(C O P Y.)

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54 Chancery Lane,

LONDON,

J/MW.

W.C.2½

Mon:6:Dec:20:

PER REGISTERED POST.

Dear Sirs,

I duly received your letter of the 18th ultimo, and enclose herewith a Tracing of my latest design Rolling Stock, based upon a 6 to 1 Streamline. I am not however, using this particular Streamline, but the Tracing will serve to indicate the method proposed.

The shape I propose to adopt is the 4 to 1 Streamline, mounted on single Track Wheel Bogies as indicated in the accompanying Tracing. This reduces the length somewhat, and for your information, in the Model I propose using six Motors instead of eight as indicated in the Tracing.

Patent Specification No. 17323/20 I think takes care of the Bogie construction, with the exception perhaps of the Guide Wheel Peripheries, an important factor which ought to be covered in some way. It also gives cover, so far as the Streamline shape of the Rolling Stock is concerned, although I quite understand no claim can be made under this heading.

Generally speaking full provision has been made for dealing with head resistance, but no provision beyond the Guide Wheels is or has been made to take side pressure due to wind, or Centrifugal force occuring upon curves, this particular point, as you are aware, had already been mentioned by Mr. Glaser, of Tunbridge Wells, but his method of dealing with same did not appeal to me, and in consequence I would have nothing to do with same.

An entirely new idea presents itself for dealing with this important point, which in fact is the key to negotiating curves at high speeds, particularly above 120. M.P.H. Under ordinary circumstances the speed of the train would have to be reduced to negotiate curves at high speeds, but with the arrangement now proposed, the train can travel round any curve at full speed, and for this idea I want if possible to obtain

Messrs A.M. & Wm. Clark,

J/MW.

Mon:6:Dec:20:

a Master Patent, which would cover not only Mono-Raile Vehicles, but also any Vehicles whatsoever, whether for Air craft, Water craft or Land craft (including road and twin Rail Transport).

The Invention is described in the accomapnying particulars, and I shall be glad to know your fee for preparing the Provisional Specification for same.

After you have had an opportunity of perusing the accompanying Specification, I should be glad if you could fix up an appointment with me, preferably at 3 o'clock one afternoon. I will fix the day on hearing from you.

Yours faithfully,

(sgd) Edmomd E. Johnson.

P.S. It might be well to refer to Patent Specification No. 17323/20. in the preparation of the Aerofoil Specification.

433. 1. Tracing of 6 to 1 Streamline Mono-Rail Rolling Stock (Elevation, end View, Plan and Section.)
2. Aerofoil Provisional Specification.

ROVISIONAL SPECIFICATION.

THE COUNTERACTION OF CENTRIFUGAL AND OTHER FORCES BY AEROFOIL.

This invention relates to all vehicles moving bodies or means of transit, it's object being to counteract laterally Centrifugal forces internal external integral with extraneous to the vehicle moving body or means of transit.

An Aerofoil and/or Aerofoil having reversible and/or adjustable camber and/or variable incidence placed with it's leading edge running perpendicularly thus exerting at it's root or centre of pressure an adjustable or reversible force due to it's motion through air or water. This counteracting force may be controlled either by hand or automatically by static and/or pendular means.

For example:-

In the case of Mono-Railways one method of applying this is as follows:-

A vehicle is normally subject to side pressures such as that due to wind and when negotiating curves at high speeds Centrifugal forces which must perforce be transmitted through same to Permanent Way.

In the interests of economy and reduction of weight and simplification both of the Permanent Way and the Vehicles, it is desitable that these forces should be counterbalanced by the atmosphere in this case.

Mon:6:Dec:20:

One or more Aerofoils placed on each side of the vehicle or vehicles with their roots or centres of pressure at or near the point of Centrifugal balance and with their leading edges or span set vertically, thus capable of exerting a lateral force which by virtue of their adjustable and reversible camber and variable incidence may be directed in opposition to any Centrifugal or wind forces which latter would otherwise have to be finally sustained by the Permanent Way.

By varying the camber and angle of incidence or attack, the efficiency of and force exerted by the Aerofoils, can be controlled (Automatically or by hand) both in direction and in magnitude so that the Centrifugal or wind stresses are exactly counterbalanced.

The said Aerofoils may be raised or lowered, folded or so rotated about their vertical axes as to form the most efficient air brake.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,

MAESCOURT,

MAIDENHEAD,

BERKS.

MEMORANDUM.

REFERENCE.

THE COUNTERACTION OF CENTRIFUGAL AND OTHER FORCES BY AEROFOIL.

This invention relates to all vehicles moving bodies or means of transit it's object being to counteract laterally centrifugal forces internal external integral with extraneous to the vehicle moving body or means of transit.

An Aerofoil &/or Aerofoils having reversible &/or adjustable camber &/or variable incidence placed with it's leading edge running perpendicularly thus exerting at it's root or centre of pressure an adjustable or reversible force due to it's motion through air or water. This counteracting force may be controlled either by hand or automatically by static &/or pendular means.

For example:-

In the case of Monorailways one method of applying this is as follows:-

A vehicle is normally subject to side pressures such as that due to wind and when negotiating curves at high speeds centrifugal forces which must perforce be transmitted through same to permanent way. In the interests of economy & reduction of weight & simplification both of the permanent way & the vehicles it is desirable that these forces should be counterbalanced by the atmosphere in this case. One or more Aerofoils placed on each side of the vehicle or vehicles with their roots or centres of pressure at or near the point of centrifugal balance and with their leading edges or span set vertically thus capable of exerting a lateral force which by virtue of their adjustable & reversible camber & variable incidence may be directed be directed in opposition to any centrifugal or wind forces which latter would otherwise have to be finally sustained by the permanent way. By varying the camber & angle of incidence or attack the efficiency of & force exerted by the Aerofoils can be controlled (Automatically or by hand) both in direction & in magnitude so that the centrifugal or wind stresses are exactly counterbalanced.

The said Aerofoils may be raised or lowered folded or so rotated about their vertical axes as to form the most efficient air brake.

This invention was evolved by the undersigned in concert

B Crosby Yeates

Edmond E. Johnson.

3-12-20, 1

E. E. JOHNSON, MAESCOURT, MAIDENHEAD, BERKS. Phone MAIDENHEAD 297.

To M

Thur:9:Dec:20:

Captain B. Crossley Meaks.

It would appear by the enclosed that the next step to take is a Patent Office search. Am not replying to enclosed pending your decision.

ENCLOSURE No. 440

Copy of letter from A.M. & Wm. Clark dated 8th December.

(C O P Y).

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54 Chancery Lane,

London, W.C.2.

Your Ref. J/MW. 8th Dec. 20.

E.E. Johnson, Esq.,
Maescourt,
Maidenhead, Berks.

Dear Sir,

We are in receipt of your letter of the 6th inst, together with the enclosures mentioned therein. Are we to understand that the alterations in the drawings which you require to be made, are all comprised in the tracing which you have sent to us, or will there be other alterations in connection with the bogie?

With regard to the new idea which has presented itself to you, we have very carefully studied your draft Specification, and regret that we have not been able to arrive at a definite conclusion as to what you wish to cover. From what we gather, however, it appears to us that it would be impossible for you to obtain a master Patent for the invention, as we believe that a somewhat similar construction has already been Patented as a means of preventing side slip of aeroplanes when banking. We suggest, therefore, that it would be as well for you to examine the aeroplane Patents before we proceed further with the drafting of the Specification.

Please let us know your wishes as soon as possible.

We are, dear Sir,

Yours faithfully,

(sgd) A.M. Clark.

COPY.

A.M. & Wm. Clark,
British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,
London, W.C. 2.

15th December 1920.

E.E. Johnson Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

Stabilizing moving bodies.

In accordance with your instructions, we have now prepared a Provisional Specification in this case, and have the pleasure to send herewith a draft for your approval.

We shall be glad if you will kindly go through same and make any alterations or additions which you may deem necessary and return same to us with your remarks thereon.

We also enclose a form of Application and Authorisation, which please sign in the two places indicated and return to us.

The favour of your cheque for £4. 14. 6. at the same time to cover the cost of preparing and filing this application will oblige.

Yours faithfully,
(sgd) A.M. & Wm. Clark.

(a) and/or an axis radial from the centre of gravity.

(b). and/or for the purpose of balance.

(c). In the case of balance above mentioned the Aerofoil or Aerofoils are operated simultaneously but may act in conjunction with ~~be in opposition to~~ each other thereby displacing a volume of air, on each side of the Vehicle of sufficient mass to maintain lateral Rolling equilibrium.

(d) The Aerofoils controls may also be automatically operated through forces acting from the Vehicle at the point, or points of contact with the supporting media.

O P Y.

PROVISIONAL SPECIFICATION.

"Improved means for stabilizing moving bodies."

This invention relates to the stabilization of moving bodies and has for its object to provide improved means for counteracting forces acting laterally thereof, or there-against, such, for instance, as centrifugal force or the effects of side winds.

According to this invention a body is provided on each side with an aerofoil mounted so that its angle of incidence may be varied about a vertical axis (a) and constructed so that its camber may be varied towards either side of a neutral plane.

Each aerofoil is adapted to exert, when the body is in motion through a fluid, a lateral force adapted to counteract a lateral force such as the centrifugal action set up when rounding a curve or the effect of a side wind, and for the purpose of counteracting such force as closely (b) as possible each aerofoil may be set by hand, both with regard to its angle of incidence and with regard to its camber, but preferably automatically acting means would be provided to attain these ends. For instance a servo-motor controlled by a pendulum may be employed for varying the angle of incidence of the aerofoils to counteract centrifugal force in rounding a curve, whilst a servo-motor controlled by an aero-static valve may be employed for varying the camber of the aerofoils to counteract the affects of a side wind. The aerofoils are operated

15/12/20.

simultaneously and in the same direction so that when their angle of incidence is varied the force acting on the one would tend to push, and the force acting on the other would tend to pull, the body towards the inner side of the curve.

The invention is especially applicable to rapidly moving bodies, such, for instance, as mono-railway vehicles, which, in rounding curves or when subjected to a strong side wind, transmit the lateral strain or a part thereof to the permanent way. (c).

The aerofoils should be mounted so that their centres of pressure lie in or near the transverse vertical and horizontal planes in which lies the centre of gravity of the vehicle and the means for varying their angle of incidence and camber may be of any known type as used on aeroplanes. By the use of aerofoils as set forth above a component of the resistance presented by each counteracts the laterally acting centrifugal or wind force.

If such vehicles be made of streamline formation an aero-static valve should be arranged at each side at the neutral vertical transverse plane for controlling the servo-motor for varying the camber of the aerofoils whilst the pendular means for controlling the servo-motor for varying their angle of incidence may be arranged within the vehicle itself. (d)

In addition to the stabilizing effects which may be obtained the aerofoils may also be actuated so as to operate as brakes.

Dated the day of December 1920.

(sgd) A.M. & W. Clark,

Chartered Patent Agents,

53 & 54, Chancery Lane,

London, W.C. 2.

15/12/20.

Vale Cottage
Cliveden Mead
Maidenhead.

27-12-20.

Messrs A.M.& Wm.Clark
Chartered Patent Agents
53 & 54, Chancery Lane. W.C.2.

Dear Sirs,

Many thanks for your letter of Dec' 24 th 1920 with enclosure No' 265.
I have examined the amended Specification & I do not think it could be improved upon. I therefore return it to you together with the application form filled & signed as requisite.
I also enclose cheque for Five Guineas as,per your letter dated December 16th 1920.
Please note that Mrs Crossley Meates & I are spending a fortnight's holiday abroad as from 28th' inst' so I hope that any further communications may stand over for that period without inconvenience to you.

Yours faithfully

B C M.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,

MAESCOURT,

MAIDENHEAD,

BERKS.

MEMORANDUM.

Captain B. Crossley Meates,

R.A.F. Cadet College,

Cranwell,

Sleaford,

LINCOLNSHIRE.

REFERENCE. J/MW.

Tues:13:Dec:21.

Dear Captain Crossley Meates,

On the 2nd instant I sent you by Registered Post to your address as above, some typewritten matter with illustrations re my Mono-Railway, for a Booklet I now propose having printed. This letter was signed for by H. Franklin, Hall Porter, Officers Mess on the 5th instant, and I am now writing to advise you of the fact, in case same has not been handed to you.

I have now completed a new Design of a variable camber Wing, which is a decided improvement on the original, and would like to show you a working Model of same, so if we could fix up an appointment before Christmas I could meet you anywhere and at any time to suit your convenience.

Hoping the letter I sent you on the 2nd instant has not gone astray, and with kind regards to your Wife and family.

Yours sincerely,

Edmond E. Johnson

P.S. Since writing the above I hear from Seymour that you have been away on leave, which will account for my not having heard from you.

My Wife has just written your Wife to know if you will spend Xmas Day with us.

DEC:31st.1921.

MONO-RAILWAY EXPENSES AND DEMONSTRATION CAR.

	Monthly Totals.			Intrum Totals.			TOTAL.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
July 1919 to Dec. 1921.							626.	13.	2.
1922.									
January.....	3.	6.	7½	3.	6.	7½	629.	19.	9½
February.....	34.	10.	5½	37.	17.	1.	664.	10.	3.
March.....	6.	18.	0.	44.	15.	1.	671.	8.	3.
April.....	24.	5.	7½	69.	0.	8½	695½	13.	10½
May.....	25.	13.	6½	94.	14.	3.	721.	7.	5.
June.....	61.	8.	11½	156.	3.	2½	782.	16.	4½
July.....	27.	14.	3.	183.	17.	5½	810.	10.	7½
August.....	61.	15.	7½	245.	13.	1.	872.	6.	3.
September.....	34.	12.	0.	280.	5.	1.	906.	18.	3.
October.....	34.	4.	5½	X314.	9.	6½	X941.	2.	8½
November.....	28.	5.	0½	342.	14.	7.	969.	7.	9
December.....									

Elevated Model from July 1919 to March 11th, 1921	£256.	6.	0.
Aerofoil Model from March 12th to December 31st, 1921	£370.	7.	2
July 1919 to Dec.1921 (2½ years) TOTAL.....	£626.	13.	2.
Demonstration Car from Jan.1st to Dec. 31st, 1922.....			
July 1919 to Dec. 1922 (3½ years) TOTAL....			

X The figure £314. 11. 0. in Agreement should be £314. 9. 6½ as above

X The figure £941. 4. 2. in Agreement should be £941. 2. 8½ as above.

DEC:31st.1921.

MONO-RAILWAY EXPENSES AND DEMONSTRATION CAR.

	Monthly Totals. £.	s.	d.	Intrum Totals. £.	s.	d.	TOTAL. £.	s.	d.
July 1919 to Dec. 1921.							626.	13.	2.
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March.....	6.	18.	0.	44.	15.	1.	671.	8.	3.
April.....	24.	5.	7½	69.	0.	8½	695.	13.	10½
May.....	25.	13.	6½	94.	14.	3.	721.	7.	5.
June.....	61.	8.	11½	156.	3.	2½	782.	16.	4½
July.....	27.	14.	3.	183.	17.	5½	810.	10.	7½
August.....	61.	15.	7½	245.	13.	1.	872.	6.	3.
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November.....	28.	5.	0½	342.	14.	7.	969.	7.	9
December.....	104.	7.	2	447.	1.	9	1073.	14.	11

Elevated Model from July 1919 to March 11th, 1921 £256. 6. 0.

Aerofoil Model from March 12th to December 31st, 1921 £370. 7. 2

July 1919 to Dec.1921 (2½ years) TOTAL..... £626. 13. 2.

Demonstration Car from Jan.1st to Dec. 31st, 1922..... 447. 1. 9

July 1919 to Dec. 1922 (3½ years) TOTAL.... £1073. 14. 11

X The figure £314. 11. 0. in agreement should be £314. 9. 6½ as above

X The figure £941. 4.. 2. in agreement should be £941. 2. 8½ as above.

Post Office Telephones Cheque £4. 10. 5 sent you on the 10th inst.

Maidenhead Gas Co., Cheque £5. 15. 3. also sent you on the 10th instant.

Yours faithfully,

(sgd) Edmond T. Johnson.

I dont now propose having the Rolls-Royce Demonstration Car sent to the United States as the cost will be too great, it will however serve for demonstrating in England at a later date. I am about to have another Demonstration Car built here, by the Ace Motor Cycle Company.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larkalnds,
ASCOT,
BERKS.

REFERENCE.
J/MW.

Wed:18:Jan:22.

Dear Captain Crossley Meates,

I enclose herewith copy of my letter dated the 16th instant to Messrs A.M. & Wm. Clark together with a copy of their reply received this morning.

You will observe that they do not appear to have answered the question in regard to the division of the Patent dealing with Aircraft.

I presume the application of a variable camber horizontal wing for aeroplane purposes is inadmissable by the slotted block and crank system owing to the weight involved.

You will see I have put the question to Messrs A.M. & Wm. Clark in regard to vertical Foils as applied to aeroplanes; no doubt, however, you can ascertain whether it is worth while to proceed to obtain a separate Patent under this heading.

My view is that if it can only be applied to a Fighting Machine it would not be worth while, on the other hand if the variable camber can be applied to the horizontal wings of an aeroplane then it would be worth while. (See my remarks to Clark on Page 4 of letter dated the 16th instant.)

With kind regards,
Yours sincerely,

Edmond E. Johnson

P.S. I shall hope to see you again when I receive a reply from Clark to my letter of the 18th instant.

93. Copies to A.M. Clark dated the 9th, 16th and 18th instant.
Copies from A.M. Clark dated the 5th, 12th and 17th instant.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,

MAESCOURT,

MAIDENHEAD,

BERKS.

