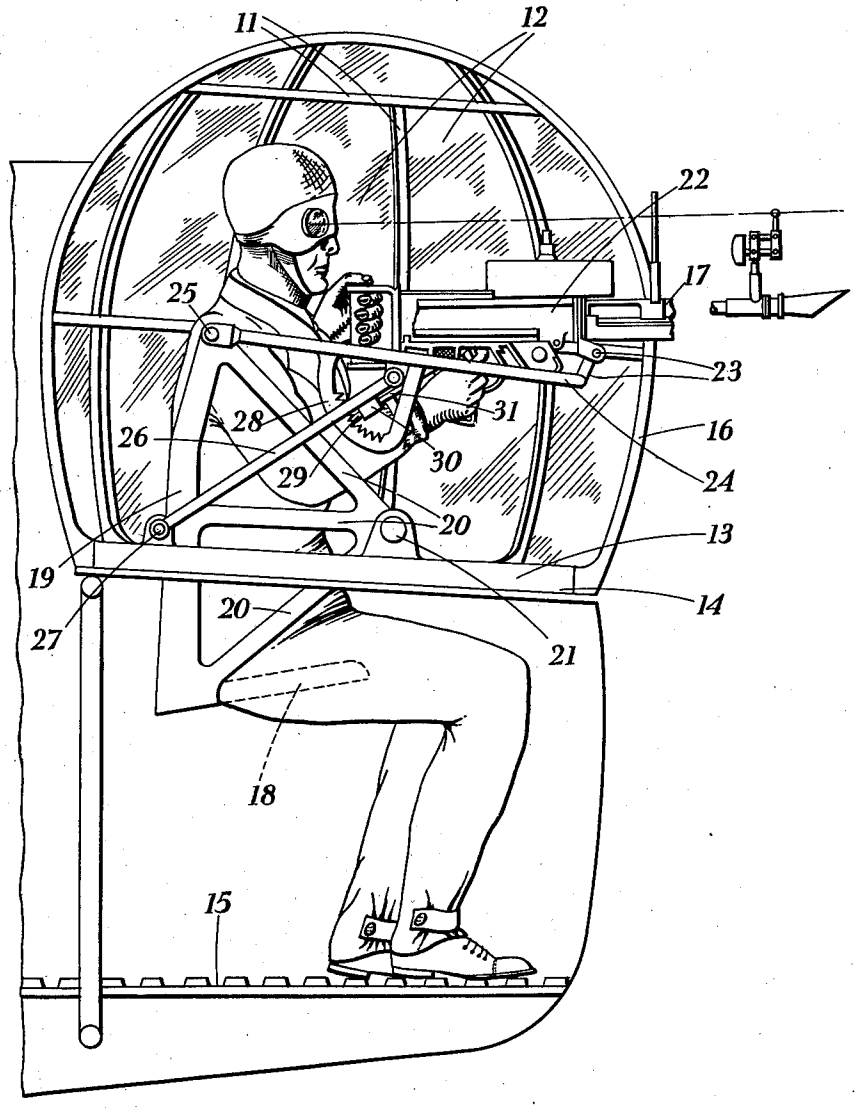
Feb. 25, 1936. C. V. MURRAY ET AL 2,032,300

GUN MOUNTING, PARTICULARLY FOR AIRCRAFT

Filed July 3, 1935 3 Sheets-Sheet 1

Fig. 1.



