

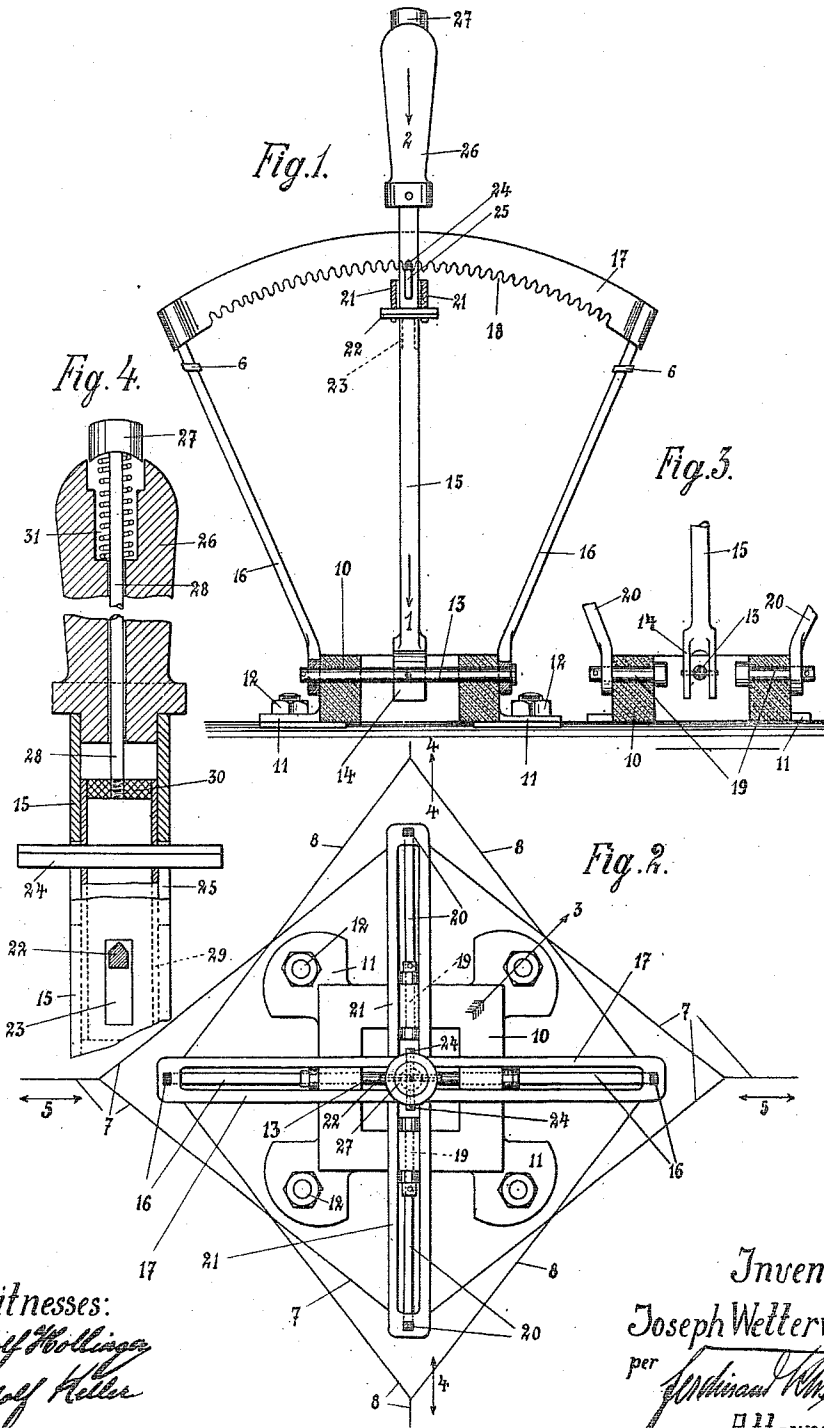
J. WETTERWALD.

STEERING DEVICE FOR VEHICLES, AIRSHIPS, AEROPLANES, SUBMARINES, AND THE LIKE.

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985,958.

Patented Mar. 7, 1911.



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UNITED STATES PATENT OFFICE.

JOSEPH WETTERWALD, OF LUCERNE, SWITZERLAND.

STEERING DEVICE FOR VEHICLES, AIRSHIPS, AEROPLANES, SUBMARINES, AND THE LIKE.

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Specification of Letters Patent.

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Application filed August 24, 1910. Serial No. 578,755.

To all whom it may concern:

Be it known that I, JOSEPH WETTERWALD, a citizen of Switzerland, and resident of Lucerne, Switzerland, have invented a 5 Steering Device for Vehicles, Airships, Aeroplanes, Submarines, and the Like, of which the following is a specification.

My present invention relates to an entirely novel steering device for vehicles, and 10 is more especially designed for air-ships, aeroplanes and submarines, the most essential feature consisting in the arrangement of a single hand lever in such a manner that complete control of all the different planes 15 or the steering wheels respectively is obtained.

In order that this invention may be more clearly understood, I refer to the accompanying drawing, in which:

20 Figure 1 shows a part-sectional elevation of the device; Fig. 2 shows a plan of same; Fig. 3 shows a section through the bottom part of the device in the direction of the arrow 1, Fig. 1; and Fig. 4 shows a vertical 25 section through the steering lever in the direction of the arrow 2, Fig. 1, the whole being illustrated on a larger scale for the sake of clearness.