MEMORANDUM.

Captain B. Crossley Meates,

Officers Mess,

R.A.F. Cadet College,

REFERENCE. J/MW.

Cranwell,

LINCS.

Wed:25:Jan:22.

Dear Captain Crossley Meares,

I am in receipt of your letter of the 22nd instant, and enclose herewith copies of the correspondance which has been passed between Messrs A.M. & Wm. Clark and myself, since writing you on the 18th instant.

You will see by the copy of the 2nd letter I have received this morning, dated the 23rd instant, that Messrs A.M. & Wm. Clark have an appointment with the Examiner to-day, so that I fear nothing more can be done until I hear again from Clark, the Verdict given.

You will nevertheless observe that one of the principal points raised by you in connection with the mounting of the Aerofoils is dealt with by Clark in this letter, to the effect that half the area of each aerofoil should be above the centre of gravity and half below, and he therefore proposes revising one of the Claims accordingly.

You will observe in my letter to Clark of the 24th inst. I have dealt with the anchoring of the Aerofoils to the slotted Blocks through which the cranks pass, which has not been clearly set out in the Claims.

Regarding the Divisional Airfraft Application, you will see the position of affairs by reference to Clark's letter dated the 20th instant. I note that it is your opinion that the weight involved would be too great to admit of their being adapted for that purpose, and I shall no doubt be soon hearing from Clark in regard to their application for Aircraft in a vertical plane, as the question is to be settled at the Examiners conference to-day.

<antain B. Crossley Meates. (2). Wed:25:Jan:22.

It occurs to me that the pendular floor can itself be used as a Pendulum, although I doubt if the weight even then would be sufficient to operate the Aerofoils without the use of a Servo-Motor for this purpose.

The thing which pleased me most of all in your letter is your suggestion in regard to the reduction in the height of the Aerofoils, for as you are aware I have all along foreseen the terrible obstacle this presents both in regard to Bridges and Tunnels, and it seems to me that the height of the Aerofoils is governed by the centre of pressure of the Vehicle, which when loaded would come considerably below the centre line of same. The Aerofoils can then be so shaped as not to exceed the height of the Vehicle, the only objection to this, is the obstruction they would cause to the port holes, and the Passengers would be rather disappointed with the view they obtained of the surrounding scenery , however, it is better that they should be looking through a port hole at an Aerofoil, than to attempt to accomplish the desired result with one pair of Aerofoils.

Regarding your Centrifugal Force calculations, the figures for a Vehicle weighing 150 tons would be enormous. In going into the question sometime back with Mr. Park, of H.P. required to attain a speed of 150 M.P.H. with a 6 to 1 Streamline Vehicle, 90 feet long, weighing 25 tons fully loaded, he says:-

> "A 15 ft diameter car circular in section with an area of 180 sq. ft. app. would have a resistance of 1600 lbs at 150 M.P.H. and should require about 800/1000 H.P. which would be a practical proposition".

The weight of the Vehicle was arrived at as follows:-

Weight of Vehicle.....	15 tons.
Weight of Petrol Engine 800/1000 H.P....	2 tons.
104 Passengers @ 13 to ton.....	8 tons.
	25 tons.

I think, however, that centrifugal force calculations based on a 25 ton Vehicle would present an enormous reduction in your figures, as a Vehicle weighing 150 tons would be an enormous proposition, and one which would not have to be tackled for many years to come.

Captain B. Crossley Meates, (3) Wed.25.Jan.22

I am extremely obliged to you for your interesting letter. To tell you the truth I was feeling rather down about matters, and your letter has re-acted upon me as a stimulating tonic.

I shall hope to give you a call at Ascot, if you will be home for the week-end; possibly Sunday would suit you better than Saturday.

With kind regards,

Yours sincerely,

Edmond E. Johnson

ENCLOSURE No 96 "JUSTSO"

Copies of letters to A.M. Clark dated the 20th, 21st, 23rd and 24th instant.
Copies of letters from A.M. Clark dated 20th, 23rd and 23rd instant.

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,
LONDON. W.C.2.

J/MW.

Fri:27:Jan:22.

British Application No. 36531/20.

Dear Sirs,

I am in receipt of your letter of the 26th instant, and am pleased to note that the difficulties regarding Claim 1 have been removed by the amendments proposed, also the amalgamation of Claims 3 and 4 including my amendments.

I was not aware, however, that there were any amendments proposed in regard to Claims 5 and 6, as no mention is made thereof in your letter to me dated January 5th, which states that the Examiner took exception only to Claims 1, 2, 3, 4 and 10, however, owing to the amalgamation of Claims 3 and 4 this will alter the numbering thereof and until I hear from you again I shall be ignorant as to the amendments proposed in regard to my original Claims 5 and 6.

Dealing with my original Claim 10, it is unfortunate for me that it was not worded as my French and American Patents were, in which case no doubt the Examiner would have passed the amendments proposed. I gather, however, that he accepts "on one or other side of the neutral chord" because this is contained in the body of the Specification, Page 8, reading as follows:- "and adjust it on, the one side or the other of the central neutral chord, as indicated in Figure 3". I presume also the Examiner has passed the remaining alterations in this Claim with the exception of the words "cranks" and "alternately". If this is so, I think you have done well in having succeeded in obtaining the revisions you have, which after all the Examiner was bound to admit, although he might not have done so, unless you had handled the case in the able manner you appear to have done.

While on this point I would be much obliged if you could furnish me with a copy of the American Patent, as I find you have not already done so. The French Patent I understand is worded exactly the same as the American Patent.

ENCLOSURE No. 98

The angle of incidence as viewed in Plan would be to oppose attempted Starboard cant /(, while the camber for the same cant would be)(, while the angle of incidence to oppose attempted Port cant would be \(, while the camber for this cant would be)(.

The variation for the camber as you have shown it is correct if applied to one Aerofoil only, but not as applied to the two Aerofoils, however, in regard to your remarks about dividing crank shaft 57 into 2 parts geared together, I will give this point, and the question of a divided out Application under Claim 16, further consideration and hope to write you on Monday in reference thereto.

Perhaps in the meantime the enclosed notes "Action of Pendulum in relation to Centrifugal Force and Wind Pressure" dated September 15th last, will be of assistance to you, and enable you to grasp exactly what takes place under the influence of attempted Port and Starboard cants.

Yours faithfully,

99. Notes dated September 15th, 1921.

Thur:15:Sept:21:

ACTION OF PENDULUM IN RELATION TO CENTRIFUGAL FORCE AND WIND PRESSURE.

The following operations take place as viewed from TAIL of Vehicle.

Curve to STARBOARD (Right) PENDULUM swings to PORT (left) and produces P.C.F. (Port Centrifugal Force)

Curve to PORT (Left) PENDULUM swings to STARBOARD (Right) and produces S.C.F (Starboard Centrifugal Force)

PENDULUM swings to PORT then lower No.1 Servo-Motor Valve Chest OPERATING.

PENDULUM swings to STARBOARD, then upper NO.2 Servo-Motor Valve Chest OPERATING.

Wind blowing from STARBOARD to Starboard beam, cants the Vehicle to the PORT side, producing P.C. (Port Cant). Block at bottom.

Wind blowing from PORT to Port beam, cants the Vehicle to the STARBOARD side, producing S.C.(Starboard Cant) Block at top.

Centrifugal Force plus wind = SUM or Block away from Fulcrum.

Centrifugal Force minus wind = Difference or Block close to Fulcrum.

DEFINITIONS.

PORT. A left side of a Vessel as one looks from stern to bow.

STARBOARD. That side of a Vessel on the right hand of one standing on it and facing the bow.

Enclo No 99

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON, W.C.2.

T.E. Johnson Esq.,
Maescourt,
Maidenhead, Berks.

26th, January, 1922.

Dear Sir,

British Appln. 36531/20.

We are in receipt of your letter of the 25th inst, which we have very carefully considered. The only point of importance is that which bears out our contention that the main feature of difference is that your aerofoils are placed on each side of the vehicle so as to act through the centre of gravity. The remainder of the letter appears to us to deal with matters not set forth specifically in the Specification, therefore, not part of the matter to be discussed with the Examiner. In these circumstances we do not think that a detailed reply is called for in response to the several minor points raised in said letter.

We have today interviewed the Examiner and discussed the matter fully with him, and as a result of this interview we are glad to be able to inform you that the difficulties regarding your Claim 1 have been removed, inasmuch as we are proposing to restrict the opening portion of the claim to "means for neutralizing lateral forces acting in a horizontal plane on either side of a moving monorail vehicle body".

The Examiner is willing to allow the proposed running together of Claims 3 and 4, and also the proposed slight amendments in original claims 5 and 6. Moreover he will allow original Claim 10 in the form in which we propose to amend it, except that he will not allow either in the claim or in the description the introduction of the new matter relating to the securing of alternate blocks to the opposite walls of the aerofoils.

Regarding the body of the Specification itself, we have been able to clear up most of the difficulties, but if you will refer to line 1, page 7 of the Specification, you will find that reference is made to the algebraic sum of the pendulum and pennant movements. The Examiner considers that these movements and the effect of the pennant controlled servo motor upon the valve chests of the pendulum controlled servo motor should be explained in extenso. We think we should be able to prepare the necessary description without special instructions from you and submit the amendment for your consideration. Similar information is also required regarding the action of the pendulum 76 and the action of the servo motor controlled by the diaphragm 79. In this

connection the variation of the camber of the aerofoils on one or other side of the neutral chord and the means for effecting this variation need very careful consideration, and it is here in particular that we require your assistance.

We understand that the angle of incidence of each aerofoil is varied in the same direction, that is to say the aerofoils would be set / /, the camber, we believe, would be)). The crank shaft 57 will, however, through its extensible Cardan shafts 56 turn the crank shafts 55 in opposite directions, so that the variation of the camber will be)(. The Examiner requires this point to be cleared up in the Specification and the general action of the pendulum 76 accordingly to the position of the diaphragm 79 to be set forth. It appears to us that the crank shaft 57 would have to be divided into two parts geared together so as to turn in opposite directions and thus produce variation of the camber of the aerofoils in the same direction.

For the moment, we do not think it necessary to discuss further the Specification, and we will in due course prepare the amendment as far as it is possible for us so to do, but we desire your full instructions on the point of the variation of the camber.

With regard to the question of filing a divided out application for the subject matter of Claim 10 as originally filed, the Examiner states that if we propose to claim for this divided out application the date, i.e. 30th September on which your Complete Specification was filed (this being the first time the crank shaft 55, crank 54 and blocks 52 were brought to the notice of the Office), he will not allow us to put in such divided out application anything except a plan of an aeroplane wing together with the crank shafts 55 and crank 54 as shown in respect of the aerofoil e in Figure 1, and a cross sectional view of an aeroplane wing corresponding with the plan view of the aerofoil e in Figure 3, and in the divided out Specification we shall have to confine ourselves to the exact wording of your Complete Specification for the monorail vehicle substituting the words aeroplane wing for aerofoil where necessary. As you will see this will considerably restrict the scope of the divided out application. If you wish to go into greater details you will have to forego the 30th September as the date for the divided out application, and take the date on which such divided out application is filed. This would undoubtedly give you greater freedom as you could introduce the securing of the alternate blocks and other details, but if the use of these slotted blocks and the cranks has been made public in any way as regards the aerofoils of your monorail vehicle, it is doubtful whether a valid Patent could be granted without claiming the 30th September

as its date.

We shall be glad therefore, if you will kindly let us know what you wish us to do regarding the divided out application.

We are, dear Sir,

Yours faithfully,

(sgd) A.M. & Wm. Clark.

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON, W.C.2.

25th January, 1922.

F.E. Johnson, Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

British Appln.36531/20.

We thank you for your letter of the 24th inst., and note your remarks regarding alternate blocks being anchored to the walls of the aerofoils. This was not mentioned in the Specification as filed and it is quite probable that the Examiner will object to the introduction of fresh matter. We will endeavour to incorporate it, however, and will let you know if it is permitted. Even if the Examiner objects, we do not think that the matter is of any very great importance from the point of view of the Patent. Similarly, the provision of more than one crank in each aerofoil is still more likely to be regarded as fresh matter.

Unfortunately, we have been unable to have the proposed interview with the Examiner today as he had to attend a Hearing before the Comptroller on an urgent case. We have, however, fixed up an interview for tomorrow morning instead.

We propose to keep your sketch until after the interview in case we have to produce it.

Yours faithfully,

(sgd) A.M. & Wm. Clark

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larklands,
ASCOT,
BERKS.

REFERENCE. J/MW.

Fri:27:Jan:22.

Dear Captain Crossley Meates,

Since writing you on the 25th instant, I have received 2 letters from Clark, and enclose you copies thereof, together with a copy of of my reply of even date.

You will see from Clark's letter dated the 26th inst., that the Patent Office Examiner has dealt with this matter, and on the whole I am delighted at the turn of events, as the Patent certainly now looks far more promising.

There are, however, some important points which I should like to discuss, and if convenient to you, I could come over to Ascot on Sunday by the Bus leaving Maidenhead at 12 noon, due at Ascot at 1.15 p.m.

With best wishes,

Yours sincerely.

Edmond E. Johnson.

P.S. See Paragraph 2, Page 2 of Clark's letter dated the 26th inst., underlined in Blue.

ENCLOSURE No 98 "JUSTSO"

Copy of letters received from Clark dated the 25th and 26th.
Copy of my letter to Clark dated the 27th instant.
Notes dated September 15th, 1921.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. (Cadet)College
Cranwell,
LINCS.

REFERENCE. J/MW.

Mon:30:Jan:22.

Dear Captain Crossley Meates,

I have now had an opportunity of looking further into your letter of the 26th instant, and note you state that the area of a foil will always be larger above than below the C of G, due to:-

(1) Wash out at Aerofoil tips.
(2) Interference to Root Wash out set up by the proximity of the root to ground.

I should have thought at any rate (2) would point to the fact that the lower portion of the Foil was less efficient and in consequence called for a larger Foil area below the C of G, but it would appear from what you state that this is not the case, conceding this conclusion that the Interference (2) increases the Foil effeciency below the C of G, there still remains one factor which I cannot help thinking you have not taken into consideration i.e. LEVERAGE

Some little time back I applied a Spring Balance at the Root Axis (which is 5 inches above the Mono-Rail head) of the Aerofoils on my Model and found it registered 22 lbs. to push the Vehicle over from Port to Starboard, while it only registered a few ozs. to perform the same operation at the upper Axis, the first test was made about 4 inches below the C of G, while the second test was 24 inches above the C of G (or 33 inches above the Mono-Rail head) and intermediate tests indicated that the nearer the root the greater the push required. It was obviously entirely due to leverage, and I should have thought that this factor would have over ruled the factors put forward by you to such an extent that the area of the Foil would become greater below the C of G than above same.

It seems to me in order to get a direct side thrust it would require a fairly large area of Aerofoil below the C of G to make up for the diminished amount of leverage which occurs in this region, however, as you are the Air Expert you will know best whether there is anything or not in the point raised by me. If there is it will be another factor calling for a still further

reduction in the height of the Aerofoils, or for a reduction in the area of same above the C of G.

Regarding the direct acting Pendular floor I fully appreciate what you mean by violent rolling, as I had an experience of this when running one of my Bogies with an Aerofoil mounted thereon; the rolling was so violent that the Bogie carried over from Port to Starboard, the outer Track Wheels contacting with a bump, in this case however, the entire Aerofoil was mounted above the C of G.

Paragraph 7 of my letter of the 25th instant should, as you state, read C of G and not C of P.

I note your remarks re C of P in relation to C of G, and that you think the former will come above the latter, if however my "Leverage" theory is correct then the C of P might come below the C of G, this of course assumes that the C of P of the Vehicle coincides with that of the Aerofoils which I presume is the case.

I see your point in regard to Centrifugal C of P and Wind C of P, moreover you are right, the Examiner has not spotted it. Nevertheless I think we were always aware that they did not actually coincide, but near enough to employ one pair of Aerofoils for a Streamline Vehicle. I think, however, that the Examiner has spotted too much already and that I must be thankful that he appears to be giving way and meeting me fairly in the matter.

I can assure you that I shall look forward with high glee to a 150 Ton Vehicle, just think what it would mean on a pro-rata basis to a 25 ton Vehicle operated by 1000 H.P. It would need 6000 H.P.; Some Prop to absorb this.

With 150 Ton Vehicle and the Channel Tunnel completed, the finishing touch would be an exciting race with an Aeroplane from London to Paris, and for the Mono-Rail Vehicle to win.

Yours sincerely,

Edmund E. Johnson

ENCLOSURE
Nº 106
"JUSTSO"

Your wife phoned today saying you were away from home; but I got your letter on Saturday morning, so had already cut out the proposed ascot trip.
With kind regards from us all.

Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,

MAESCOURT,

MAIDENHEAD,

BERKS.

MEMORANDUM.

Captain B. Crossley Meates,

R.A.F. Cadet College,

Cranwell,

Sleaford,

LINCS.

REFERENCE. J/MW.

Thur:1:Feb:22.

Dear Captain Crossley Meates,

Since I wrote you on the 30th ultimo, my Patent, as you will see by the accompanying correspondance, has been undergoing a most severe examination. The Examiner has been again interviewed, and luckily for me has agreed to allow the Drawings, at this date, to be altered to comply with his requirements, and from what has passed it seems to me that the Examiner is taking a particular interest in the developements of this Patent.

Unfortunately last night I found a snag which evidently escaped your notice when the original Drawings were made; the diaphragm in the air speed indicator, drawing the valve chest rod in the wrong direction, as to this, however, you will see the full particulars in my letter to Clark of this date.