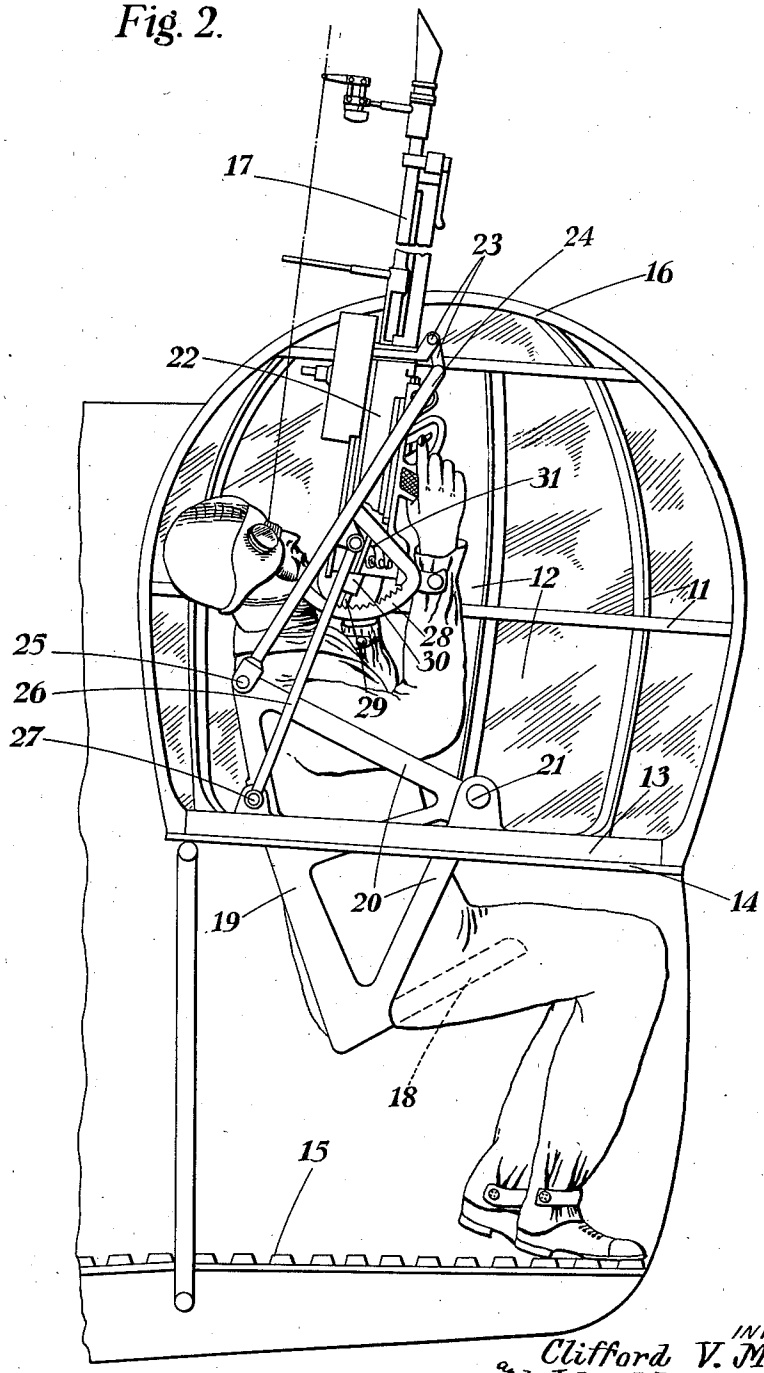
INVENTORS
Clifford V. Murray
and John Lloyd
BY
Mawhinney & Mawhinney
ATTORNEYS

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GUN MOUNTING, PARTICULARLY FOR AIRCRAFT

Filed July 3, 1935 3 Sheets-Sheet 2

Fig. 2.



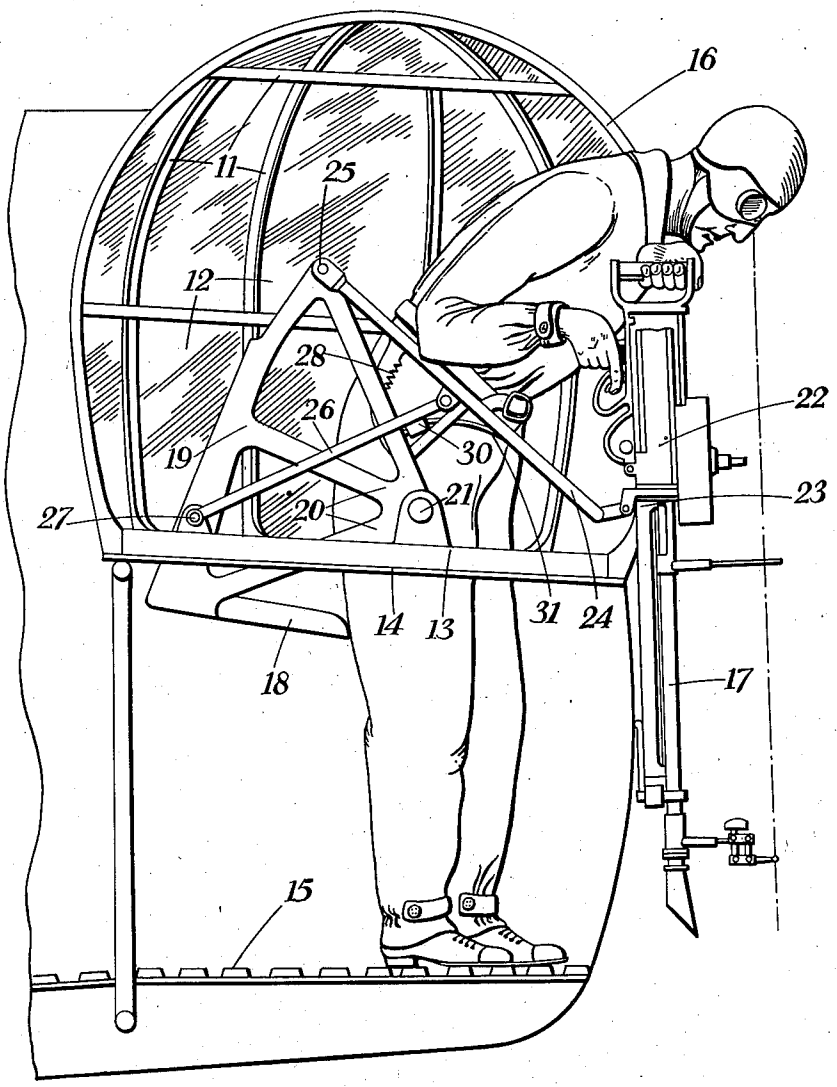
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ATTORNEYS.

