Sept. 2, 1930. I. M. LADDON ET AL 1,774,558

DUPLEX OPERATING DEVICE

Filed April 26, 1928 2 Sheets-Sheet 1

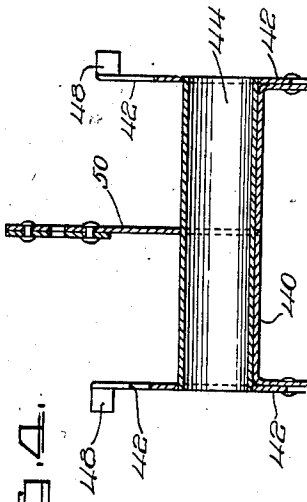


FIG. 4.

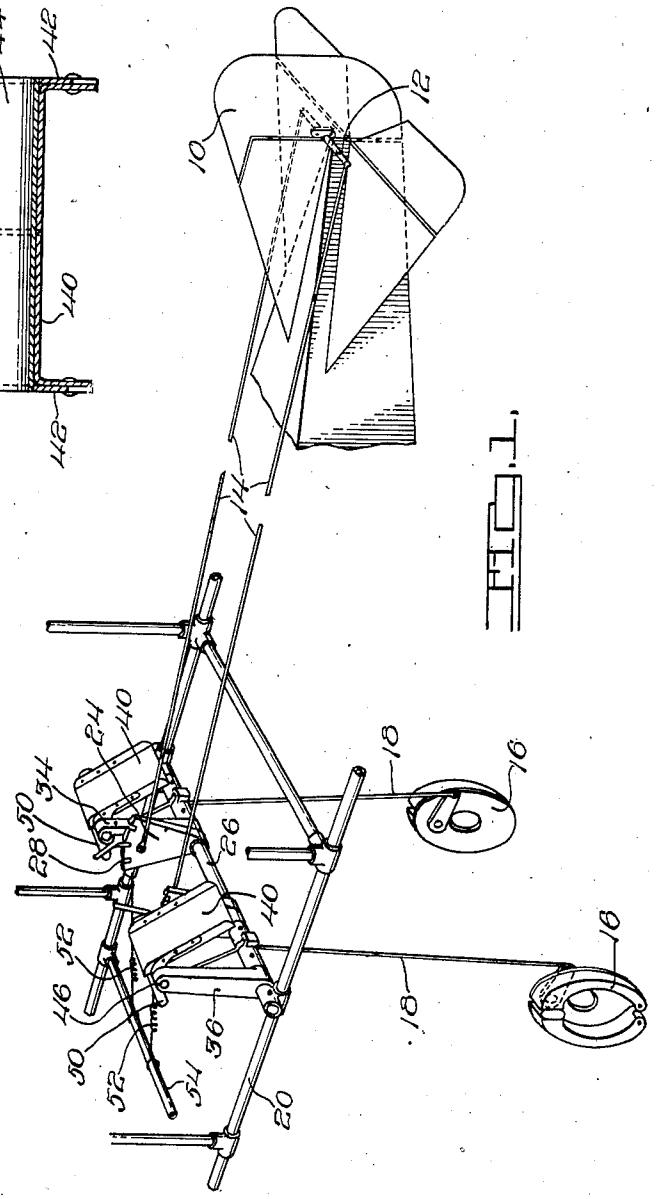


FIG. 1.

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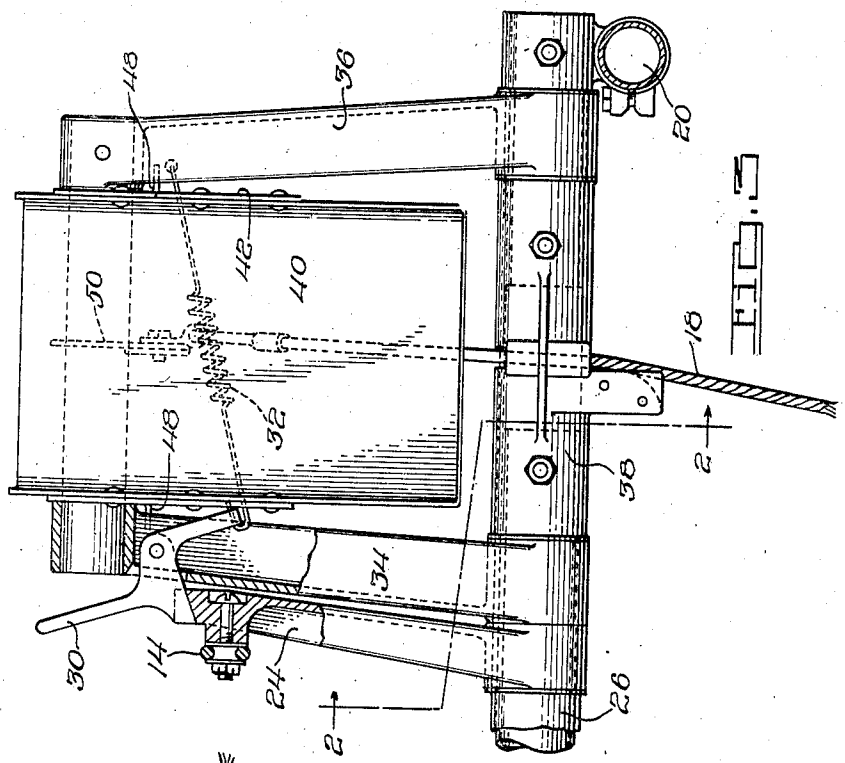