In case you have not the original Patent Specification Drawings by you, I am enclosing you two Blue Prints (indicating the alterations approved of by the Examiner, in red) together with the revised Patent Specification sheets, 2,3,3a,7,8,9,10,11 and 12, and new revised nine Claims, which so far have been approved by the Examiner.

Yours sincerely,

Edmond E. Johnson

P.S. A point which will have to be watched is that the Compressed Air in regulating valve chest 68, does not interfere with the action of diaphragm 79

ENCLOSURE No 110 "JUSTSO"

1. Two Blue Prints.
2. Revised Sheets for complete Specification.
3. Revised nine Claims.
4. Copies of letters from Clark dated the 30th ultimo and 31st ultimo and the 1st instant
5. Copies of letters to Clark dated 31st ultimo, and 1st and 2nd instant.

(Copy)

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

J/MW.
3
Fri: 4:Feb:22.

British Application No. 36531/20.

Dear Sirs,

I have a suggestion to make, whereby my Drawings can be made to comply with the conditions imposed by the Examiner.

Owing to the difficulty of explaining the operations in the Plan view, Figure 3, and the awkward position of the Pendulum in relation to the switch valve 72, I think the Examiner would accept the cancellation of Figure 3, with the exception perhaps of the aerofoils which must remain, and the entire cancellation of Figure 7, and substitute therefor a sectional view showing the mechanism for the camber operations on the lines of Figure 4, incorporating therewith Figure 7, by so doing the drawing becomes very much more compact, and as a consequence the description is simplified.

I enclose herewith a rough tracing embodying this idea, and if same is accepted it gets over the whole of the trouble raised in my letter to you of yesterday, whereby the camber will be decreased as the speed of the Vehicle increases.

It will be seen by the adoption of the differential gear a double acting servo-motor, similar to g in Figure 4, can be employed instead of 2 single acting servo-motors, thereby simplifying the pipe work and the description accordingly.

I think if the Examiner realises the difficulty there is in the description, he will allow the substitution suggested by me, and if he does it will "kill two birds with one stone" because it not only gets over the differential gear trouble but also the variation of the camber in relation to the speed; by so doing the Examiner will in all probability pass the entire arrangement, particularly as it now becomes so simple and easy to understand.

Yours faithfully,

P.S. By the above method the 2 cranks 58 and 59 are entirely dispensed with, the single crank from the double acting servo-motor taking the place of these 2 cranks.

111. Sectional View of Camber Mechanism.

Copy

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,

53 & 54, Chancery Lane,

J/MW. LONDON. W.C.2.

Thur:2:Feb:22.

British Application No 36531/20.

Dear Sirs,

I am in receipt of your letter of the 1st instant, and consequently accept the position that the matter is now to proceed upon the basis of your letter to me dated the 31st ultimo.

Dealing with the Amendments you have sent in connection with the Patent Specification, I would point out on Page 7, six lines from the bottom and again three lines from the bottom, the words "piston rods" would possibly read better "Valve chest rod".

On Page 10, lines 8 and 9, the following words appear, "except that the valve chest 68 has four ports instead of three". It appears to me that these words constitute a clerical error, and should be deleted.

On Page 11, five lines from the bottom, after the words "centrifugal action", "or both" might be added.

I see that you have dropped out the sentence appearing at the bottom of Page 2 and the top of Page 3 in the old Specification, which has reference to Permanent Way, and in this connection you may have a very good reason for doing so, as the original wording might not, in your opinion, be permissable, nevertheless as this entire Patent is based upon attaining a reduced size and weight of Permanent Way, I think some reference to Permanent Way should be mentioned, particularly as it is the underlying factor governing the Patent, the accomplishment of which being attained by the Aerofoils.

Assuming that Figure 4 represents a section as viewed from the stern of the Vehicle, then it is obvious that the crank 51 must face the stern, in order to push the connecting rod 50 from Port to Starboard when the Pennant is operated upon by a wind blowing from Port. I mention this because the original intention was that the crank should face the same Way as the Bob Weight.

I now come to an incorrect detail in Figure 5, which evidently the Examiner has not spotted. The crank is shown in its extreme position for diagrammatic purposes, giving the Foils a Starboard incidence. This Crank should be placed at right angles. The Shaft m when turning clockwise gives Starboard incidence, while when turning anti-clockwise gives Port incidence, with the crank facing aft at neutral.

As to whether it is necessary to make this correction or not I must leave you to decide, also whether it is necessary to mention in the Specification that Stops should be provided in connection with the incidence shaft m and likewise in connection with camber shafts 57, to prevent the cranks from reaching their extreme dead points, is another matter which I must leave you to decide. in Each case

The above are all more or less minor matters, which I have no doubt you will have little difficulty in dealing with. There is, however, one matter which I spotted last night; it is of a more serious nature, and is one which cannot be ignored.

The point is that the greater the speed the less the camber; unfortunately the Drawings rule, the greater the speed the greater the camber. This means to say that the description given on Page 10 in regard to the chamber 78 and diaphragm rod 77 is incorrect, ~~and moreover the diaphragm chamber is incorrect.~~ & Valve Chest-68.

There are two ways of getting over this trouble; one is to remove the cowl 82 from the pipe 80 to the pipe 81 and rearrange the pipe work accordingly, the other is to leave the cowl where it is and bring the pipe work to the other side of the two pistons contained in valve chest 68, and here again I must leave you to decide as to the best way to get out of the trouble. the latter method would be the simplest.

The pipe work should be rearranged so as full apertures are obtained in each case when the valve 72 is set at Neutral. In this way the moment this valve opens it will set the Aerofoil to full camber at slow speed; as the speed increases so the apertures of the inlet pipes will be diminished by the pistons in valve chest 68.

This is a most unfortunate thing to have occured, and is accounted for by the original drawing having been made showing the Aerofoils in action. When the Patent Office drawings was made however, the pistons were adjusted for neutral position, without adjusting the pipe work to meet the case and as you are aware, there was such a rush at the last minute in putting in these drawings that there was not sufficient time to check them over, the final drawings being only inspected by me at your office on the same day as they were put into the Patent Office.

I

I trust, however, that under the circumstances you will be able to rectify this all important point.

In Figure 7 the crank marked 58 should be marked 59, moreover this crank will now face downwards instead of upwards.

As requested I enclose, in your tube, Patent Office Drawing, Figures 1 to 3, along with revised sheets for complete Specification, per Registered Post.

Yours faithfully,

109. 1. Revised Sheets for Complete Specification.
2. Patent Office Drawing.

(C O P Y)

A.M. & WM. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

E.E. Johnson Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

British Appln.No.36531/20.

We thank you for your letter of the 31st ulto.,which crossed ours of the same date. As you will find from the amendments which we have submitted to you, we have covered the points raised in your letter. We think that the arrangement suggested by us i.e. dividing the crank shaft 57 into two is better than the bevel gear arrangement proposed by you as, for the reason which we explained to you before the Complete Specification was filed, this gear will be inoperative when the starboard aerofoil is at certain angles of incidence.

We await your reply to our letter of yesterday.

Yours faithfully,

(sgd) A.M. & Wm. Clark.

(Copy)

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,

J/MW. LONDON. W.C.2.

Wed:1:Feb:22.

British Application No. 36531/20.

Dear Sirs,

I am in receipt of your letter of the 31st Ultimo, but am reserving my reply thereto until I receive a reply from you to my letter to you of yesterday's date, and in connection with Enclosure 108, contained in that letter, I would point out that on the Notes thereon, in paragraph 1, the word "Nose" should be "Tail", while in paragraph 3 the word "Aft" should read "the Nose".

It seems to me if you have already arranged with the Examiner that the Shaft should be split in the middle, there is nothing for it but to do so, which will necessitate a big alteration in the Drawings. In my letter to you of yesterday's date I was endeavouring to accomplish the same thing without the necessity of making the alterations, which would otherwise be called for.

It is curious coincidence, but we both appear to have come to the same conclusion in regard to the position of the Pistons in Cylinders 64 and 65 at the same time.

Yours faithfully,

P.S. I think perhaps on reflection that the alterations involved by my method would be almost as much, by the method suggested by you, because it is evident that the Examiner would call for another Drawing showing the Starboard Aerofoil gearing. By your method this additional Drawing would not be required, but instead the alteration as proposed by you. I, therefore, favour your scheme and shall hope to hear from you tomorrow.

(C O P Y).

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

31st January, 1922.

E.E. Johnson Esq.,
Manscourt,
Maidenhead,
Berks.

Dear Sir, Brit.Appln.No.36531/20.

We are in receipt of your letter of the 28th inst. contents of which we note. We spent many hours yesterday in drafting an amendment to this case, and when checking over the same with your letter of the 27th inst. we found that we were at variance with page 2 of said letter. As, however, we believed that we were right, we did not alter our amendment, and find from your letter of the 28th inst. that we were quite correct in not doing so.

The reminder contained in your letter of the 28th inst. regarding the sunstitution of the Cardan shaft illustrated by Figure 7 for the bevel gear originally proposed, brings back clearly to us the discussion which led up to the substitution of said Cardan shaft and the representation of bevel gear in Figure 1 of the drawing clearly confirms your original intention, as also does the opposite arrangement of the cranks 58 and 59 in Figure 3. We return your drawing.

We have not only prepared an amendment to describe fully the manner in which the pennant controlled servo-motor modifies the action of the pendulum and arm controlled servo-motor so as to produce an algebraic sum equal to the algebraic sum of the effects of centrifugal force and wind, but we have also drafted an amendment to explain in detail the action of the servo-motors 64 and 65 and how they are controlled by movement of the pendulum 76 and diaphragm 79. Our amendment necessitates alterations in Figure 3 of the drawings, and we have therefore had a further interview with the Examiner and are pleased to be able to report that the Examiner considers our proposed amendment of Figure 3 to be allowable as it is more in the nature of an explanation in response to the official letter than the introduction of new matter. We are therefore sending to you copies of pages which have been retyped and which are to be substituted for pages 2,3,7 and 8 of the Specification originally filed. We have already sent to you copies of the amended claims. Please read through our amendment

very carefully, especially the explanation on the two points mentioned above and check that they are correct. We believe that they are, and in order that you may understand our amended description with reference to Figure 3, we send herewith the original sheet of drawings on which we have intimated certain amendments in pencil, i.e. the shaft 57 is divided into two centrally and the two parts are connected by ordinary differential gear. The cranks 58 and 59 instead of extending in opposite directions should both extend vertically downwards from the plan of the shaft shown in Figure 3. Lastly, the pistons of the servo-motors 64 and 65 together with their piston rods and connecting rods should be shown both in mid position as the remaining parts of the mechanism are shown in their normal inoperative positions corresponding with the full line positions of the ailerons c,c, and when the body a is stationary.

As a result of our interview with the Examiner this morning we have received permission to amend the drawings in this manner. It may be possible to amend the original drawings by erasing and inserting the alterations, but on the other hand it may be necessary to prepare a fresh Figure 3. In either event we shall have to supply a fresh true copy of Figure 3. The Examiner has also given permission if we so desire, to remove the bevel wheels from the crank shaft 55 in Figure 1, but if we do so we shall have to supply also a fresh true copy of Figure 1. This elimination of bevel wheels from Figure 1 is not in our view particularly important as the circles may be taken to be a diagrammatic representation of the Cardan shaft 56. We assume that we may instruct Mr. Bartlett to prepare the amended drawings. We return your original drawing sent with your letter of yesterday and await your instructions.

Although the additional description which we are inserting in the specification appears to be a rather unnecessary elaboration we think it better to insert it as the Examiner was rather anxious that we should do so. In any event it certainly makes the working of the apparatus much clearer, although (assuming Figure 3 to have been altered) any intellegent engineer would be able to understand the working from the shorter original description. Please return the original Patent Office drawing in the roll in which we send it in order that it may not be creased, and please register it for the sake of safety.

We think that the complete description now reads very well and trust that it will meet with your approval.

As a consequence, upon the amendment of the opening phraseology of the claims the title of the application will have to be amended to read "Improved Means for Neutralising Lateral forces acting in a horizontal plane on either side of a moving Monorail Vehicle". We await your instructions.

Yours faithfully,
(sgd) A.M. & Wm.Clark.

(Copy)

Messrs A.M. & Wm. Clark,
British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,
J/MW. LONDON. W.C.2.

Tues:31:Jan:22.

British Application No. 36531/20.

Dear Sirs,

I am in receipt of your letter of the 30th instant, and thank you for having furnished me with a copy of the amended Claims. The Amendments in new Claims 4 and 5 appear to me to be in order.

Dealing with the detailed description as to the functions of Crank shaft 57, you may depend upon it that the Examiner has already spotted a snag, and I have therefore again gone into the matter with this in view.

In the first place I have looked upon Figure 7 as representing the Port Aerofoil in which case the Crank should be numbered 59 instead of 58 in order to comply with Fig.3, as I take it Fig. 7 is viewed from the Tail of the Vehicle, otherwise Fig.7 is perfectly correct, with the Port crank facing upwards, as representing Neutral position.

The position however of the Cranks in Fig.3 was done for diagramatic purposes and will not stand the test the Examiner proposes to apply, for it is quite obvious from Fig.7 that the Cranks 58 and 59 (Fig.3) in the Neutral position, should be vertical which would then bring the pistons in 64 and 65 in the Mid-position.

If Fig. 3 is not to be treated diagramatically then it is perfectly obvious that cranks 58 and 59 are set for the extreme Starboard camber, while the Cock 72 is set for the Aerofoils at Neutral.

Cannot you introduce some wording into the Specification pointing out that the Cranks 58 and 59 are shown in this position for diagramatic purposes, but in reality they are vertical and the pistons in Mid-position to correspond with the setting of Cock 72, and the Aerofoils, both of which are indicated in Neutral position.

As the Cranks are at present indicated in Fig.3, operated as Fig.7, the Aerofoils will be set at Starboard Camber (not Neutral), which is counteracting Port cant, the Pendulum 76 consequently falls to Port and opens the pipe 70 to pressure and the pipe 69 to exhaust; thus the Crank Shaft 57 is turned clockwise to produce Starboard Camber.

I enclose you a Tracing of Starboard Aerofoil gearing, the adoption of which will enable Port Aerofoil gearing in Fig.7 to be preserved.

Yours faithfully,

108. Tracing of Port and Starboard Aerofoil Gearings, which can be used one in conjunction with the other. The Starboard drawing, however, indicates Starboard camber for the purpose of explaining the matter to you, but if it is necessary to provide an additional drawing of this for the Patent, then the Starboard Foil should be shown in neutral position, to correspond with the Port Aerofoil in Figure 7.

Copy of Notes on Enclosure No. 108

1. The above crank is shown ~~in~~ dotted in Neutral position. To attain Starboard camber as above indicated the Crank shaft must turn clockwise leaving this Starboard crank facing the Nose. The crank however should not quite reach the dead centre when in the extreme position.
2. To return to Neutral the crank shaft then turns anti-clockwise until this Starboard crank faces the ground in the dotted position indicated.
3. To reach Port camber the crank shaft continues Anti-clockwise until the Starboard Crank faces Aft.
4. From this position to Starboard camber the shaft turns clockwise.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
CRANWELL. LINCS.

REFERENCE. J/MW.

Sat:4:Feb:22.

Dear Captain Crossley Meates,

I enclose you letters to and from Clark dated the 3rd and 4th instant, together with rough Sketch of the new arrangement I propose should be employed for obtaining the camber.

Clark appears to be more or less taken aghast, and I begin to wonder whether something has or has not gone wrong at the eleventh hour, but surely I must be right about the camber " the greater the speed the less the camber", which means to say extreme camber near neutral and the further from neutral, the less the camber.

Yours sincerely,

Edmond E. Johnson

P.S. I shall be much obliged if you will kindly say whether the statements re Camber in my letter to Clark of yesterday's and todays date are right or wrong, as it is necessary for me to have this matter put right forthwith.

ENCLOSURE No 114 "JUSTSO"

1. Sketch.
2. Letter to Clark dated the 3rd and 4th. instant.
3. Letter from Clark dated the 3rd instant.

Captain B. Crossley Meates,

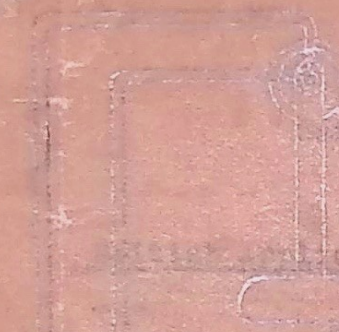
Clerk

Messrs. A.W. & W. Clerk,

British, Foreign & Colonial Patent Agents,

53 & 54, Chancery Lane,

LONDON. W.C.2.



1. At no speed inlet pipe at full aperture.

2. ~~At slow speed inlet pipe at almost full aperture.~~

3. At slow speed when the Aerofoils are most inefficient, (their Camber will be at the highest efficiency for slow speed, ~~indicated by the broken lines in Figure 2~~) SECTION

4. The higher the speed the greater the efficiency of the Aerofoils, consequently the Camber is automatically reduced, thereby offering less resistance, and as a result thereof greater speed.

ENCLOSURE No. 114 "JUSTSO"

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

3rd February, 1922.

F.E. Johnson, Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

Brit.Appln. No. 36531/20.

We beg to acknowledge receipt of your letter of the 2nd inst. together with the enclosures, and are giving the matter our careful attention. We will write to you thereon again in due course.

The only point to which we desire to call your attention at the moment, is in respect of the valve chest 68. It seems to us that there must be something radically wrong with the means for varying the camber, as if the maximum curvature is to be imparted to the aerofoils at slow speed, there would have to be a very sudden change between no speed and slow speed. That is to say, the curvature of the aerofoil would have to be altered from the normal position shown in full lines in Figure 3 to the extreme position shown in broken lines. Please consider this point.