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Filed July 3, 1935 3 Sheets-Sheet 3

Fig. 3.



INVENTORS
Clifford V. Murray
and John Lloyd
BY
Mawhinney & Mawhinney
ATTORNEYS.

Patented Feb. 25, 1936 2,032,300

UNITED STATES PATENT OFFICE

2,032,300

GUN MOUNTING, PARTICULARLY FOR AIRCRAFT

Clifford Vernon Murray and John Lloyd, Coventry, England, assignors to Sir W. G. Armstrong Whitworth Aircraft Limited, Coventry, England

Application July 3, 1935, Serial No. 29,716
In Great Britain November 8, 1933

5 Claims. (Cl. 89—37)

This invention relates to gun mountings, particularly for aircraft, such as comprise a frame, for use in raising and lowering the gun, on which the gun is hinged and a seat, for the gunner, which is pivoted directly upon a main support, the arrangement being such that the weight of the gun and frame is opposed to that of the seat.

The main object is to provide an improved arrangement with which the gunner is automatically supported in correct relationship to the gun in substantially every position thereof; and, in particular, to arrange for the gunner to be protected from wind pressure.

According to the main feature of the invention, the main support is a shell or turret which encloses the gunner, and the frame is pivotally linked to the turret and also pivoted directly upon the seat. Preferably the turret is rotatable about a more-or-less vertical axis, in a manner known per se, the hinged mounting of the gun on the frame allowing of only a small lateral movement.

According to a further feature of the invention, a gunner-enclosing shell or turret comprises a frame-work fitted with transparent panels and having a vertical slot in it through which the gun can fire, the frame on which the gun is hinged near its centre of mass being pivoted to two independent crossed links pivoted directly upon the turret and one of which is formed integrally with or constituted by the seat for the gunner.

According to a further feature, a gunner-enclosing turret has the gun frame pivoted directly upon the back rest or side portions with which the seat for the gunner is provided, the frame being linked elsewhere to the turret near the back of the seat, while this latter is directly pivoted forwardly on the turret.

In the accompanying diagrammatic drawings:—

Figure 1 is a view in elevation and shows one method of mounting a gun according to the invention, the gunner firing horizontally;

Figure 2 is a similar view but with the gunner firing vertically upwards; and

Figure 3 is a similar view but with the gunner firing vertically downwards.

The nearside bars of the enclosing shell or turret are omitted in each case for the sake of clearness.

Like numbers indicate like parts throughout the drawings.

The seat for the gunner is formed of metal or other material and has a saddle 18 and a back support 19. It is formed with side pieces 20 extending forwardly and pivotally attached at the forward ends 21 directly to each side of the turret. The gun 22 is mounted at about its centre of mass in a ring piece 23 so that it is rotatable within limits about its own axis. The ring piece is in turn universally hinged in a known manner to the centre of a U-frame 24 for movement within limits in two transverse directions. The ends of the U-frame 24 are directly pivoted at 25 to the upper part of the gunner's seat. Links 26 connect an intermediate point of each arm of the U-frame to the lower edge 13 of the turret, the connection being a pivotal one at each end of the links.