Fig. 5.

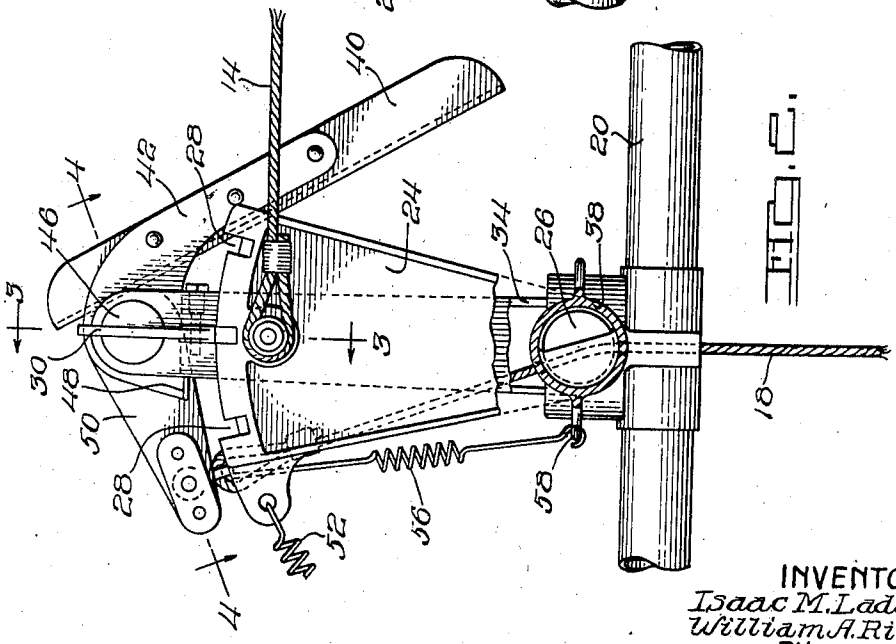


Fig. 6.

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UNITED STATES PATENT OFFICE

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DUPLEX-OPERATING DEVICE

Application filed April 26, 1928. Serial No. 272,962.

This invention relates to operating mechanism for devices, such as the rudder and brakes of an aeroplane, which require two different operating connections actuated independently by the same pedal or other operating device. An object of the invention is to provide a simple adjustment for different pilots, which can be manipulated without affecting the operation of either of the operating connections.

From this point of view, the invention contemplates the use of two independently pivoted levers, one of which is directly connected to operate the one operating connection and the other of which carries the pedal or other part which is arranged to actuate the second operating connection, and which two levers are operatively joined by means, such as a novel latch, in different relative angular positions to make the desired adjustment. Preferably the second or brake connection passes adjacent the axis of movement of the second lever, so that it is not affected by the adjustment.

The above and other objects and features of the invention, including various novel combinations of parts and desirable particular constructions, will be apparent from the following description of one illustrative embodiment shown in the accompanying drawing, in which:

Figure 1 is a perspective view of so much of an aeroplane as is necessary to describe the invention;

Figure 2 is a section on the line 2—2 of Figure 3, showing one of the novel operating devices in side elevation;

Figure 3 is a front elevation of the device shown in Figure 2, partly broken away in section on the line 3—3 of Figure 2; and

Figure 4 is a section through one of the brake connections, on the line 4—4 of Figure 2.

In Figure 1 there are shown diagrammatically the rudder 10 having an operating bar 12 with tension elements or connections 14 secured to its opposite ends, and the brakes 16 for the ground wheels with operating connections such as steel cables 18, also part of the body framework 20.

Brakes 16 are used for steering when on the ground, as well as to stop the aeroplane in landing and to hold it in warming up the engine, so it is desirable that they be controlled by the same pedals or other parts as are used in steering by means of the rudder when in the air. It is also desirable that these parts be adjustable for different pilots, or to permit the pilot to change his position so that he will not become unduly tired by being forced to stay too long in the same position. To this end both brakes and rudder are controlled by novel duplex operating devices, one form of which is described below.