We are, dear Sir,

Yours faithfully,

(sgd) A.M. & Wm. Clark.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B . Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
LINCS.

REFERENCE. J/MW.

Mon:6:Feb:22.

Dear Captain Crossley Meates,

As the Patent now appears to be proceeding satisfactorily, subject to my query to you regarding the Camber Mechanism, I am anxious to get ahead with the commercial side, I am, therefore, sending you by this post, under separate cover, a rough Sketch of a Demonstration Car, which you will observe is 15 feet long, excluding Propeller.

The object I have in view is if possible to enable the Aerofoil Controls to be entirely operated by the Driver,(without the aid of Servo-Motors) which would be controlled either by a hand wheel somewhat similar to that on a Motor Car, or operated by the feet, or both if variable Camber is incorporated.

For the sake of simplicity I should like if possible to employ a Pusher Propeller only (providing the torque can be overcome).

One of the difficulties I have experienced is that the smallest Engine I can find measures 3' 6" either way; this of course is very objectionable in the Plan View because of the interference set up thereby, moreover same comes rather near the trailing edge of the Aerofoils.

My idea is to run this Demonstration Car upon an existing 4' 8½" Twin Rail Track, then all that is necessary to do is to add the Mono-Rail in the centre of the existing Track.

Owing to the aforesaid difficulties I have come to the conclusion that before doing anything more to the Drawing I am sending you, it will be better for you to see same. Possibly you can suggest a more compact Engine that the 40 H.P. A.B.C. "Wasp" indicated on the Drawing, and whether you consider the arrangement proposed by me feasible.

With kind regards,

Yours sincerely,

Edmond E. Johnson

Drawing of Demonstration Car. (By this post)
Copy of letter to Clark dated the 6th instant.

ENCLOSURE No 117 "GUSTSO"

(Copy)

Messrs A.M. & Wm. Clark,
British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,
LONDON. W.C.2.

J/MW.

Mon:6:Feb:22.

British Application No. 36531/20.

Dear Sirs,

I have been looking through the Drawings and think you will find the following correct:-

Position of Cranks at Neutral.

1. Pennant Crank 51 faces AFT.
2. Incidence Crank on Shaft m faces NOSE.
3. Camber Crank faces AFT.
4. Aerofoil Crank 54 faces AFT.

I think if you agree the above everything will now be in order.

Yours faithfully.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
LINCS.

REFERENCE.
J/MW.

Tues:7:Feb:22.

Dear Captain Crossley Meates,

I am sorry to worry you so much, but this question of camber is really more complicated than appears on the surface, as you will see by the accompanying copy of Clark's letter of the 6th instant, and my reply thereto of even date.

What I am afraid of is that the theory of the operation of the camber will not work out in practice, because the pressure of air on the Foils will be so great as to produce camber automatically, and in order to reduce the camber against such a pressure it will require the servo-motors to work in the opposite direction, to give the requisite camber for high speeds.

With this question settled, everything, as far as I can see, will be in order. If you have not an opportunity of letting me know, perhaps I had better run up and see you as soon as Bartlett has completed the Drawings in pencil.

Hoping all is well with you. With kind regards,

Yours sincerely,

Edmond E. Johnson

ENCLOSURE No 120 "JUSTSO"

1. Copy of letter from Clark dated the 6th instant.
2. Copy of letter to Clark dated the 7th instant.

NHEAD, 297.

OND E. JOHNSON,

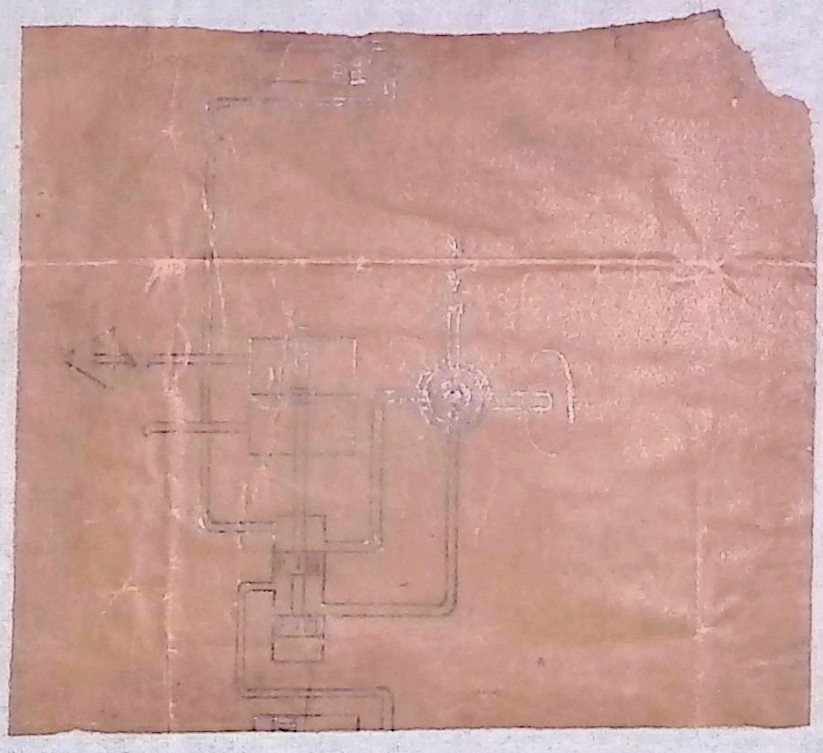
MAESCOURT,

MAIDENHEAD,

BERKS.

MEMORANDUM.

REFERENCE.



(C O P Y).

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

6th February, 1922.

T.E. Johnson, Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

British Appln.No. 36531/20.

We duly received your letters of Friday and Saturday last, the 3rd and 4th inst. We will first deal more fully with your letter of the 2nd instant.

Regarding paragraph 2 in this letter, we do not think that any amendment is desirable, as early in the Specification see page 5, line 18, the ports 19 and 20 have been called "piston rods of piston valves".

Regarding paragraph 3, the amendment in question is quite correct, and was made at the express desire of the Examiner. If you will refer to Figure 3 you will see that there are 4 ports, viz, the ends of the pipes 66,67,69 and 70.

With regard to the amendment proposed in the fourth paragraph of your letter we agree.

Regarding the fifth paragraph, we beg to point out that the invention is no longer "especially applicable" to monorail vehicles. It is confined solely to such a vehicle, so that these lines are no longer necessary.

Regarding the sixth paragraph, the crank 51 may be considered as extending 45 degrees towards the rear. Figure 4 is the only figure which shows the crank, and anyway, the drawings are said to be diagrammatical only.

Regarding the first paragraph on page 2 of your letter this difficulty is, to a certain extent, met by the statement that the drawings are diagrammatical, but it is quite possible that the Examiner may allow us to make an alteration.

Regarding the second paragraph, page 2 of your letter, we think that the additional points mentioned are unnecessary. It would no doubt be desirable to make use of such stops in practice, but they are not essential for carrying out the invention.

ENCLOSURE
No 120
"JUSTSO"

The remainder of your letter is more or less tied up with your letters of the 3rd and 4th inst. The sketch sent with your letter of the 3rd inst., would, we fear, be objected to by the Examiner as introducing new matter. It is certainly a very simply way of overcoming the difficulty, and we will ask for another interview and obtain the Examiner 's views regarding your proposed alteration.

In note 1 of the postcript to your letter of the 4th inst., you state that at no speed the inlet pipe is at full aperture, by which we understand that both pipes leading to the diaphragm-controlled valve are open to the fluid pressure supply. The valve on your sketch however, contradicts this, as both these pipes are closed. This we think is correct, as if both pipes are open to full pressure when the diaphragm is in its inoperative position (corresponding with no speed) there would be an appreciable interval before one pipe can be closed as a result of movement of the valve relatively to the pendulum, i.e. the body would have to tilt over to an appreciable extent before adjustment or variation of the camber of the aerofoils could be effected. It seems to us that both pipes should be closed at mid position, and that it would be wiser to retain Figure 3 in its present form, and alter the positions of the junctions of the pipes 69 and 70 with the valve chest 68 so that both said pipes are fully open when the diaphragm is in its normal inoperative position, in order that the ports may be closed as the speed increases. Probably, this is what you mean by your note 1, in your letter of the 4th inst. The pipes 66 and 67 would have to be altered correspondingly so as to open into the valve chest 63 above the two piston valves therein.

Regarding the second paragraph, see page 3 of your letter of the 2nd inst. we agree. We will report the result of the interview with the Examiner in due course, and think that even if we do have to retain the construction substantially as illustrated in Figure 3 of the drawings as filed, it is not a matter of very great importance, as the broad principle of adjusting and varying the camber of the aerofoils is effected in a mechanically similar manner to that shown in the sketch accompanying your letter of the third inst.

Yours faithfully,
(sgd) A.M. & Wm.Clark.

P.S. Since dictating the above we have by a special favour of the Examiner been able to have an interview with him. He declines absolutely to permit such a modification as is proposed by the sketch which accompanied your letter of the 3rd inst., but he has no objection to our amending Figure 3 by altering the pipe work to make the communication such that the maximum camber is obtained at slow speed. Please let us know if we shall instruct Mr. Bartlett to amend the drawings.

We suggest that in the first instance a pencil tracing showing Figure 3 as amended should be submitted to you together with the correspondingly amended description, but before amending the description we should be glad if you would kindly let us know if we are correct in stating that at no speed the valve 72 closes communication between the pipe 73 and both the pipes 69 and 70, but that these two pipes 69 and 70 are both fully open to the valve chest 68.

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,
53 & 54, Chancery Lane,

J/MW. LONDON. W.C.2.

Tues:7:Feb :22.

British Application No.36531/20.

Dear Sirs,

I am in receipt of your letter of the 6th instant, and note your remarks re Ports 19 and 20 which should read Rods 19 and 20.

Regarding paragraph 3 you are perfectly correct in what you state. I spotted the mistake after my letter of the 2nd instant had been posted and intended to right the matter in my letter to you of yesterday, but overlooked same.

Dealing with paragraph 5 of your letter, it will not do to place the Crank 51 at 45 degrees towards the rear for the neutral position, because the Pennant (solid with its stuff) should be free to rotate through an arc of say 180 degrees; this Crank therefore must be facing aft, to give the Pennant its necessary rotation.

Referring to paragraph 6 of your letter this Crank should face the Nose (not Aft) at neutral, as per my letter of yesterday, but as you state that this may be taken to be diagrammatic, it may not be necessary to make this alteration on the Drawings.

In reference to my Notes at the bottom of my letter to you of the 4th instant, these all had reference to the inlet apertures in valve chest 68. You have evidently taken these notes to apply to the switch valve 71. At neutral position both pipes are closed in the switch valve 71, while both pipes are at full aperture in the valve chest 68.

I enclose you a small Tracing indicating the revised positions of the pipes in valve chest 68, which should clear up this matter.

In theory this is the method of obtaining the camber, but in practice I am inclined to think that something different will happen . Take the case of a yacht when changing tack

the moment the sail catches the wind it assumes the extreme camber, and I am inclined to think that the same will happen with my aerofoils the moment the wind catches them; the pressure exerted will be so great that it will itself produce the extreme camber, and in fact it will require a fairly powerful force in the opposite direction to reduce the camber to accord with the speed of the Vehicle.

I note that the Examiner will not permit the new Drawing proposed by me, which I note you admit is so much simpler, nevertheless, he agrees that the pipe work can be altered in Figure 3 to attain the same thing in a more roundabout way.

You can, therefore, instruct Mr. Bartlett to proceed with the Drawings accordingly, producing a pencil drawing, together with correspondingly amended description, for my approval in the first instance.

The Switch Valve 71 as shown in Figure 3 is quite correct as representing neutral position. The question of speed has nothing whatever to do with this valve, which is solely operated by the pendulum. The flow, after passing Switch Valve 71, is regulated by the Diaphragm 79, which is entirely governed by speed and nothing else.

Yours faithfully,

119. Tracing of Switch Valve 71, Regulating Chamber 69 and Pipe connections.

MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
LINCS.

REFERENCE. J/MW.

Wed:8:Feb:22.

Dear Captain Crossley Meates,

I am in receipt of your letter of the 6th instant, and presume everything will be in order if I proceed upon the basis of the revised Tracing of Figure 3, (sent you yesterday) indicating new positions of the pipes to the chamber 68, the question of the spring loaded release valves being treated as a refinement not called for in this Specification.

Dealing with the last paragraph of your letter, I am fully in agreement with you that if leverage is not properly balanced and allowed to play a part in the preservation of balance, side stress on the rail head will certainly result, and for this reason the Foil area must be increased in the lower regions, so as to counteract the leverage which occurs higher up, and by so doing the question of leverage is eliminated.

Thanking you for your letter.

Yours sincerely,

Edmond E. Johnson

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
LINCS.

REFERENCE. J/MW.

Wed:15:Feb:22.

Dear Captain Crossley Meates,

As I am anxious to get a move on in regard to the Demonstration Car, I shall be much obliged if you will return me the Tracing, Enclosure No. 117, sent you on the 6th instant.

The main point to be first decided is what Engine should be incorporated, and in this connection I enclose you a letter dated December 10th last, received from Short Brothers, in which you will see they state that the 35 H.P. Anzani, and the 40 H.P. Wasp are the smallest Egines upon the market.

I enclose you a Specification of the A.B.C. Wasp 2, but unfortunately this Engine is 3' 6" wide, it being a Radial type, and possible a Vertical type would be the more compact for this purpose so far as width is concerned, but if nothing can be found more suitable it may be necessary to increase the width of the Vehicle and in this connection perhaps you may know of some Engine more suitable.

You will also observe in the last paragraph of Short's letter that to construct a body in Duralumin would be too expensive, so that I suggest for the purposes of the Demonstration Car, that the ordinary Aeroplane fabric built up on wooden frame-work should suffice.

My idea would therefore be to see if some Aeroplane works would take on the job of making the Body and the Aerofoils etc., and presume I should have to get the Bogies made at an Engineering Works independantly.

Bartlett has not yet completed the Drawings of the revised Camber Control etc., but as soon as he does so will let you know how that matter is proceeding.

Hoping to hear from you soon. With kind regards,

Yours sincerely,

Edmond E. Johnson

P.S. I am holding up the printing of the Booklet until Clark has completed the revised Specification.

ENCLOSURE No 131 "JUSTSO"

Letter from Short dated Dec.10th last.
Specification of A.B.C. Wasp.

CONTRACTORS TO H.M.WAR OFFICE, ADMIRALTY AND LEADING GOVERNMENTS OF THE WORLD.

AWARDED FIRST PRIZE AERO CLUB EXHIBITION 1906 "FOR EXCELLENCE OF CONSTRUCTION."

MS:
CHESTER.
E, LONDON.

ONES:
AM 627.
T 370.

FIRST PRIZE GOLD MEDAL — AERO CLUB 1907.

FIRST PRIZE GOLD MEDAL — TRAVEL EXHIBITION. 1907.

WORKS:
ROCHESTER.

LONDON OFFICE:
WHITEHALL HOUSE.
29-30, CHARING CROSS, S.W.1.

Short Brothers (Rochester & Bedford) Ltd.,

Aeronautical Engineers.

Seaplane Works,
Rochester.

OUR REFERENCE	W.8227/1/P.
YOUR REFERENCE	J/MW

10th December, 1921.

E. E. Johnson, Esq.,
Maescourt,
Maidenhead,
B E R K S.

Dear Sir,

In reply to your letter of the 9th inst., we beg to inform you we have no stock of Streamline bodies constructed of duralumin or aluminium, and therefore are unable to give you dimensions or details of motors which could be installed in the body.

We believe the smallest aero engines are the 35 HP. "ANZANI" and the 40 HP. "WASP". This latter engine was manufactured by the A.B.C. Motors Ltd., Walton-on-Thames, and we are unable to state if these are obtainable today.

If you would give us more particulars of your requirements it would enable us to go more fully into the matter, although it would be as well to here state that duralumin fuselage or body construction is most expensive, and the cost of an experimental streamline body would probably be somewhere in the neighbourhood of £2. sterling per pound avoirdupois.

Yours faithfully,
SHORT BROS. (ROCHESTER) LTD.
A. E. Wood
Secretary.

ALL COMMUNICATIONS TO BE ADDRESSED TO THE FIRM AND NOT TO INDIVIDUALS.

ENCLOSURE
No. 131

ETON MOTORS LTD
WALTON-ON-THAMES

DRG. Nº D.4.

Engine Data
A.B.C. Wasp II

Type of Engine.	7 Cylinder Static Radial.
Type of Cylinder.	Steel, fins A.B.C. Copper coated 3 overhead valves 2 Exhaust 1 Inlet
Bore	= 4 3/4"
Stroke	= 6 1/4"
Maximum B.H.P.	= 200 (Normal B.H.P = 160)
Rotation	= Anticlock facing Propellor.
Maximum Speed	= 1850 R.P.M. (Normal Speed 1650)
Lubrication	= 2 Rotary Plunger Pumps 1 Feeding thro hollow c/shaft to Crankpin, Centrifugal feed to big end & thence splash, 1 Feeding to nose, dropping onto Cam & forming a permanent Sump for Gears in bottom of Nose.
Oil Recommended	= Wakefield Castrol R
Oil Consumption	= 6 pints per hour
Oil Consumption per B.H.P. Hour	= .03 pints. (Based on Max B.H.P.)
Carburetters	= 2 A.B.C. 48 M/M
Petrol Consumption	= .56 pints per B.H.P. Hour.
Magnetos	= 2 P.L. 7. Type. 2 Spark.
Speed of Magnetos	= 1 3/4 Engine Speed
Mag. Rotates	= Clockwise facing driving end of armature
Rev. Counter Rotates	= Anticlock facing driving shaft
Speed of Rev. Counter Drive	= 1/4 Engine Speed
Weight of Engine including Prop. Boss, but without Oil or Fuel	= 350 lbs
Weight of Engine per B.H.P	= 1.75 lbs.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
LINCS.