As will be clear from the illustrations, if the gunner in the position shown in Figure 1 bends his knees as to lower the seat whilst retaining his feet in the same position on the floor 15, the seat will be tilted back and the U-frame and links will elevate the gun towards the position shown in Figure 2.

If, on the other hand, the knees be straightened somewhat the seat will rise and the gun will be lowered, and may eventually reach the position shown in Figure 3. In this extreme position the seat or the U-frame 24 comes against a stop and the pilot may rise from the seat in order to sight the gun.

It will be appreciated that at all elevations of the gun the frame holds the gun at the correct distance from the gunner's eye, and the gun is brought to an elevation substantially correct by means of the frame. The final and accurate sighting of the gun, however, in order to obtain the correct elevation, is carried out by tilting the gun slightly on its pivot. Whilst doing this and whilst firing the gun, it is preferable that the seat and framework be rendered rigid, and for this purpose a notched arcuate bracket 28 is attached to an arm of the U-frame and is engaged by a plunger 29 supported in the lug 30 which is carried by the link 26. The plunger, which may be operated by a lever on the arm 24 through means outlined at 31, serves to hold the arm 24 and the link 26 in a fixed angular relationship so that the whole frame and seat become fixed relative to the turret.

The turret is a more or less parti-spherical shell comprising a framework 11 filled in with transparent panels 12, which are suitably of a material known under the registered trade-mark "Cellon". The shell has its lower edge 13 mounted through rollers or in other ways to revolve on a co-acting stationary ring 14. Beneath is a floor stationary relative to the turret, upon which floor the gunner's feet rest. The floor may con-

veniently have a rough surface to provide a good grip for the gunner's feet. By pushing with his feet in a sideways direction the gunner may revolve the turret for training purposes. The upper part of the turret is provided with a substantially vertical slot 16 through which the gun barrel 17 projects, the slot being wide enough to allow of a limited angle of training on the pivot piece 23 without movement of the turret. In order to permit the gunner to fire directly downwards in the position shown in Figure 3, the slot is preferably wide enough to admit the gunner's head. Sliding or other panels may be provided to close different parts of the slot.

What we claim as our invention and desire to secure by Letters Patent of the United States is:—

1. A gun mounting, particularly for an aircraft, comprising a shell through which the gun can be fired, a frame for supporting the gun, a seat for the gunner pivotally mounted for support directly upon said shell, said frame being pivotally mounted directly upon said seat, and a link interconnecting said frame and shell such that the weight of said seat is opposed to that of said gun and frame.

2. A gun mounting, particularly for an aircraft, comprising a shell having a slot in it through which the gun barrel can extend, said shell having a transparent panel in it, a seat for the gunner pivotally mounted at its forward portion directly upon said shell to support the seat, said seat having a back-post, a frame for supporting the gun, said frame being pivotally mounted upon said back-post, and a link interconnecting said frame and shell rearwardly of the seat supporting pivot such that the weight of the seat is opposed to that of the gun and the gun frame.

3. A gun mounting, particularly for an aircraft, comprising a shell through which the gun can be fired, said shell being rotatably supported for movement about a substantially vertical axis, a seat for the gunner pivotally mounted directly upon said shell, a frame for supporting said gun, said frame being pivotally mounted upon said seat, and a link interconnecting said frame and shell whereby the weight of said seat is opposed to that of said gun and frame.

4. A gun mounting, particularly for an aircraft, comprising a shell, said shell having a slot through which the gun barrel extends, a seat for the gunner pivotally supported directly upon said shell to swing thereon, a frame, means hingedly supporting said gun near its centre of mass from said frame, said frame being pivotally mounted upon said seat, and a link interconnecting said frame and shell, said link crossing the line joining the pivotal axis of said frame on said seat and that of said seat on said shell.

5. In a gun mounting, a main support, a seat for the gunner having a back-post and side portions, said side portions being pivotally mounted upon said main support to admit swinging of the seat thereon, a frame for supporting said gun, said frame being pivotally mounted upon said back-post, and a link interconnecting said frame and main support, the point of connection of said link with said shell being substantially in line with said back-post in all positions of said seat.

CLIFFORD VERNON MURRAY.
JOHN LLOYD.