In the illustrated arrangement, each connection 14 is secured at its end to a novel lever 24 pivoted at its lower end on a fixed support such as a shaft 26 forming a part of the framework 20. This lever 24 has a plurality of notches 28 in its upper edge, any one of which can be engaged with a latch 30 held by a spring 32 and mounted on a double lever including spaced members 34 and 36 pivotally mounted on support 26 and separated by a sleeve 38 pinned to the shaft 26 so it cannot turn on the shaft.

The particular pedal shown includes a channel-shaped stamped steel foot-engaging portion 40, to which may be riveted two arms 42 welded to the ends of a hollow shaft 44 freely pivoted on a cross shaft 46 connecting and pinned to the outer ends of members 34 and 36. Arms 42 have outwardly-projecting lugs 48 to engage the backs of members 34 and 36 to determine the idle position of the pedal. An arm 50 welded to the center of shaft 44 is connected to the end of the brake connection 18, which connection passes through an opening in support 26 (i. e. adjacent the axis of movement of the double lever 34—36) so that it is not affected by the position of either lever 24 or lever 34—36, but is operated by rocking pedal 40 about shaft 46.

Return springs 52 for the rudder connections are tensioned between levers 24 and a cross member 54 of frame 20. Return springs 56 for the brake connections are tensioned between arms 50 and ears 58 on sleeves 38.

It will be seen that latches 30 can readily

be operated to make the adjustment, without affecting either the brake or the rudder connections.

While one illustrative embodiment has been described in detail, it is not our intention to limit the scope of the invention to that particular embodiment, or otherwise than by the terms of the appended claims.

We claim:

1. A vehicle having, in combination, brakes, a rudder, and controlling means therefor including a pair of devices each of which is connected to one brake and both of which are connected to the rudder, and each of which includes a support, a lever pivoted on the support and connected to the rudder, another lever independently pivoted on the support and having a part connected to one of the brakes, and means for securing the two levers together in different relative angular positions so that said part can be manipulated to operate the rudder.

2. A vehicle having, in combination, brakes, a rudder, and controlling means therefor including a pair of devices each of which is connected to one brake and both of which are connected to the rudder, and each of which includes a support, a lever pivoted on the support and connected to the rudder, another lever independently pivoted on the support and having a pedal pivotally mounted thereon and connected to one of the brakes, and means for securing the two levers together in different relative angular positions so that said part can be manipulated to operate the rudder.

3. A vehicle having, in combination, brakes, a rudder, and controlling means therefor including a pair of devices each of which is connected to one brake and both of which are connected to the rudder, and each of which includes a support, a lever pivoted on the support and connected to the rudder, another lever independently pivoted on the support and having a pedal pivotally mounted thereon and connected to one of the brakes by means passing adjacent the pivot axis of the mounting for the second lever, and means for securing the two levers together in different relative angular positions so that said part can be manipulated to operate the rudder.

4. A duplex operating device comprising, in combination, a fixed support, a lever pivotally mounted on the support and which has an operating connection, a two-part second lever independently pivotally mounted on the support and having an operating part intermediate its sides with a second operating connection, and means for securing the two levers, so that the second can operate the first, in different relative angular positions.

5. A duplex operating device comprising, in combination, a fixed support, a lever pivotally mounted on the support and which has an operating connection, a second lever independently pivotally mounted on the support and having an operating pedal pivotally carried thereby and provided with a second operating connection, and means for securing the two levers, so that the second can operate the first, in different relative angular positions.

6. A duplex operating device comprising, in combination, a fixed support, a lever pivotally mounted on the support and which has an operating connection, a second lever independently pivotally mounted on the support and having an operating pedal pivotally carried thereby and provided with a second operating connection passing adjacent the axis of movement of the second lever, and means for securing the two levers, so that the second can operate the first, in different relative angular positions.

7. A duplex operating device comprising, in combination, a fixed support, a lever pivotally mounted on the support and which has an operating connection, a second lever independently pivotally mounted on the support and having an operating pedal pivotally carried thereby and provided with a second operating connection passing adjacent the axis of movement of the second lever, and a latch for securing the two levers together in different relative angular positions.

8. A duplex operating device comprising, in combination, a fixed support, a lever pivotally mounted on the support and which has an operating connection, a second lever independently pivotally mounted on the support and having an operating part with a second operating connection, and a latch for securing the two levers together in different relative angular positions.

In testimony whereof, we have hereunto signed our names.

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