In practice I provide a frame or base 10 30 of preferably square-shaped form with a square hole in the center, the said base serving to carry a shaft or axle 13, and having lugs 11, by means of which the base can be screwed onto a horizontal part of the aerial 35 or other conveyance. The projecting ends of the shaft 13 carry bars 16 to which are fastened at 6, the wires 8 connecting one of the planes or steering wheels respectively. At a right angle to the axle 13, and also 40 carried by the base 10 are bolts 19 upon which bars 20 are mounted, the latter being again connected with another plane or the other steering wheel respectively by means of wires 7, Fig. 2. The bars 16 at their 45 upper end carry a toothed segment 17 the teeth being at the lower side of same, while a similar toothed segment 21 is carried by the bars 20. The last named segment is at right angles with the segment 17 and on the 50 underside of same. Both segments are slotted in longitudinal directions and serve to guide the steering lever 15, which pivotally hinged to axle 13, terminates in a drilled handle 26 above the segment 17. 55 The said handle is provided with a button

27 forming the top end of a spindle 28, the whole being influenced by a spring 31, Fig. 4, the latter thus effecting an automatic return of the button when the latter has been pressed downward and released again. 60 Button and spindle are in connection with pawls 22 and 24 which are adapted to engage with the teeth of the segments 17 and 21. The upper end of the steering lever 15 to which the handle is secured is suitably 65 drilled, Fig. 4, or may consist of a tube, the said tube containing a second tube 29 with head piece 30 the latter serving as securing means for the spindle 28. Both pawls 22 and 24 are firmly wedged into the inner tube 70 29 and extend through the outer tube of the steering lever 15 by means of slots 23 and 25, in which they are adapted to slide. If the operator presses upon the button 27 the pawls slide downward in their respective 75 slots thus disengaging from the teeth of the segments and vice versa, if the pressure on the button is released, the pawls slide automatically, that is to say under influence of the spring 31 upward so that they again 80 engage with the teeth of the segments.

In action the device operates as follows: If the button 27 is pressed downward, the steering lever which is pivotally mounted 85 upon the axle 13 by means of its forked end 14, may be moved in any desired direction, while immediately after the release of the button the pawls become engaged with the teeth of their respective segments, so that 90 the lever and with it all the movable parts inclusive of the planes or steering wheels are secured and rigidly kept in any desired position. The wires 7 and 8 may be attached to the bars 16 and 20 in any convenient manner. If now by way of example, 95 the steering lever 15 in the afore described manner is moved forward, in the direction of the arrow, only the vertically disposed segment 17 guiding the said lever, is coming into operation, and with it the plane or the steering wheel which is connected by means 100 of the wires 8. If on the other hand the lever 15 is moved to the right, in the direction of the arrow 5, only segment 21 and plane or steering wheel connected by means 10 of wires 7 are operated. Thus, one plane or rudder may provide the means for elevation and the other the means for direction. The steering lever 15 may now be moved diagonally *i. e.* in the direction of arrow 3 thus 110

operating both elevating and directing plane, this being an important feature of the present invention. Providing one of the planes has already been put into a certain position or to be more explicit, if the steering lever 15 has been moved to the left, the operator is still enabled to proceed forward as well as backward without altering the position of the already adjusted plane or rudder, since the corresponding toothed segment is kept rigid, only the segment of the second plane being put in action. In consequence of the fact, that the middle position of the steering lever 15 is the means of placing the planes or the steering wheels or rudders in their middle position, the conveyance thus moving horizontally and in a straight line, the simultaneous rear movement of the steering lever 15, in the direction of the arrows 4 and 5 has the contrary effect, that is to say, the conveyance may be made to move downward and upward or to the left and right by means of a single lever.

In constructing my device I make all the parts preferably of aluminium at the same time making due allowance as regards the strength of the said parts. The wires 7 and 8 are in reality much longer and should be guided by means of rollers to assist in the smooth working of the device. The teeth are furthermore made so that any breakage or disengagement of the pawls is obviated.

Having now fully described my said invention what I claim and desire to secure by Letters Patent is:—

1. In a steering device for vehicles, air-ships, aeroplanes, submarines and the like the combination with a frame (10) which is attached to the said conveyances, of a shaft 40 carried by the frame, bolts mounted in the frame and at right angles to the said shaft, bars pivotally mounted upon the projecting ends of the shaft and bolts respectively,

toothed segments carried by the said bars and being provided with longitudinal slots, 45 a tubular hand lever having a forked lower end being pivotally arranged upon the aforesaid shaft, the upper end being adapted to slide in the slots of the segments, and of means for securing and releasing the said 50 lever in and from the teeth of the segments, substantially as described and shown and for the purpose specified.

2. In a steering device for air-ships, aeroplanes and submarines, the combination with 55 a frame (10) which is attached to the said conveyances, of a shaft carried by the frame, bolts mounted in the frame and at right angles to the said shaft, bars pivotally 60 mounted upon the projecting ends of the shaft, and bolts respectively, toothed segments carried by the said bars and being provided with longitudinal slots, a tubular hand lever having a forked lower end being pivotally 65 arranged upon the aforesaid shaft, the upper end being adapted to slide in the slots of the segments, and of means for securing and releasing the said lever in and from the teeth of the segments, the said means consisting of a spring influenced spindle with 70 button at its top end, both spindle and button being guided in the drilled handle of the tubular lever, a second tube arranged inside the tubular lever and being connected to the aforesaid spindle, two pawls at right angles 75 to each other secured in the inner tube and adapted to slide up and down in the slots of the outer tube, substantially as described and shown and for the purpose specified.

In testimony whereof I have hereunto set 80 my hand in the presence of two subscribing witnesses.

J. WETTERWALD.

Witnesses:

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J. C. GEDEAN.