

N° 7417



A.D. 1911

(Under International Convention.)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in France), } 25th Mar., 1910

Date of Application (in the United Kingdom), 24th Mar., 1911

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 15th June, 1911

COMPLETE SPECIFICATION.

Improvements in Controlling Means for Aeroplanes.

I, ALFRED EDOUARD CHEVROLET, of Artenay (Loiret), in the Republic of France, Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

5 This invention has for its object an improved universal control for aeroplanes which serve to replace the multiple parts for operating the elevation rudders the steering rudders and the stabilising devices such as means for warping the planes movable wings or ailerons and so forth.

10 Now in carrying out my invention I employ a hand wheel movable in every direction permitting of operating either alternately or simultaneously the different members above mentioned, the rod of this wheel, connected by a cardan joint with a rod directly controlling the horizontal steering members, acting by the inclination which it is given upon one or both of two sectors pivoted diametrically opposite upon a fixed plate at the centre of which the steering rod 15 rotates. So that the rod of the hand wheel may perform its different movements, the sectors are provided with slots which serve as guides.

The accompanying drawing represents by way of example the universal control for aeroplanes according to my invention.

In said drawing:—

20 Figure 1 is an elevation.

Figure 2 a plan view.

Figure 3 a perspective view.

25 The rod *a* of the hand wheel *b* mounted within convenient reach of the navigator is connected by a cardan joint *c* with the rod *d* ordinarily serving for steering, the vertical rudders being displaced by the intermediary of cables suitably arranged at the end of the arms rigid with the rod *d* or passing over grooved sectors or pulleys fixed upon the same rod.

30 The rod *d* is able to rotate freely in the centre of a fixed plate *e*. Upon this plate two sectors *f* and *g* are pivoted, the sector *f* for example in the longitudinal direction of the apparatus and the other in the transverse direction. Each of these sectors which are thus diametrically opposed carries a longitudinal slot *h*, the width of which is such as to permit the rod *a* to slide freely, this rod being engaged in both the sectors *f* and *g* as shown in the drawing.

[Price 8d.]



Chevrolet's Improvements in Controlling Means for Aeroplanes.

The sector *f* for example being of greater radius than the sector *g* is superposed on the latter.

In these conditions it is obvious that the hand wheel *b* occupying any position such as that indicated in Figure 3 for example if it be operated in such a manner as to rotate the rod *a* upon itself the rod *d* will experience the same movement of rotation: the sectors *f* and *g* are not acted upon. If on the other hand the hand wheel *b* be acted upon so as to displace the rod *a* (without rotating it) in the longitudinal vertical plane of the apparatus, that is to say, in the direction indicated by the arrow 1 or in the direction indicated by the arrow 1¹ the sector *g* is displaced in the direction indicated by these arrows while the sector *f* remains motionless serving to some extent as a guide for the rod *a*.

Finally, if the hand wheel *b* be acted upon so as to cause the rod *a* to oscillate (still without rotating it) in the transverse vertical plane of the aeroplane, that is to say, in the direction indicated by the arrow 2 or in the direction indicated by the arrow 2¹ the sector *f* is displaced in the direction indicated by these arrows, while the sector *g* remains stationary serving as a guide for the rod *a*.

It will therefore be understood that if the sectors are provided beneath their points of articulation with lugs *i* as shown in the drawing or with grooved sectors or pulleys and these lugs, sectors or pulleys are suitably connected by cables with the parts of the apparatus to be controlled the following operations can be effected, (1) by displacing the sector *g* forward or rearward the elevation rudders can be controlled for example, (2) by displacing the sector *f* towards the left or towards the right the stabilising members such for example as the means for warping the planes movable wings *etc.* can be controlled.

The aeroplane is steered as usual by means of the rod *d* which is rotated by the intermediary of the cardan joint *c* by rotating the hand wheel *b* whatever the position of the rod *a* may be.

The first two controls and even the steering can be produced simultaneously by placing the rod *a* in the suitable oblique position outside the vertical longitudinal and transverse planes so as to simultaneously displace the two sectors *f* and *g* and cause them to oscillate through a suitable angle relatively to each of these planes. At the same time the navigator imparts a movement of rotation to the hand wheel *b* in the proper direction for acting upon the steering parts and steering the apparatus.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