REFERENCE. J/MW.

Fri:10:Feb:22.

Dear Captain Crossley Meates,

I have this day received a letter from Messrs A.M. & Wm. Clark, referring to Spring Release Valves, which reads as follows:-

"With regard to spring loaded release valves, we beg to point out that the Specification provides for hunting gear for the valve mechanism".

You will see by the above that Clark is of the opinion that I am amply covered in regard to the above refinement.

I enclose you copy of letter from Clark, dated the 8th instant, by which you will see that the American Examiner only raised one objection in regard to the last paragraph of the Specification.

The last paragraph in the American Specification deals with the application of the Aerofoils to Aircraft, which can be deleted. Luckily they have put no citations against me, which very much simplifies matters. I also enclose you copy of my letter to Clark of even date.

In yesterdays paper I observe an important developement arising out of an invention by Mr. George Aveline, which you brought to my notice some time back; it reads as follows:-

"Quicksilver operating electrically a compressed air motor, which obtains its power from the rush of wind as the aeroplane travels through the air, is the prime factor of this invention."

It is the means of producing the compressed air which would be of special interest as applied to my case, which I learn is operated as follows:-

"Two turbine pumps running at 2,000 r.p.m. keep up a pressure of about 50 lbs. per sq. in. in the air container.

These two pumps are driven by two windmills, mounted under the front portion of the fuselage."

I understand that the Aveline Mechanical Air Pilot has already been installed in the Farman Goliath air express used by Messrs Aeriennes on their service between London and Paris. It would be interesting to see this machine if it were possible.

Hoping to be able to forward you the revised description and drawings in the course of the next few days.

With best wishes.

Yours sincerely,

Edmund B. Johnson

ENCLOSURE No 125 "JUSTSO"

Copy of letter to Clark dated the 10th instant.
Copy of letter from Clark dated the 8th instant.

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

J/MW. LONDON. W.C.2.

Fri:10:Feb:22.

British Application No. 36531/20.

Dear Sirs,

I am in receipt of your letters of the 8th and 9th instant. I find in your letter of the 6th instant you mention alterations to Figure 3; you say nothing about the alterations to Figures 5 and 7.

Figure 5. Does the Examiner treat the Incidence Crank on Shaft m diagrammatical, or has Bartlett to alter this also?

Figure 7. Crank to face downwards and to be numbered 59 instead of 58.

I presume this will be attended to by Bartlett.

Regarding the American Patent referred to in your letter of the 8th instant, I note you do not propose doing anything in this matter until the British Patent is through, and in this connection I think perhaps if we deleted the last sentence it may meet the case, as the Claims are more wide than the British Patent.

Dealing with your letter of the 9th instant, I observe that you consider that spring loaded release valves are covered by the hunting gear for the valve mechanism provided for in the Specification.

I now await the revised description and Drawings as promised.

Yours faithfully,

ENCLOSURE
No 125
"JUSTSO"

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial Patent Agents,

53 & 54, Chancery Lane,

LONDON. W.C.2.

8th February, 1922.

E.E. Johnson Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

Brit.Appln.No. 36531/20.

We thank you for your letter of the 7th inst., contents of which we note. Regarding the crank 51 we note what you say. Figure 4 of the drawings can stand as it is. We note that the postcript to your letter of the 4th inst., refers to the inlets to the valve chest 68, we are therefore, on common ground on this point. We are instructing Mr. Bartlett to prepare the amended drawings, and will send to you a pencil drawing or tracing first together with an amended description.

For your information, we have received an objection to the corresponding American application. No citations are made but the American Examiner has objected to the last paragraph of the Specification which deals with the use of a diaphragm and associated parts for varying the camber of the wings of an aircraft.

As we have plenty of time for dealing with the American objection we think the best course to adopt will be to wait until the English case is in better form and then endeavour to amend the American application on the same lines. It is quite possible, however, that the American Office may be more strict regarding the amendment of the drawings. We propose, however, subject to your approval, to forward to our American Correspondant, a copy of the amended British Specification and drawings and ask him if it would be possible to make corresponding amendments in the United States case. In the meantime, we should prefer to concentrate our energies on the British Specification and deal with the American later on.

We are, dear Sir,

Yours faithfully,

(sgd) A.M. & Wm. Clark.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD. LINCS

REFERENCE. J/MW.

Fri:17:Feb:22.

Dear Captain Crossley Meates,

I have this day received a letter from Clark, and enclose you copy of same, together with copy of my reply thereto, also copy of Pages 10 and 12 of re-cast proposed Amendments; the alterations on the Drawings are those made in red ink upon a Blue Print sent you on the 1st instant.

I presume, so far as you are aware, everything is in order, as you will see by Clark's letter that the amendments have to be filed at the Patent Office by Thursday next, the 23rd instant.

I presume also you are in agreement with me that it will not be worth while filing a separate divisional Aircraft Application, in view of the citations and other circumstances against the adoption of such a course, and moreover I gather that you are of opinion that the incorporation of this variable camber to the wing of an Aeroplane, is not a practical proposition.

Should you have any queries in connection with this matter, perhaps you would let me know per return, owing to the short space of time left for filing.

I should have liked to have run over and seen you this week-end, but did not know if it would be against rules to call upon you at your present address, without making previous arrangements. If, however, you would prefer to see me, send me a Wire and I will come.

Yours sincerely,

Edmond E. Johnson

ENCLOSURE No 133 "JUSTSO"

1. Copy of letter to Clark dated the 17th instant.
2. Copy of letter from Clark dated the 16th instant.
3. Re-cast Specification, Pages 10 and 12.

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

16th February, 1922.

C.E. Johnson, Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

Appln. No.36531/20.

We beg to inform you that having received a pencil drawing showing the modifications to be made in Figures 1 and 3 we have re-cast our proposed amendment and send herewith those pages of the specification which have been retyped, together with the proposed amended pencil drawing. Please consider these and instruct us as soon as possible as the amended specification and drawing should be filed at the Patent Office by the 23rd instant. We trust that you will find everything in order and shall be glad if you will kindly bear in mind that it is highly desirable to avoid as far as we can, introducing fresh matter.

We are, dear Sir,

Yours faithfully,

(sgd) A.M. & Wm. Clark.

ENCLOSURE
No 133
"JUSTSO"

Messrs A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON,

J/MW.

W.C.2.

Fri:17:Feb:22.

British Application No. 36531/20.

Dear Sirs,

I am in receipt of your letter of the 16th instant, and have duly received pencil Drawings of Figure 1.amended and Figure 3.

In regard to Figure 3, however, I would point out that the Aerofoils have been omitted, but presume same will be added hereafter. Figure 3 is now very good, with the exception that the Aerofoil differential gear 57a is not quite central.

In your letter of the 14th instant, you state that the alterations to Figure 5 and 7 were being attended to by Mr. Bartlett, so that I presume that these amended Drawings will follow in due course.

Referring to the re-cast of your proposed amendment, as far as I see these amendments are perfectly correct, so far as Pages 10 and 11 are concerned, but with regard to Page 12, however, I understand that in referring to the direction of rotation of the crank shafts 55, this is looked at in relation to Figure 3, in which case both Port and Starboard crank shafts 55 are viewed in Plan downwardly, therefore, when both crank shafts 55 are working counterclockwise as viewed in Plan when giving one camber, they will both be operating clockwise when giving the other camber.

In your description the words "upwardly" and "downwardly" are introduced, which to my mind causes confusion and it would read far better if both cranks were viewed downwardly in Plan as Figure 3, thus giving both crank shafts 55 counterclockwise for one camber and clockwise for the other camber; in your description it reads counterclockwise for both cambers, and to be quite candid your words "upwardly" and "downwardly" have tied me up in knots.

I find that you have omitted a paragraph which appeared at the bottom of Page 12 of your previous sheet dated 27/1/22, ~~which should be inserted, reading as follows:-~~
which I presume is in accordance with the Examiners wishes.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD.

REFERENCE. J/MW.

Mon:20:Feb:22.

Dear Captain Crossley Meates,

I have this morning received a letter from Clark a copy of which I enclose, together with a copy of my reply thereto, and copy of his final amendment of Page 12, which appears to me to be now all in order, as if anything were wrong I presume I should have heard from you ere this.

I think the time is approaching when I shall have to be seeing you as to what had better be done in regard to the proposed Demonstration Car. If you have nothing on next week-end, perhaps we can arrange a meeting, anywhere to suit your convenience.

Yours faithfully,

Edmond E. Johnson

ENCLOSURE No 139 "JUSTSO"

1. Copy of letter from Clark dated the 18th instant.
2. Copy of letter to Clark dated the 20th instant.
3. Revised Page of Specification.

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

LONDON. W.C.2.

18th February, 1922.

T.E. Johnson Esq.,
Maescourt,
Maidenhead,
Berks.

Dear Sir,

Brit. Appln.No. 36531/20.

We are in receipt of your letter of the 17th inst. together with the enclosures. In making the pencil drawings Bartlett particularly omitted the aerofoils so as to save unnecessary expense. It was taken for granted that you would understand that they would be added in the finished drawing. Your comment regarding the differential gear 57a is noted, and Bartlett will be instructed accordinly.

Figures 5 and 7 will not be sent to you for approval as it is unnecessary so to do. The alterations will be made on the original drawings. We have carefully re-considered page 12 of the specification as amended and appreciate the difficulty which you encountered. There is no doubt a mistake where it is set forth that the crank shafts 55 are moved counter-clockwise to vary the camber of the aerofoils towards the left. They are moved clockwise to effect this variation. We also appreciate your difficulty regarding the use of the words "upwardly" and "downwardly". As applied to the cranks 58 and 59 the word "downwardly" was used in the sense downwardly of the vehicle, that is to say, through the sheet of paper on which the drawing was made, whilst the word "upwardly" with regard to the aerofoils was used in the sense of upwardly from bottom to top of the sheet of paper. We have accordingly amended the wording and send herewith a copy of page 12, which we think you will probably be able to understand without having to have the drawing before you.

Unless we hear from you to the contrary we shall amend and refile the case with the new page 12 as soon as Bartlett has finished the drawings.

Regarding the paragraph at the bottom of page 12 which was on our previous amendments dated 27/1/22, this was a mistake, it should not have been typed on that page, as it must be struck out in accordance with the Examiner's objection to claim 10.

Yours faithfully,
(sgd) A.M. & Wm. Clark.

ENCLOSURE
No 139
"JUSTSO"

of the aerofoils e to, and adjust it on, the one side or the other of the central neutral chord, the extent to which such adjustment takes place depending on the extent of deformation of the diaphragm 79 and consequent closure of the pipes 69 and 70, as a result of the speed of the vehicle; the slower the speed the less the deformation of the diaphragm 79, consequently the less the closing of the pipes 69 and 70 and the more the movement of the pistons in the servo-motors 64 and 65, so that the camber of the aerofoils e,e is greater the less the speed. Thus assuming the cranks 58 and 59 to be in such an angular position in Figure 3 (vertically downwards from their crank shafts 57,57) that forward movement of the piston rod 62 will move the crank 58 forwardly and the crank 59 rearwardly, the crank shafts 55 of the aerofoils e,e will be moved counterclockwise and the variation of camber of the aerofoils e,e (and its adjustment) will be towards the right i.e.) relatively to the direction of movement of the vehicle, as shown in dot and dash lines, whilst forward movement of the piston rod 63 will move the crank 59 forwardly and the crank 58 rearwardly and produce clockwise movement of the crank shafts 55, so that the variation of camber of the aerofoils e,e (and its adjustment) will be towards the left, i.e. (relatively to the direction of movement of the vehicle as shown in dotted lines.

It is to be understood that the valve mechanisms of the various servo-motors may include any known form of hunting gear, where required, in order to cut off admission of fluid under pressure to the cylinders of the servo-motors in accordance with the effect to be produced.

(C O P Y)

Messrs A.M. & Wm. Clark,

British Foreign & Colonial
Patent Agents,
53 & 54, Chancery Lane,

J/MW. LONDON. W.C.2.

Mon:20:Feb:22.

Dear Sirs,

British Application No. 36531/20.

Since writing you this morning I have again gone through revised Page 12 of the Specification with Figure 3, and have come to the conclusion that although the statements contained thereon are perfectly correct so far as they go, they unfortunately fall to the ground if your statements be followed through from the source, namely the pendulum 76.

Taking the first instance you give with the forward movement of the crank 58, this gives as you state a starboard or right camber; unfortunately starboard camber calls for port cant, and port cant means that pendulum 76 falls to port. This will allow the air to communicate with cylinder 65 instead of 64, and the simplest way to right this matter will be to take it that these cranks 58 and 59 in neutral position are facing upwards instead of downwards.

This only means that the word "downwards" appearing on page 12 should be changed to "upwards", in addition counter-clockwise should read clockwise, and clockwise should read counterclockwise, the brackets or camber signs in each case to be altered accordingly., the dash and dot lines should read dotted lines and vice versa.

Figure 7 can then remain intact with the crank facing upwards, the only alteration then necessary in that Figure being to change 58 into 59.

Yours faithfully,

ENCLOSURE
No. 141
"JUSTSO"

E. E. JOHNSON, MAESCOURT, MAIDENHEAD, BERKS. Phone M'HEAD 297.

J/MW To Captain B. Crossley Meates, Mon:20:Feb:22.

ENCLOSURE
No. 141
"JUSTSO"

Copy of second letter sent to Messrs. A.M. & Wm. Clark this day.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD.
LINCS.

REFERENCE. J/MW.

Tues:21:Feb:22.

Dear Captain Crossley Meates,

I am very much obliged to you for your long letter of the 17th instant, and I will certainly do as you suggest and pay a visit to Waddon, but do not propose purchasing an Engine unless I had you with me in making the selection. Apart from this the first thing I should have to do would be to arrange with one of the Railway Cos. in regard to the 2 miles of Track necessary, and before I can do this the Booklet must be published which will be proceeded with as soon as the revised Drawings are complete.

I have already been promised the use of a 2 or 3 mile disused Railway Track, subject to the approval of the proposed demonstration, but the difficulty will be the cost of installing the Mono-Rail, and it was suggested that I should approach the Government with a view to their paying the cost of this, and if this were done therewould be no difficulty about the utilization for this purpose of the disused Track.

The arrangements so far were made unofficially with the South Eastern Railway, with a view to the incorporation of my Rolling Stock upon the Channel Tunnel Scheme.

There is only two days left now in which to make the Divisional Application to cover Aircraft, but in view of the remarks contained in your letter I gather it will not be worth while, as the idea at the present moment is more or less of a speculation.

With regard to the Helicopter idea,- the problem appears to me as having one leading advantage for its adoption and one against. In the first place the advantage for would be the abolition of the Side Wings and Guide Wheels, and hence the simplification of negotiating tunnels and bridges, and in addition reduction of cost of Permanent Way. As against its adoption, there is the loss of power occuring in keeping the Vehicle upright when at a standstill, and it was this very point which killed the Brennan Gyroscopes as a commercial proposition in that case. The cost of keeping the Vehicle upright when at a standstill was

more than the cost of the additional rail employed on the Twin Rail System.

The Helicopter application, however, is one which must not be lost sight of and I will certainly, at a later date, do as you suggest by bringing the matter before Park. At the present time Park is reading through the M.S.S. for my Booklet and when he has completed that job I will put the matter before him.

Yours sincerely,

Edmund E. Johnson

Very sorry to hear about your Fathers illness, this has been a rough winter for the Flu. I hope all the rest of your family are feeling fit.

We are all feeling A.1. with best wishes. E.E.J.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD. LINCS.

REFERENCE. J/MW.

Sat:25:Feb:22.

Dear Captain Crossley Meates,

I have now received the M.S.S., in connection with the Booklet about to be published, from Park. His corrections throughout this Booklet are in Blue pencil, and I thought perhaps therefore you would be kind enough to glance through these, and approve where necessary before sending to the Printers,

Yours sincerely,

Edmond E. Johnson

Park's corrections occur on Pages 1, 4, 6, 7, 8, 9, 10, 11, 12 and 17. By all means make any additional notes or corrections you think desirable.

ENCLOSURE No. 147 "JUSTSO"

M.S.S. For Booklet
Letter from Mr. W.E. Park dated the 24th instant.

The Technical College
Cardiff
24-2-22

Dear Mr Johnson,

I have read through your M.S.S. and have marked any comments I desired to make in blue pencil, but in all cases they are only suggestions which you might consider carefully before adopting or rejecting. I consider the general lay-out of the booklet to be excellent and it should appeal very strongly to anyone interested in modern transport.

I shall be pleased to hear about your propeller proposal at your convenience

Yours faithfully
W E Park.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD.

REFERENCE. J/MW.

Wed:1:Mar:22.

Dear Captain Crossley Meates,

I enclose you letter received this day from the Aircraft Disposal Co.,Ltd.,by which you will observe there appears nothing doing in regard to 90 H.P. Engines with Fuselage etc. In the first instance I wrote as you suggested, to Waddon, but not receiving any reply from them I wrote another letter to the Ministry of Munitions. Is there anything else you can suggest?

I must hurry away now as Baby has broken her shoulder, and has to be X-rayed this afternoon.

Yours sincerely,

Edmond E. Johnson

ENCLOSURE No 153 "JUSTSO"

Letter to Ministry of Munitions dated 24th ultimo.
Letter from M. of M. dated the 27th ultimo.
Letter from A.D.C. Ltd., dated the 28th ultimo.

