Aug. 22, 1950 W. J. WEINFURT 2,519,804

FOOTREST AND RUDDER PEDAL

Filed Jan. 29, 1946

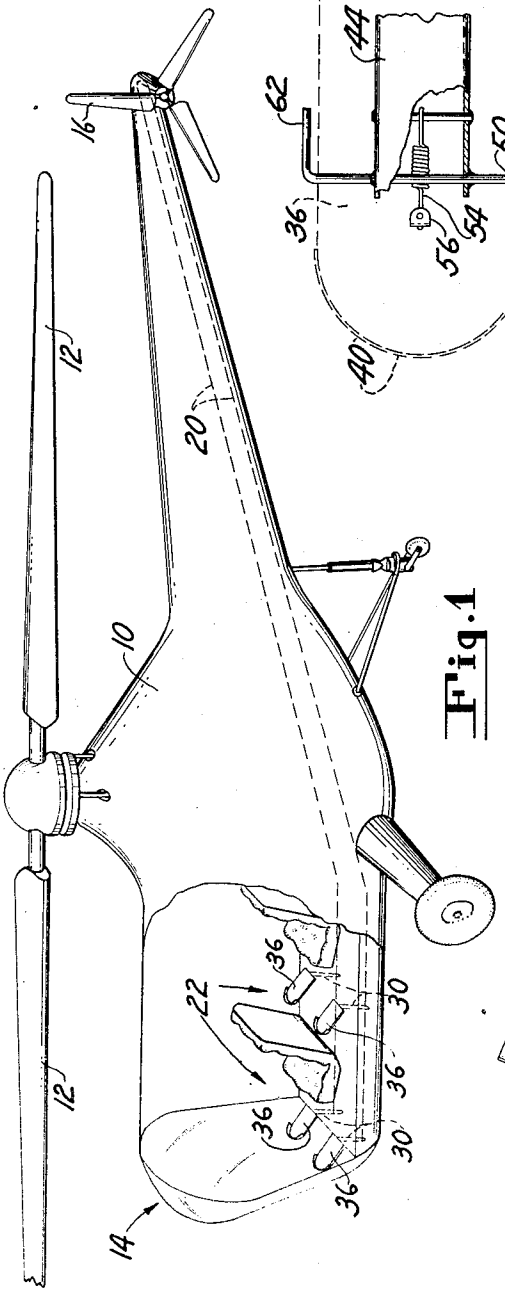


Fig. 1

Fig. 4

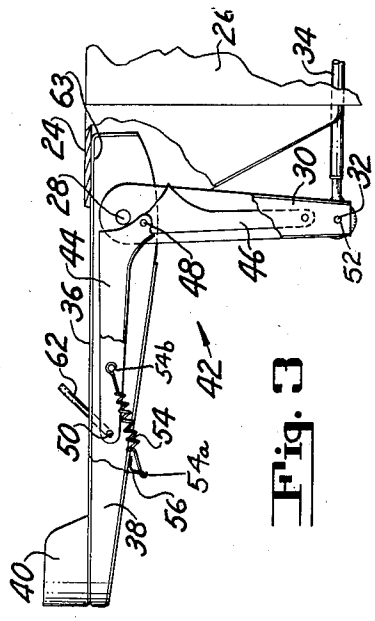


Fig. 3

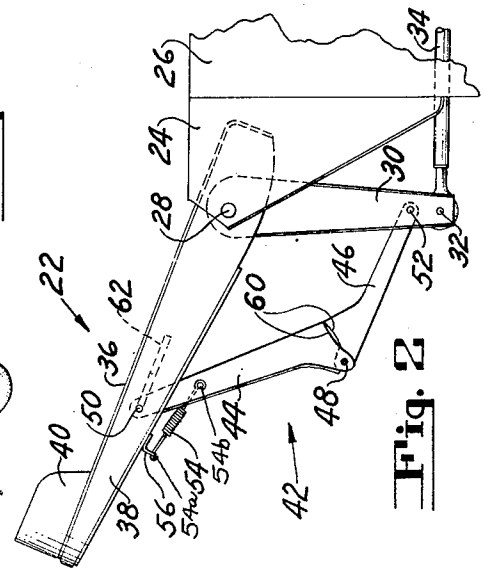


Fig. 2

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FOOTREST AND RUDDER PEDAL

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1 Claim. (Cl. 74—560)

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This invention relates to a device for controlling the heading of helicopters, which device is adapted for providing a footrest for an occupant of a seat thereof.

In observation type helicopters there are usually provisions for dual controls so that either occupant of the occupant's portion thereof can fly the ship. However, for normal operation and at times during operation when the pilots may change off in flying the ship, it is desirable that the occupant not flying the ship be provided with comfortable facilities therein. Hitherto, the occupant who was not flying the ship has been required to keep his hands and feet well away from the manual controls so as not to interfere with the operation of the ship by contact of an operating part with parts of his body. In other instances, the ship has been designed so as to provide extra space to place the feet of the occupant so as to keep parts of the body clear of the controls, but such structure is not capable of being placed in the smallest space conducive to the best configuration of the occupant's portion of the helicopter.