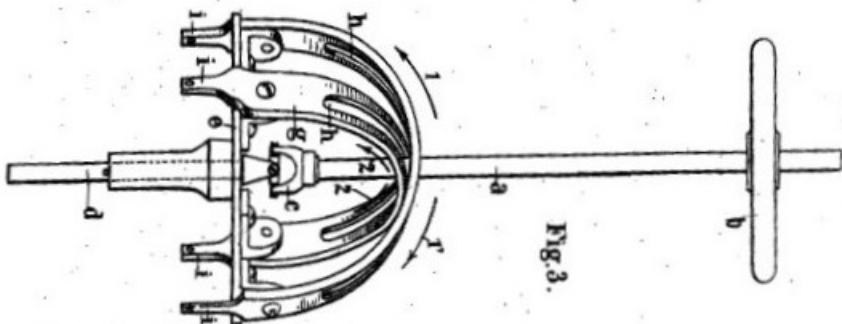
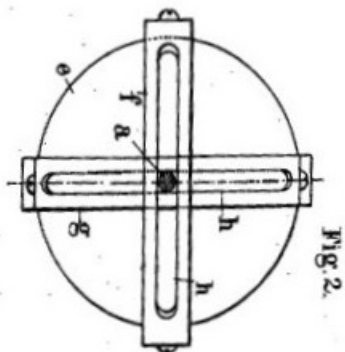
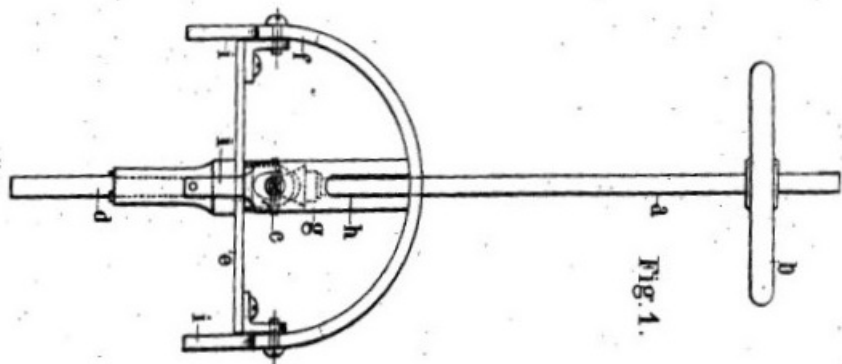
1. A control for aeroplanes comprising a hand wheel movable in every direction permitting of operating alternately or simultaneously and within limits under the control of the navigator the members for vertical steering, the stabilising members and the horizontal steering members, the rod of this hand wheel connected by a cardan joint with the rod directly controlling the horizontal steering members acting by inclination of the hand wheel forward or rearward to the left or right or by combined inclination upon one or both sectors pivoted diametrically opposite upon a fixed plate in the centre of which a steering rod rotates and each of these sectors being provided with a longitudinal slot serving as a guide for the rod of the hand wheel.

2. The improved controlling means for aeroplanes substantially as herein described and illustrated.

Dated this 24th day of March, 1911.

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Agents for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale]



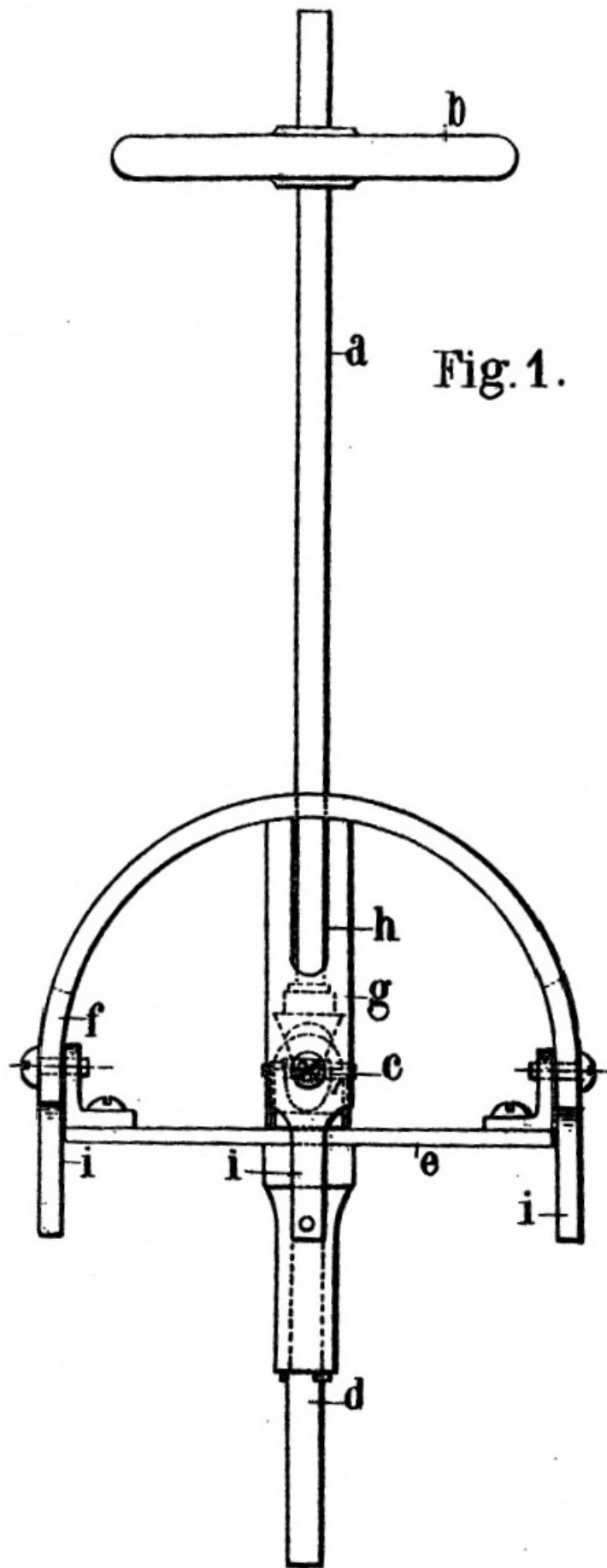


Fig. 2.