...L WORKS: WADDON, CROYDON. DEPOTS: REGENT'S PARK, LONDON. AINTREE, LIVERPOOL. CASTLE BROMWICH, BIRMINGHAM.

AIRCRAFT DISPOSAL Co LTD

DIRECTORS:
GODFREY C. ISAACS. | A. W. HASCHKE.
F. HANDLEY PAGE. | HENRY MORGAN.
SIDNEY ST. J. STEADMAN.

TELEGRAMS: "AIRDISCO, PHONE, LONDON."
CABLES: "AIRDISCO, LONDON."
CODE: BENTLEY'S.
TELEPHONE: REGENT 6240 (5 LINES.)

ADC LIMITED

BRITISH AIRCRAFT.

REGENT HOUSE,
KINGSWAY,
LONDON, W.C.2.

PLEASE QUOTE REF. SM/HD

28th February 1922.

46636

E.E.Johnson, Esq.,
Maescourt,
Maidenhead,
BERKS.

Dear Sir,

Your postcard of the 24th inst., addressed to the Ministry of Munitions has been forwarded to us as having purchased the entire stock of surplus aircraft material from the Government.

We, however, regret to inform you that we have nothing of the nature of your enquiry which we can offer you.

Yours faithfully,
For and on behalf of AIRCRAFT DISPOSAL CO.LTD.

ENCLOSURE
No 153
"JUST SO"

DISPOSAL AND LIQUIDATION COMMISSION.

Any *further* communication should be addressed to— Controller, for attention of subscriber of this letter.
and the following reference quoted :—
DD.11/Sales/EJL/FB.

Tele. Address :
"Mapladis Earls London"
Telephone Number : Hammersmith 2300
Ex. : 333

DISPOSAL BOARD,

EARL'S COURT,
LONDON, S.W. 5.

27th February, 1922.

Sir,

I acknowledge receipt of your postcard of the 24th instant, and am to say that your enquiry has been referred to the Aircraft Disposal Co., Regent House, Kingsway, W.C., from whom you will no doubt hear in due course.

I am, Sir,

Your obedient Servant,

E.J. Larbalestier

For ASSISTANT CONTROLLER, D.B.I.E.

E.E. Johnson Esq.,
Maescourt,
Maidenhead,
BERKS.

Fri:24:Feb:22.

J/M.

Ministry of Munitions,

Dear Sirs,

I shall be glad to know if you have any 90 H.P. R.A.F. Engine Fuselages for sale, or B.E.2.C. with Engine and Tanks and Propellers complete to offer, if so what price you are asking.

Perhaps you would be kind enough to furnish me with Specification, giving overall dimensions etc..

Yours faithfully,

REVISED SPECIFICATION.

This invention relates to means for neutralizing forces acting laterally in a horizontal plane such, for instance, as centrifugal force or the effect of side winds on a moving monorail vehicle.

According to this invention a monorail vehicle body is provided on each side with an aerofoil or cambered vane mounted so that its angle of incidence may be varied about a vertical axis and constructed so that its camber may be varied towards either side of a neutral plane.

Each aerofoil is adapted to exert, when the mono-rail vehicle body is in motion through the air, a lateral force adapted to counteract a lateral force such as the centrifugal action set up when rounding a curve or the effect of a side wind, and for the purpose of counteracting such force as closely as possible each aerofoil may be set by hand, both with regard to its angle of incidence and with regard to its camber, but preferably automatically acting means would be provided to attain these ends. For instance, a servo-motor may be employed for varying rhe angle of incidence of the aerofoils, to the one side or the other, to counteract centrifugal force in rounding a curve the valve chests for permitting the servo-motor to operate, in the one direction or the other, being controlled buy a pendulum and a correspondingly moving arm geared thereto, whilst a servo-motor controlled by a pennant may be employed , in conjunction with the pendulum-controlled servo-motor, for a like purpose to counteract the effect of a side wind, and a servo-motor controlled by an aero-static device ~~x~~ may be employed for varying the camber of the aerofoils to maintain the latter at their most efficient configuration according to the speed at which the mono-rail vehicle body is moving. The aerofoils

are operated simultaneously and in the same direction as that when their angle of incidence is varied the force acting on the one would tend to push, and the force acting on the other would tend to pull, the vehicle body towards the inner side of the curve.

The aerofoils should be mounted so that their centres of pressure lie in or near the transverse vertical and horizontal planes in which lie the centre of gravity of the vehicle and the means for varying their angle of incidence and camber may be of any known type as used on aeroplanes. By the use of aerofoils as set forth above a component of the resistance presented by each counteracts the laterally acting centrifugal or wind force.

If desired, and for the preservation of balance, when the vehicle body or bodies is or are moving at speed, one or more additional aerofoils may be provided and mounted on each body so that the angle of incidence of each aerofoil is variable about an axis passing through the centre of gravity of the respective body. When more than one additional aerofoil is employed on a body, they may be operated simultaneously but may act in conjunction with each other thereby displacing a volume of air, on each side of the moving vehicle body, of sufficient mass to maintain lateral rolling equilibrium. Their controls may also be operated automatically through forces acting from the body at the point or points of contact with the supporting medium.

In addition to the stabilizing effects which may be obtained the aerofoils may also be actuated so as to operate as brakes.

The accompanying drawings illustrate diagrammatically one method of carrying out the invention Figure 1.

being a side elevation of a monorail vehicle, parts being broken away, and Figure 2 being a plan thereof. Figure 3 is a plan on a larger scale of the means for varying automatically the camber of the aerofoils, Figure 4 is a transverse sectional elevation on.....

The algebraic sum of the pendulum and pennant movements, i.e. the valve opening which should result from a given amount of centrifugal action on the pendulum s may be augmented or decreased, as a result of wind action on the pennant t. That is to say if the monorail vehicle body a be rounding a curve to the right centrifugal action will cause it to lean to the left and the pendulum x will consequently swing from its normal (upright) position to the left as shown in Figure 6, this will cause the inlet pipe 29 and the outlet pipe 32 to be opened (to an extent corresponding with the extent of swing of the pendulum x), and the outlet pipe 31 and the inlet pipe 30 to be closed thus moving the piston h and its rod j to the right so as to turn the vertical crank shaft m and shafts p,p to incline the aerofoils e,e towards the right tothe required extent, the angles of incidence thus imparted tending to restore the vehicle body a to its upright position. If at the same time as the pendulum x thus swings to the left the pennant t be acted upon by a wind from the left, this will to some extent counteract the effect of centrifugal action, and consequently the angle of incidence imparted to the aerofoils e,e should be less. As a result of this wind action on the pennant t the inlet pipe 47 and outlet pipe 48 will be opened thus moving the piston 36 piston rod 35, connecting rod 34 yoke 33 and slide blocks 15 and 16 (from their normal mid-positions) upwards. This reduces the leverage of the pendulum x on the connecting rod 17 and piston rod 19 thus causing the inlet pipe 29 to be opened to a smaller extent whilst the upward movement of the slide block 16 increases the leverage of the arm 12 on the connecting rod 18 and piston rod 20 thus causing the outlet pipe 32 to be opened to a greater extent with the result that the angles of incidence imparted

to the aerofoils e,e are less than would have been the case if there had been no side wind. Had the wind acting on the pennant t been from the right it would have augmented the effects of centrifugal action and to counteract this the inlet pipe 46 and outlet pipe 49 would have been opened with the result that the piston 36 and with it the slide blocks 15 and 16 would have been moved downwards from their normal mid-positions thus increasing the leverage of the pendulum x and decreasing the leverage of the arm 12 so that the inlet pipe 29 would have been opened to a greater extent and the outlet pipe 32 to a less extent than would have been the case if there had been no side wind, so that greater angles of incidence would be imparted to the aerofoils e,e. Similarly if the vehicle be rounding a curve to the left the pendulum x would swing to the right and open the inlet pipe 30 and outlet pipe 31 to incline the aerofoils e,e to the left; a wind from the left would to some extent augment the effect of centrifugal force and the opening of the inlet pipe 47 and outlet pipe 48 and the consequent upward movement of the slide blocks 16 and 15 from their normal mid-positions would increase the leverage of the arm 12 and decrease the leverage of the pendulum x so that the inlet pipe 30 would be opened to a greater extent and the outlet pipe 31 to a less extent than would be the case if there were no side wind thus causing greater angles of incidence to be imparted to the aerofoils e,e whilst if the wind be from the right the opening of the inlet pipe 46 and outlet pipe 49 and the consequent lowering of the slide blocks 16 and 15 from their normal mid-positions would decrease the leverage of the arm 12 and increase the leverage of the pendulum x so that the inlet pipe 30 would not be opened to so great an extent and the outlet pipe 31 would be opened to a greater extent than would be the case if there were no side wind; thus causing the

angles of incidence imparted to the aerofoils e,e to be decreased according to the strength of the side wind. It would appear that as the pennant t is the only controlling element on which side winds act directly and that as the effect of movement of said pennant is to cause an upward or downward movement of the slide blocks 15 and 16 from their normal mid-positions, such movement would be non-effective except when the pendulum x and arm 12 are displaced from their normal vertical positions as a result of the effect of centrifugal action on the vehicle body a when rounding a curve, but it must be borne in mind that a side wind of sufficient force to be taken into consideration would not only act upon the pennant t but would also tend to, and in fact, would, to some extent, cause the body a to lean over to one side or the other (to the right if the wind be from the left and vice versa) thus producing obliquity of the pendulum x and arm 12 and bringing about a corresponding setting of the aerofoils e,e to counteract the wind effect and right the body a.

It is to be understood that the mechanism shown in Figures 4 and 5 lie in the same or nearly the same plane and that they are shown separately merely for the sake of clearness.

In order that the camber of the aerofoils e may be adjusted so that their configuration is the most effecient according to the speed at which the vehicle is travelling, and according to centrifugal action on the body a, each aerofoil e is hollow and has fixedly mounted therein a block or blocks, such as 52 through a slot 53 in each of which passes the crank 54 of a vertical crank shaft 55 adapted to deform the walls of the aerofoil e and so adjust its camber. Each crank shaft 55 is connected by an extensible Cardan shaft 56 (Figure 7) with a crank

shaft 57 (Figure 3 and 7) and these crank shafts are disposed transversely of and near the bottom of the body a and are interconnected by suitable gearing as at 57a so as to rotate in opposite directions. The cranks 58 and 59 of the crank shafts 57, 57 are united by connecting rods 60,61, with the piston rods 62,63 of servo-motors 64,65, the cylinders of which are connected through pipes 66,67, with a valve chest 68 similar to the valve chests 25 and 26, except that the valve chest 68 has four ports instead of three. The valve chest 68 has two inlets 69,70 for fluid under pressure connected with the casing 71 of a cock 72, said casing being connected by a pipe 73 with a source of fluid under pressure (not shown). The cock 72 has an admission port 74 extending through nearly 270 degrees and a centrally escaping exhaust port 75 extending through nearly 90 degrees and is operated by a pendulum 76. The valve rod 77 of the valve in the chest 68 passes slidably through the ends of a chamber 78 in which is centrally disposed a flexible diaphragm 79 to which said vale rod 77 is secured. Opening into the chamber 78 are two pipes 80 and 81, one at each side of the diaphragm 79, said pipes leading forwardly and projecting through the body a, the open end of the pipe 80 being covered by a cowl 82. As the vehicle moves forwards the rush of air over the cowl 82 creates a partial ~~ex~~ vacuum in the pipe 80, whilst the air entering the open end of the pipe 81 sets up pressure therein with the result that the diaphragm 79is deformed, and the valve rod 77 is moved and the ends of both pipes 69 and 70 are uncovered, to an extent depending upon the speed of the vehicle. The pipes 69 and 66 are thus placed in communication with oneanother, as are also the pipes 70 and 67. The admission port 74 of the cock

72 is adapted, when said cock is turned in the one direction or the other, to establish communication between the pipe 73 and either the pipe 69 and therefore the pipe 66, or the pipe 70, and therefore the pipe 67, thus admitting fluid under pressure to the cylinder of the servo-motor 64 or of the servo-motor 65 whilst the exhaust port 75 communicates with either the pipe 70 and therefore with the pipe 67, or the pipe 69, and therefore with the pipe 66 and exhausts the cylinder of the servo-motor 65 or of the servo-motor 64.

The pendulum 76 which actuates the cock 72 being subjected to centrifugal action serves to determine to which of the servo-motors 64 and 65 fluid under pressure shall be admitted and from which fluid shall be exhausted, and thus determines which shall actuate the crank shafts 57,57 and 55,55, according as it becomes necessary to vary the camber of the aerofoils e to, and adjust it on, the one side or the other of the central neutral chord, as indicated in Figure 3. Normally the pendulum 76 occupies a vertical position so that both inlets 69 and 70 are closed, when, therefore, the diaphragm 79 is deformed (to an extent which depends upon the speed of the vehicle) as a result of the pressure set up in the pipe 81 and of the partial vacuum created in the pipe 80 the valve rod 77 is moved but neither servo-motor 64 nor 65 is operative and each aerofoil e, remains symmetrical about its central neutral chord, as shown in full lines in Figure 3, no matter what may be the speed of the vehicle and the consequent extent of deformation of the diaphragm 79. When however, the vehicle leans over to one side or the other under wind or centrifugal action, either the inlet 69 or 70 is placed in communication with the pipe 73 according as the body A leans to the right or to the left and consequently either the servo-motor 64 or 65 is caused to actuate the crank shafts 57,57, and 55,55 so as to vary the camber

of the aerofoils e to, and adjust it on, the one side or the other of the central neutral chord, the extent to which such adjustment takes place depending on the extent of deformation of the diaphragm 79 and consequent opening of the pipes 69 and 70, as a result of the speed of the vehicle Thus assuming the cranks 58 and 59 to be in such an angular position in Figure 3 (vertically downwards from their crank shafts 57,57) that forward movement of the piston rod 62 will move the crank 58 forwardly and the crank 59 rearwardly, and the crank shafts 55 of the aerofoils e,e will be moved counter-clockwise and the variation of camber of the aerofoils e,e (and its adjustment) will be upwardly of said Figure, as shown in dot and dash lines, i.e.) relatively to the direction of movement of the vehicle, whilst forward movement of the piston rod 63 will move the crank 59 forwardly and the crank 58 rearwardly and produce counterclockwise movement of the crank shafts 55, so that the variation of camber of the aerofoils e,e (and its adjustment) will be downwardly of said Figure, as shown in dotted lines, i.e. (relatively to the direction of movement of the vehicle.

It is to be understood that the valve mechanisms of the various servo-motors may include any known form of hunting gear, where required, in order to cut off admission of fluid under pressure to the cylinders of the servo-motors in accordance with the effect to be produced.

If desires a chamber such as 78, having a diaphragm such as 7-9, and associated parts as hereinbefore set forth, with a servo-motor having a double-acting cylinder and valve mechnaism including, if necessary, hunting gear, or with an electric servo-motor, may be employed for varying, on one side only of the neutral chord, the camber of the wings of an aircraft according to its speed or other circumstances.

27/1/22

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

REFERENCE.

Fri: 3: March: 22

Dear Capt. Crossley Meates,

The time is now drawing near when I feel some definite step will have to be taken as to future developments.

For many reasons circumstances are such that a move from Maidenhead in the near future is clearly indicated.

This unfortunate accident to Glory from the point of view of my wife, has more or less precipitated matters & where to go is still a problem to be considered, for we must move to some place near Schools for the Children.

I gather you have tendered your Resignation from your present position on no less than 3 occasions, that you expect to be a Civilian again at no distant date. When that time comes whether you would entertain joining hands with me upon my Mono-Railway is a matter which I hardly dare venture to suggest, for the reason that the whole problem is so much in its infancy & the risk from your point of view would be too great to contemplate.

That I look on such Speculations perhaps in a Sporting way as "Nothing Venture nothing have" is no reason that you might adopt the same view & therefor I look at the matter from an exceedingly delicate standpoint, for to speak

quite candidly I would be the last person to suggest that you should jump from "the frying pan into the blooming fire" & for these reasons I do not wish to say anything to influence you either one way or the other, beyond mentioning that if you do eventually leave your present position, Nothing would give me greater pleasure than, that you should come in with me on the Mono-Railway Venture.

With Kind regards

Yours sincerely

Edmond. E. Johnson

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess.

REFERENCE. J/MW.

R.A.F. Cadet College,
Cranwell,
SLEAFORD. LINCS.

Sat:4:Mar:22.

Dear Captain Crossley Meates,

I thank you for your letter of the 2nd instant, and note you are returning the M.S.S. for the Booklet, with corrections in red, and upon receipt of same I will put the matter in the Printers hands.

I have written the A.D. Co., Ltd., as you suggest, and will let you know the result in due course.

Yours sincerely

Edmond E. Johnson

FRACTURE

The fracture occurs in the back of the shoulder blade in a fairly good position so I am informed by the Doctor, & that is progressing fairly well.

It is indeed kind of you to think of Glory, the fact is our Nurse Maid took her out & it came on to rain & against instructions took shelter in Someone elses house. Glory was removed from her Pram & planted on a fairly high Chair, she got her foot into the pocket of her apron & then fell off the Chair upon her Shoulder, the Maid being out of reach to save her.

P.T.O.

Have not yet heard from Park re Reversibe Prop. I have sent him a Drawing indicating a method for obtaining Reversible Camber. GB

As soon as I hear from Park, I am going further into the Helicopter question.

How many Pamphlets do you think should be printed? 100 Copies will Cost abt £11-10-0

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
CRANWELL. SLEAFORD

REFERENCE. J/MW.