It is an object of this invention to provide means for controlling a helicopter, which means may be disabled to provide footrests for an occupant thereof.

A further object is to provide a device as set forth in the preceding object which will occupy a minimum of floor space in the helicopter.

The foregoing and other objects will be either obvious or pointed out as the description proceeds and includes the details of construction and the arrangement of parts of what is now considered to be a preferred embodiment thereof, as illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view of a helicopter with parts of the forward portion thereof broken away to show the arrangement of the interior;

Fig. 2 is a side elevational view of a foot pedal in an active position;

Fig. 3 is a view similar to Fig. 2 but showing the device in the inactive or footrest position; and

Fig. 4 is a partial plan view of Fig. 3.

Referring more in detail to the drawings, the helicopter is provided with a body 10 sustained in operation by rotor blades 12 suitably secured to the body and turned by an engine in any well-known manner, which body 10 has a forward occupant's portion 14. Also turned by the engine is a tail rotor 16 which has a variable pitch device for altering the thrust of the tail rotor 16 to control the heading of the helicopter, and also to

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counterbalance the torque of the main rotor blades 12. The pitch mechanism has not been shown but may be of that type shown in the patent of I. I. Sikorsky, No. 2,318,259. The pitch changing mechanism is controlled by a pair of cables 20 which lead to dual control pairs of foot pedals generally indicated by the reference character 22.

Referring now to Figs. 2, 3 and 4, the foot pedals are all alike and are mounted upon brackets 24 supported by a floor 26 of the helicopter. The brackets 24 have a pivot 28 which mounts a depending arm 30 which is connected by a pivot 32 to a rod 34 which connects the forward and rearward foot pedals 22 and also is connected with one of the cables 20. Also mounted upon the pivot 28 is a pedal member 36 which may be of pressed sheet metal having a depending flange 38 around its sides and a toe piece 40 extending upwardly from its foremost end. A collapsible strut mechanism 42 is made up of a first link 44 and a second link 46 pivoted together upon a pin 48 and separately fixed upon a pin 50 to the pedal 36 and pivoted on a pin 52 to the arm 30. A spring 54 is connected at 54*a* to a clip 56 secured to the pedal 36, which spring is connected to link 44 at 54*b* and biases the link 44 in a clockwise direction about the axis of pin 50 into a limiting position as shown in Fig. 2 in which abutting ends 60 of the links 44 and 46 engage each other to form a rigid strut connection between the pedal member 36 and the arm 30.

With the device in the pedal operative position as shown in Fig. 2, when an operator depresses the pedal 36, the strut mechanism 42 will transfer force to the arm 30 so that the rod 34 will be moved backwardly. Through the cable connection 20, the companion foot pedal of the pair will be raised an amount corresponding to the amount that the other pedal of the pair is depressed.

When it is desired to render a pedal 36 inactive, the pin 50 is rotated in a counterclockwise direction by an extension 62, to rotate the attached link 44 of the strut mechanism into the position shown in Fig. 3 in which the action of the spring 54 is no longer biasing the strut members 44 and 46 into a straightened position. It will be noted that in the Fig. 3 position of the strut mechanism the pedal 36 has moved about its pivot 28 until the shorter heel end of the pedal abuts a horizontal flange on bracket 24 which forms a portion of the floor and that in this position of the pedal the point 54*b* is located adjacent an imaginary line drawn between pivot 28 and point 54*a* so that any force produced by the spring is exerted against the pivot 28. Due to the weight

of the pedal and particularly the toe piece **40** thereof the pedal will remain in the Fig. 3 position until again placed in active position by the operator. In order for the operator to place the pedal in the active position again, it is only necessary to rotate the extension **62** in a clockwise direction as viewed in Figs. 2 and 3 so that the toggle links **44** and **46** will assume the position shown in Fig. 2.

With the device in the position shown in Fig. 3, as the other pedals are actuated, the depending arm **30** can rotate around its pivot **28** and the link **46** of toggle mechanism **42** can rotate around the pivot **48** and the pedal **36** will not be disturbed in its position wherein the top part of its rearmost portion **63** will abut the top flange of the bracket **24**.

While I have shown and described what is now thought to be the preferred form of this invention, obviously other modifications thereof will occur to those skilled in the art. For this reason, I wish not to be limited in my invention only to that form shown and described but by the scope of the following claim.

I claim:

In an aircraft having a floor, an actuatable member for controlling the aircraft, pilot operated control mechanism for said member including a pedal pivoted intermediate its ends adjacent said floor, said pedal having an operating portion forward of its pivot which normally projects above the floor and having a shorter abutment portion aft of its pivot movable into engagement with the floor, a foldable strut pivotally connected at one

of its ends to the operating portion of said pedal and pivotally connected at its opposite end to said actuatable member, said strut having a straightened operative position in which movement of said pedal about its pivot is transmitted through said strut to said actuatable member and also having a folded inoperative position, resilient means for biasing said strut into said straightened position in the normal operative position of said pedal including a tension spring connected between said pedal and said strut and adapted to have its connection to said strut disposed adjacent a line connecting the pivotal support for said pedal and the pivotal connection of said pedal to said strut in the folded position of the latter.

WILLIAM J. WEINFURT.

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