Tues:7:Mar:22.

Dear Captain Crossley Meates,

I have this day received a more favourable reply from the Aircraft Disposal Co.,Ltd., and have replied asking for a permit to inspect their Waddon scrap. I enclose you copy of the letter received.

I have been giving your Helicopter idea further thought, and note you have stated , "As the flying insect is to the bird, so is the Helicopter to the Aeroplane", moreover the flying insect is aerodynamically more efficient than the bird.

I have been looking into this matter with a view to finding a reason why this is the case, and find that a Pigeon has 1.27 sq. ft. of wing surface for each Lb. of weight, while the Bee has 5.22 sq. ft. of wing surface for each Lb. of weight. The Pigeon gives 8 beats of wing per second, while the Bee gives 190 beats of wing per second.

Is not the conclusion to be drawn from this that the increased wing speed of the insect compared with the bird accounts for the apparent increased efficiency of the insect. Perhaps a more striking example is a Pigeon giving 8 beats of wing per second, with a Common Fly giving 330 beats of wing per second.

The point I am coming to is the Propeller speed of Helicopters, which I observe are very slow,from 150 to 200 R.P.M. very much lower than the Propeller speed of an Aeroplane. In this respect, therefore, comparison between insect to bird and Helicopter to Aeroplane does not hold good, for the reverse is the case, the Propeller speed of the Helicopter being slower than that of the Aeroplane instead of faster, as in the case of the insect when compared to the bird.

The problem therefore resolves itself into this. Has Propeller speed any relation to efficiency?

This question has a direct bearing on the size and speed of Propeller to be substituted for the Aerofoils, providing that

the Propeller incorporated follows Helicopter practice.

I sent Park yesterday another Drawing of a Reversible Camber Airscrew, and am hoping for a developement in this direction.

I have not yet received the M.S.S. of the Pamphlet, which you said you were returning last week. I think of having 100 of these printed, and then I can set to work with the Demonstration Car.

Yours sincerely,

Edmond E. Johnson

Copy of letter received from A.D.C. Ltd., dated the 6th instant.

(C O P Y)

Aircraft Disposal Co.,Ltd.,
Regent House,
Kingsway,
LONDON. W.C.2.

Please Quote Ref.
46916.

6th March, 1922.

T.E. Johnson Esq.,
Maescourt,
MAIDENHEAD,
B E R K S.

Dear Sir,

QUOTATION 1218.

In reply to your postcard dated 21st ult., we have ascertained that we can offer the undermentioned from stock to meet the purpose of your enquiry:-

D.H.6 Fuselage in good condition, fitted for 90 R.A.F. engine.

PRICE: ex Depot.....£85.

B.E.2E Fuselage, in good condition, fitted with "C" Class (complete but not overhauled) 90 h.p. R.A.F. engine, tanks and propellor.

PRICE: ex Depot.....£235.

OR

Fuselage as above, less engine and propeller.

PRICE: ex Depot.....£75

The above offer is made without engagement and subject to our standard terms and conditions of sale, a copy of which is attached hereto.

Delivery from stock ex Aintree Depot.

If you would care to visit the depot for the purpose of inspecting the above mentioned machines, we shall be glad to arrange facilities.

ENCLOSURE
No 159

The following are the overall dimensions for the machines erected in flying condition:

B.E.2E:	Span:	37'
	Length:	27' 9"
	Height:	11' 4"
D.H.6.	Span:	35' 11"
	Length:	27' 3½"
	Height:	10' 9½"

We trust that we shall hear further from you in regard to this enquiry, and any further information which you may require we shall be pleased to supply.

Yours faithfully,
For & on behalf of AIRCRAFT DISPOSAL CO. LTD.

(sgd) S.C. Harrison.

P.S.

Since writing the above we have received your postcard of the 4th inst. requesting a list of fuselages and engines for sale, not necessarily in serviceable condition. We do not issue a list of such material which is usually sold as scrap ex our Depot at Waddon, near Croydon. If, therefore, the fuselages offered above are unsuitable or too expensive for your requirements, we would suggest that you might visit our Waddon Depot and negotiate a cash purchase of a fuselage and engine suitable both from the point of view of condition and price, which we can undoubtedly offer from this Depot.

(C O P Y)

A.M. & Wm. Clark,

British, Foreign & Colonial
Patent Agents.
53 & 54, Chancery Lane,

LONDON, W.C.2.

13th March, 1922.

W.E. Johnson Esq.,
Maescourt,
Maidenhead, Berks.

Dear Sir,

No.36531/20. Mono Rail Vehicles.

We beg to inform you that we have received a further official objection in this matter, and it is gratifying to find that the case is practically in order for acceptance. In the first place the Examiner considers that the title would be improved if the words "in a horizontal plane" were omitted therefrom. We see no reason that this amendment should not be made, and shall be glad to hear if you agree; further, the Examiner has given permission for the Provisional Specification to be amended by the alteration of a few words so as to limit it to mono-rail vehicles. This is a highly desirable step.

Next, the Examiner objects to the statements on pages 7 and 8 of the Specification that the slide blocks 15, 16 are in their normal mid-positions after the pendulum has swung to one side or the other. Strictly speaking this objection is correct, but as the Examiner goes on to say that it does not appear that the slide blocks can be moved upwardly to a substantial extent from the position shewn in Figure 6 as stated on page 7, it seems to us that he has not yet quite grasped the combined action of rounding a curve and side wind upon the pendulum and its associated parts. If there be no side wind when a vehicle is rounding a curve, the pendulum will swing to one side or the other and the blocks will not then be in their mid-positions, but will be a little further from the axes of the pendulum and the arm. We propose, therefore, to amend page 7 line 25, page 8 lines 7 and 20 by cancelling "mid-positions" and substituting "positions equidistant from the pivotal axes of the pendulum x and arm 12" ; further, after "upwards" page 7 line 25, we propose to insert "the positions of the parts resulting from the combined action of a wind from the left and rounding a curve to the right is shewn in Figure 6". If you agree to this, we will amend and refile the Specification with a letter to the Examiner pointing out that when the pendulum x is vertical and the pennant t is in the central

ENCLOSURE
Nº 167

longitudinal plane of the vehicle, the blocks 15 and 16 will occupy mid-positions in the slots 13 and 14. This, we think should place the case in order for acceptance. Please note that the word "as" page 3 line 1 should be "so".

We are, Dear Sir,

Yours faithfully,

(sgd) A.M. & Wm. Clark.

(C O P Y)

104, The Philog,

Whitchurch,

CARDIFF.

T.E. Johnson,
Maescourt,
Maidenhead,
Berks.

Dear Mr. Johnson,

I have carefully considered your proposed variable camber propeller, but am afraid I am not very enthusiastic. In the first case I consider the advantages of the variable pitch propeller very much overrated and still have the same opinion that I expressed in my book that the gain in efficiency of a variable pitch propeller without some means of reducing r.p.m. (variable gear or variable diameter) is very small and not sufficient to justify any increased cost.

I believe the variable camber propeller has precisely the same limitations and for that reason, although your proposed method is practicable, the very high stresses involved make the detail design very difficult and I expect the cost would be prohibitive. I do not think any variable pitch propeller is a commercial proposition at present.

With regard to reversibility, this implies twisting the blades through an angle, merely reversing camber will not reverse thrust and that usually means vibration. I think the engine clutch, on the swivelling gear as used on airships solves this problem better than a reversible pitch or camber, as any existing propeller could be made to give a negative thrust by reversing its direction of rotation.

I enclose Oddys remarks on the variable pitch propeller but I cannot agree with many of his statement.

Yours faithfully,

(sgd) W.T. Park.

THUR:16:MAR:22.

TO PRESERVE BALANCE BY THE USE OF STANDARD PROPELLERS INSTEAD OF AEROFOILS.

1. One Propeller with opening and closing guard to produce the reverse effect.

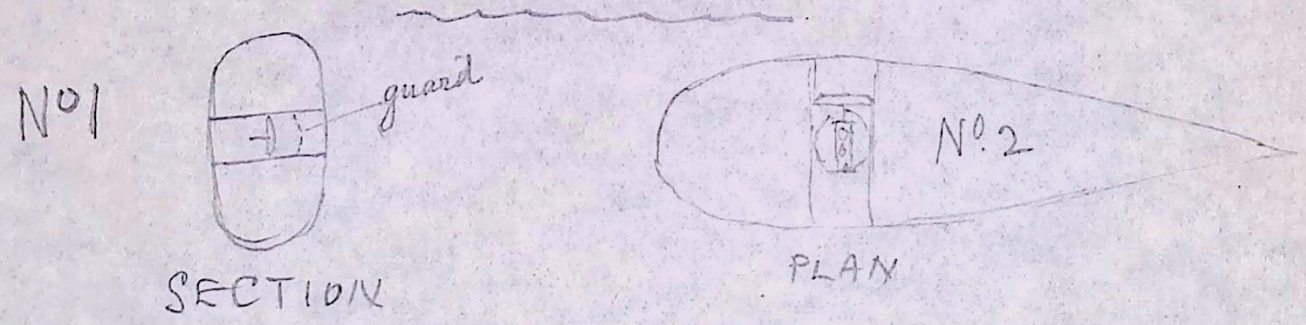
2. Single Propeller with Engine mounted on Turn-table.

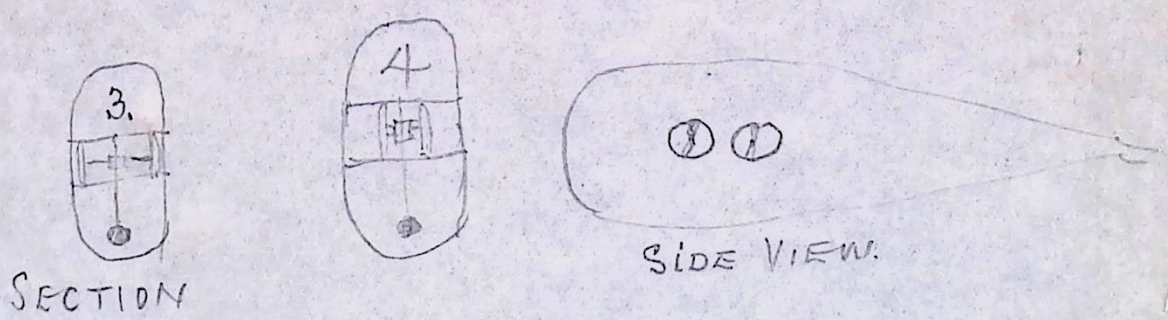
3. Two Propellers mounted at either end of tunnel, each Propeller operated by Pendulum and Clutch Gear according to Port or Starboard Cant.

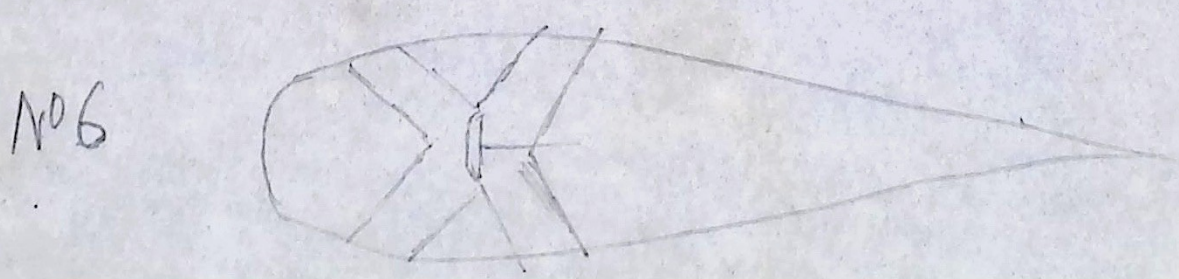
4. Two Propellers mounted near the middle of tunnel; operated same as (3).

5. Two Propellers mounted in separate tunnels running parallel athwartships.

6. Single Propeller and cross tunnels.







MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell, LINCS

REFERENCE. J/MW.

Sat:11:Mar:22.

Dear Captain Crossley Meates,

I visited Waddon yesterday, but up to the present I have not succeeded in obtaining a Drawing of B.T.2.C Fuselage. Major Grant at Waddon has three B.T.2.C. Fuselages for sale. The Engines of these have been dismantled, but other Engines can be fitted by them.

While at Waddon yesterday I took a few of the principle dimensions of this Fuselage, but not sufficient to make a correct Drawing. I, therefore, enclose you a rough Drawing of this mounted on the Bogies, carrying 3 ft. diameter Mono-Rail Wheels. These Wheels are exceedingly large in proportion to the size of the Car, and the reason for this is to enable the standard 4 Bladed Propeller, which is about 8' 8" in diameter, to be incorporated.

Upon the accompanying Drawing I have shown the Mono-Rail Wheels in two positions. In the higher position there would be a Propeller clearance of 6 inches, while the floor of the Fuselage would be cut through by one of the Wheels. In the lower position there will be a Propeller clearance of 9 inches, while front Bogie rear Mono-Rail Track Wheel just clears the body of the Fuselage.

The accompanying Drawing will give an approximate idea of what B.T.2.C. Fuselage will look like mounted on Bogies, and if it is thought advisable to lower the Centre of Gravity by using smaller Track Wheels, then either one of two things will have to be done:-

1. Existing Propeller to be raised and to be driven by Chain Drive from the existing Engine.

2. Smaller diameter Propeller to be substituted.

The advantage to be gained by using smaller Track Wheels is that the Centre of Gravity would be lowered and in consequence

smaller Aerofoils would be required in order to preserve balance. Perhaps you will tell me which method you favour.

I received the M.S.S. yesterday and am having the Pamphlets printed forthwith.

With many thanks for having perused same again.

Yours sincerely.

Edmund E. Johnson

ENCLOSURE No 163 "JUST SO"

Drawing of B.T.2. C. Fuselage mounted on Bogies.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,

Officers Mess,

REFERENCE. J/MW.

R.A.F. Cadet College,
Cranwell,
SLEAFORD. LINCS.

Tues:14:Mar:22.

Dear Captain Crossley Meates,

I enclose you a copy of a letter received this day from Clark, by which you will observe the Examiner is again on the War-path, however, the objections raised are not serious, in fact my opinion is he is only splitting hairs, and I have written to Clark agreeing the alterations he suggests.

I have also received a letter this morning from Mr. Park, a copy of which I enclose. Unfortunately, you will observe Mr. Park does not look favourably upon the Reversible Camber Propeller idea, so that if anything further in this direction is to be accomplished, it must be done between ourselves. I have written to Mr. Park asking him to return me the Drawing I sent him, indicating the method I suggest for obtaining this end, and upon receipt of same will despatch to you, in the meantime I enclose letter received from W.D. Oddy, & Co., dated July 30th, 1920, together with details of their Reversible Pitch Propeller; this however is not reversible camber.

The Mono-Rail Pamphlets are now in the Printers hands, and I hope to have the First Edition, containing the Brief Description and Drawings, ready in about a weeks time. The Second Edition containing the complete descriptive matter, will follow in about three weeks time.

Yours sincerely,

Edmond E. Johnson

ENCLOSURE No. 167 "JUSTSO"

1. Copy of Letter from Clark dated the 13th instant.
2. Copy of Letter from Mr. Park.
3. Letter from W.D. Oddy & Co., dated July 30th 1920. with four typewritten sheets attached thereto.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
CRANWELL,
SLEAFORD. LINCS.

REFERENCE. J/MW.

Fri:17:Mar:22.

URGENT.

Dear Captain Crossley Meates,

I have this day let my house on a 5 years lease, subject to Surveyors Report, and have to give possession by April 15th, so that a prompt move from this address is essential.

To a great extent it depends on you as to where I move to, and therefore I should like to see you early next week if it can be arranged, if not perhaps you would be kind enough to inform me whether you can entertain my Proposition, or if there are any difficulties in the way you might let me know.

I enclose you a rough Printers Proof, pulled on common paper, of the First Edition of the Mono-Rail Pamphlet. The Blocks will come out very much better when printed on Art Paper.

Yours sincerely,

Edmond E. Johnson

P.S. I am quite willing to come to Cranwell on Monday or Tuesday to see you, if you would like to discuss the matter with me.

Printers Proof of Pamphlet.

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

REFERENCE.

Mon: 20: March: 22

Dear Capt. Crossley Meates,

I am in receipt of your letter of the 17th inst, by which it appears obvious that if you continue your Medical Career a source of your Income will be more or less cut off for the next 2 or 3 years, this in itself is one aspect of the case; but what you have to consider is what would be your ultimate best prospects according to your own inclinations, & here I must refrain from giving you any advice, for it is for you to choose which occupation you would prefer.

As far as I can see the Mono-Railway proposition means

that during the next Years the Demonstration Car would be got ready & providing a suitable length of Mono-Rail is available, tests would be made in England. Upon the results of these trials a Company would be formed, with luck this might be done within a year; but in the meantime until the Company is formed, the where-with-all from your point of view would be more or less "a castle in the Air" & therefore I propose to make myself responsible to you for the first two years to the tune of £500 a year or for a shorter period should the Company be formed in the meantime, the Company to take over the liability.

For myself I would look to the Company to repay me £500 a year from the start (June 1919) together with the amount I had advanced to you plus out of pocket Expenses (about £680 to this date). In this case

You & I would each share alike, 50% of the Profits would be yours & 50% mine, that is my first proposition.

My second is that the past be wiped out and that you & I start de-novo, the Company to pay Out-of-Pocket Expenses from the date we start together, you to draw your £500 a year as already indicated, & I to get Credit from the Company for same, together with my £500 a year.

In this case I to have 60% of the Profits while you take 40% of the Profits.

I dont know which proposition would work out best, but the second proposition would be more advantageous to the Company, & the first proposition would be more advantageous to me in the first instance, though in the long

run the second proposition might see me through, so I dont mind, it is just which you prefer, or if you would like to make a third proposition I am quite willing to give it every consideration.

The next point is:- when could the final Mono-Railway be installed after the Demonstration Car trials? As I have said before these trials should be completed within a year, & if England is too conservative, I dont propose to wait, but to repeat the trials in America & get it going there within 2 years if possible.

The Doctor has been to-day & taken Gloy's bandages off & she now has her arm in a

sling, so that she is progressing.

I expect to obtain the final decision about the letting of this house tomorrow and if the deal goes through I have to find another house & make a move within 3 weeks from Saturday next, in which case I shall have to get a "move on".

With kind regards

Yours sincerely

Edmond E. Johnson

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
CRANWELL,
SLEAFORD.

REFERENCE. J/MW.

Tues:21:Mar;22.

Dear Captain Crossley Meates,

I have duly received from you the Drawing of B.E.2.C. Fuselage, and return of Oddy's letter re Reversible Pitch Propeller.

The question of the Fuselage is hung up, because I have received no further replies from the A.D.C., either from Waddon or Regent House, however, I have written them again today and as soon as they send me a Blue Print of this Fuselage, I shall be able to get on with the Drawings.

Regarding the Reversible Camber Propeller, I am sending you 2 Tracings indicating a method of obtaining this by means of a crank. The first Tracing gives the idea with the curve of the Propeller forming the Leading Edge; this obviously is impracticable. The second Tracing represents the straight side of the Propeller as being the Leading Edge, and is arranged in the same way as the Variable Camber for the Aerofoils. I am inclined to think, however, for the present we need not worry about Variable Camber Propellers, you might therefore retain these Tracings and reserve further discussion on this subject until I see you.

There are however some Fundamentals given in a Book published by the Kearney High Speed Railway, which runs on a single rail at the bottom and a Guide rail at the top, and these I should like to bring before your notice, as perhaps it is just as well to re-view matters from another standpoint.

"The essentials of a high-speed railway may be set down as under:-

1. It must eliminate lateral oscillation;
2. It should be able to show moderate working costs;
3. It must be reasonably cheap to construct;
4. It must permit of reasonably simple switches;

5. It should be capable of being built coincident with existing lines;

6. It should be capable of being fitted to existing tunnels;

7. It should be capable of being easily employed as a surface, underground or elevated railway;

8. It should not concentrate the forces due to centrifugal action and wind on a single rail.

9. It should not depend for the stability of its cars upon a moving mechanism.

The ordinary twin-rail system fails on Nos. 1 and 8.
The Lartigue or Behr system fails on 2, 4, 5 and 6.
The Langen Suspended Railway (Elberfield and Barman) and other suspended railways fail on 3, 4, 6, 7 and 8.
The Brennan gyroscope system fails on 8 and 9.

Failing these systems, which have in turn each had a vogue in engineering and popular thought, but which have all failed to satisfy practical requirements, on mature consideration the author has devised a system which will cover the nine heads".

Of the above the Brennan System is undoubtedly the nearest to ours. Kearney states that Brennan fails on 8 and 9. 8 as applied to ours has been overcome, and 9 as applied to ours has likewise been overcome if the Aerofoils be employed. 9 however refers to Moving Mechanism, which means Gyroscopes; same remark would be applied if the Helicopter idea were introduced.

I just mention this because theoretically I fully realise the great advantages of this system, which appeals to me as a really wonderful idea, and by the same rule the Gyroscope had the same merits.

What I want to point out is that we must not be carried away however fine the idea is if it will not hold water on the Commercial side. I was informed at the Science Museum, Kensington, that the Brennan system was a complete success on the theoretical side, but failed on the commercial side, simply because the cost of providing and operating the Gyroscopes overbalanced the cost of the additional rail used on the Twin System. When a train on the Twin system comes to rest, the cost of keeping it upright is nil, while with the Brennan or our System, if the Helicopter were introduced, when the Vehicle

comes to rest, there would be a continuous cost in keeping it upright, assuming in our case that the Outer Track Wheels were dispensed with.

Your remarks about your Lincoln experiment with the Avro are extremely interesting and fully bear out Oddy's theory.

I was very sorry to hear that you have not been successful in obtaining your Frost Alarm Patent, and can quite understand the enormous opposition you would have in such a contrivance as this.

I also note your remarks about the angle of the Prop axis and will give this my attention as soon as I receive the Blue Print of B.E.2.C. Fuselage.

I have this day had confirmation of the letting of this house, so that I shall have to make a move very shortly.

With kind regards,

Yours sincerely.

Edmund E. Johnson

ENCLOSURE No. 180 "JUSTSO"

Tracing of Propellers(under separate cover)

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Officers Mess,
R.A.F. Cadet College,
Cranwell,
SLEAFORD. LINCS.

REFERENCE. J/MW.

Wed:22:Mar:22.

Dear Captain Crossley Meates,

In my letter to you of yesterday I dealt with Kearney's remarks on High Speed Railways, and to make this more clear I enclose you a rough Sketch of each of the Systems mentioned, but with the additions of Aerofoils in each case.

I want to see if you agree with me as to how the Aerofoils behave in relation to the Mono-Rail in each of the 4 cases instanced by Kearney.

In each case assume the C of G and the Vehicle centre to coincide.

1. Lartigue and 2. Kearney:- A Direct LATERAL Centrifugal Thrust is counteracted by a direct Lateral Aerofoil THrust in the opposite direction.

3. Brennan and 4. Langen:- A direct Lateral Centrifugal Thrust is counteracted by an INDIRECT ROTARY Aerofoil Thrust in the opposite direction.

Now Kearney in regard to his System continues by stating the following:-

> "Failing these systems, (Lartigue, Langen and Brennan) which have in turn each had a vogue in engineering and popular thought, but which have all failed to satisfy practical requirements, on mature consideration the author has devised a system which will cover the nine heads.
>
> The first essential is achieved by the use of a single bearing rail, and having determined that a single bearing rail must form the basis of a practical high-speed railway and having eliminated the trestle, the gyroscope, and the suspended railway, it remains to discover by what means the trains can best be maintained on the single rail. It is

obviously desirable to limit the number of guide rails to one. It is also obvious that the greatest effect of that guide rail will be obtained if it is placed at the maximum convenient distance from the point of support of the train - the single bearing rail".

The point arrived at here is the most efficient position to place the Guide Rail.

Now if the Guide Rail is placed at the maximum distance from the Mono-Rail to give greatest efficiency, the same rule equally applies to Aerofoils or Helicopter idea as the case may be. Maximum Efficiency calls for Maximum distance available from Mono-Rail, and that is the second point I want to bring home to you: because I think in the Patent although we have succeeded in convincing both Clark and the Examiner. What really happens with the Aerofoils is what I have pointed out in this letter, as applied to 3. The Brennan System, which is similar to ours.

Yours sincerely,

Edmund. B. Johnson

NO JERKS: NO JARS,

ON JOHNSON CARS,

NO LATERAL OSCILLATION,

A STEADY GLIDE,

A LIGHTNING RIDE,

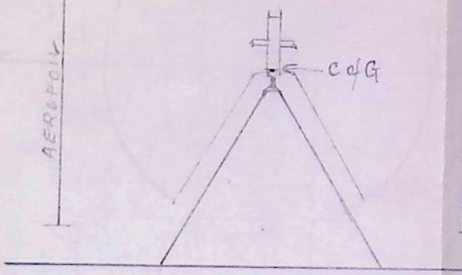
FROM START TO DESTINATION.

ENCLOSURE No. 182 "JUSTSO"

Sketch of Aerofoils applied to existing Systems.
Three Mono -Rail Pamphlets.

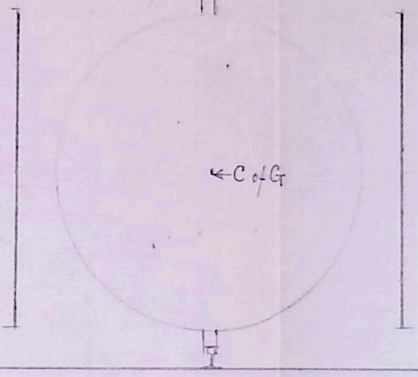
AEROFOILS APPLIED TO EXISTING SYSTEMS.

1.



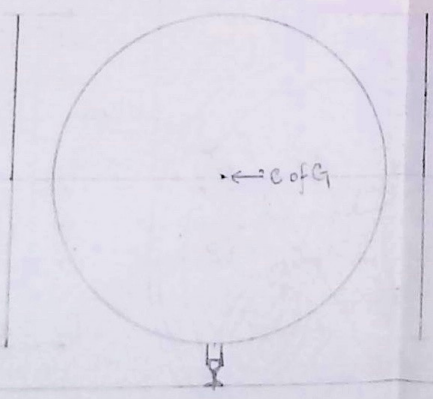
LARTIGUE OR BEHR

2



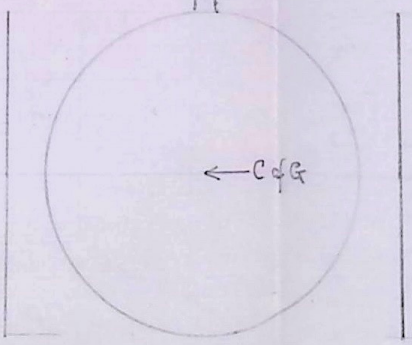
KEARNEY.

3



BRENNAN SYSTEM

4.



LANGEN SUSPENDED RY.

Assume the C of G in each case to correspond with Vehicle Centre Then:-

In the case of 1. Lartigue & 2. Kearney:— A Direct LATERAL Centrifugal Thrust is counteracted by a direct Lateral Aerofoil Thrust in the opposite direction.

3. Brennan & 4. Langen:— A direct Lateral Centrifugal Thrust is counteracted by an INDIRECT ROTARY Aerofoil Thrust in the opposite direction.

ENCLOSURE No. 182

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larklands,
ASCOT,
BERKS.

REFERENCE. J/MW.

Sat:1:April:22.

Dear Captain Crossley Meates,

I have bought the Rolls-Royce at £51-5-0. To be delivered free to your address on Tuesday.

Many thanks to you & your friend for the tip about this Engine, by the way his Book has arrived today.

Now I must see what Waddon can do in the way of a Rolls-Avero Fuselage & obtain a Blue Print of same.

The Complete Specification has now been accepted New No 177,274

MEMORANDUM

The application will now be laid open for opposition until 6th June next.

Hope to see you on Tuesday when the Rolls-Royce is being delivered.

With kind regards.

Yrs sincerely

Edmund E. Johnson

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larklands,
ASCOT,
BERKS.

REFERENCE. J/MW.

Tues:11:April:22.

Dear Captain Crossley Meates,

Your letter of the 9th instant has arrived just in time to prevent me from having the proposed large Block made for the back cover of the Pamphlet.

As however, the Artist has made in the meantime an entirely fresh Drawing and inked it in, I propose only having a small Block made, postcard size, and this can occupy a minor position inside the Pamphlet.

I am convinced however, that there is no Illustration in the Pamphlet to appeal to the imagination, giving the impression of what the Vehicle will appear like on the Large Scale. In consequence I have made a Drawing of a Vehicle having 6 to 1 Streamline Dimensions in Side View, and the Artist is now at work on the development of this Drawing, prominence to which can be given on the Back Cover, in place of the one originally proposed.

I am extremely obliged to you for your remarks about the Suspended Rail Illustration, because I quite agree with you that it is not the impression of the lay reader which has to be studied.

A plain Illustration on the back cover drawn to scale, will I feel sure, create a far better impression to the scientific mind, nevertheless I would like you to see the pencil Drawing of this Vehicle before the Block is made, so if completed to-day, will run over with it to-morrow.

I enclose you herewith Printers Proof for your perusal, with some further suggested corrections and proposed addition on Page 10.

I have this day written Major Grant and Rolls-Royce, upon the lines you suggest.

Yours sincerely,

Edmond E. Johnson

Printers Proof.

ENCLOSURE No 209 JUSTSO

'Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larklands,
ASCOT,
BERKS.

REFERENCE. J/MW.

Sat:15:April:22.

Dear Captain Crossley Meates,

I enclose you a copy of a letter this day received from Rolls-Royce, which I am inclined to think will make our friend Drury Lavin "sit up".

I had a long discussion with Mr. Todd, late District Manager of the Great Eastern Railway Company, yesterday, about the Permanent Way, and have come to the conclusion that some modifications will have to be made under this heading in the Pamphlet.

Dealing with the Pamphlet I am convinced that at this early stage too much has been claimed. It would be far better, therefore, to make modifications now, as it would be much more dignified to "climb up" by degrees, rather than being compelled to "climb down".

The chief weaknesses lie in the Claims made under the heading of Permanent Way, and I suggest therefore that owing to the complications and the difficulties involved in the proposed Road Ways for the Outer Track Wheels, that the method we have suggested should not be claimed at present. My opinion is that so long as we use Aerofoils on either side of the Vehicle that Outer Track Rails of light section should be provided to make contact with the Outer Track Wheels. Later on when we come to consider the Helicopter idea, then I would strongly advocate dispensing altogether with, not only the Outer Track Wheels but also the Outer Track Rails.

Mr. Todd has very kindly made no end of corrections, particularly in Pages 1, 2 and 3, which will render a further discussion necessary between you and me before the Pamphlet is printed, moreover the proposed End View Illustration would have to be modified from the Permanent Way point of view.

The Martini was not finished last night, but the men are coming again on Monday; this being so it will be impossible for us to attend Brooklands, so that I cannot see you then,

possibly however you can name a later date.

With kind regards to your Family and Father.

Hoping the invalid is progressing after her severe fall.

Yours sincerely,

Edmund E. Johnson

ENCLOSURE No. 212

Copy of letter from Rolls-Royce, Ltd., dated the 13th inst.
Second Copy of Printers Proof.

(C O P Y)

Messrs Rolls-Royce, Ltd.,

Nightingale Road,

DERBY.

In your reply please quote D/L8/B13. 4.22.

13th April, 1922.

Edmond E. Johnson Esq.,
Maescourt,
Maidenhead.
Berks.

Dear Sir,

Re Hawk Engine No. 168.

We beg to thank you for your letter of the 7th instant, ref. J/MW.

Our price for supplying one Exhaust Manifold to L.O.P. E16342 is £14. 11. 6. and for supplying one Half Clip Part No. E.9805, which part we know as "Cap to the Water Pipe Bracket" is 5/6. The high price of this part is due to the fact that we have to make a pattern before we can produce it, as doubtless you are aware this engine is not now being manufactured, and we have no stock of spare parts.

The above prices are net, F.O.R. Derby.

Terms:- Cash with order.

With regard to the question of size of Propeller, we regret we are not able to give you any information on this point. We suggest, however, that you make application to a Propeller Manufacturing Co., giving them particulars of your engine and the purpose for which you indtend using it. No doubt they would then be able to advise you on the matter.

Yours faithfully,

For and on Behlaf of
ROLLS-ROYCE. LTD.,
(sgd) p.p. John DeLooze,
SECRETARY.

ENCLOSURE

Phone: MAIDENHEAD, 297.

EDMOND E. JOHNSON,
MAESCOURT,
MAIDENHEAD,
BERKS.

MEMORANDUM.

Captain B. Crossley Meates,
Larklands,
ASCOT,
BERKS.

REFERENCE. J/MW.

Wed:26:April:22.

Dear Captain Crossley Meates,

I enclose you letter received from A.V. Roe & Co., Ltd., by which you will observe that the Avro Fuselages were used for Astra Torres and not for Blimps. The B.T.2.C. Fuslage is clearly indicated, as this is the one which appears to have been used for the Blimps. I therefore think that there is no doubt now that the matter can proceed upon the basis of the B.T. 2.C. Fuselage.

I now enclose you the corrected Printers Proof of the 2nd Edition of the Pamphlet, after having eliminated all reference to the addition of the Mono-Rail to an existing Twin Rail System.

It seems to me that the Aerofoils (when set at extreme angles of incidence) will each take up at least 9 ft. space on either side of the Vehicle and if only 9 ft. were allowed for the width of the Vehicle, the total width to be provided for including the Aerofoils would therefore be 27 ft., which would not be feasible on an ordinary Twin Rail system, and to suggest converting a line embracing 4 sets of Rails for the Mono-Rail system would not be practicable from many points of view, consequently I think it will be better to delete any suggestion in the Pamphlet to the addition of the Mono-Rail on an existing Twin Rail System.

You will remember at our last interview you suggested that you would like to hear some further particulars in regard to Mr. Todd's criticisms upon the 2nd Edition of the Pamphlet, and I therefore propose, if you have no objection, to bring him with me on Friday afternoon, because I think you will agree with me that it will be just as well to get this matter thrashed out as far as possible before going into print. I give you hereunder a copy of Mr. Todd's criticisms.

I called last Sunday to ask your permission if this

course might be persued, but unfortunately just missed you.

Yours sincerely,

Edmund E. Johnson

Mr. Todd's criticisms on the 2nd Edition of Pamphlet.

Page 2. Under 3. WORKING EXPENSES.
I don't follow this. Why should Working Expenses depend on time factor.

Page. 2. Permanent Way. 1st Sentence.
All very well. What about expansion, creep or other ills? You must have joints somewhere.

Page 3. Obstacles such as Rivers etc.,....
This statement is very wide of the truth.

Page 2. Deletion of the words " and fish plates dispensed with."

ENCLOSURE No 219 "JUSTSO"

Letter from A.V. Roe, & Co.,Ltd., dated the 22nd instant.
Printers Proof of Pamphlet.