Jan. 2, 1945. L. MOTLEY 2,366,642

GUN MOUNTING

Filed Dec. 29, 1942

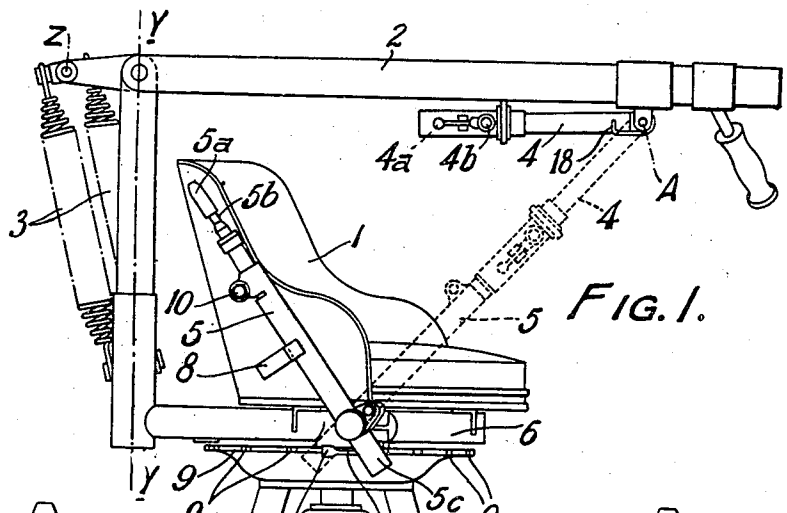


FIG. 1.

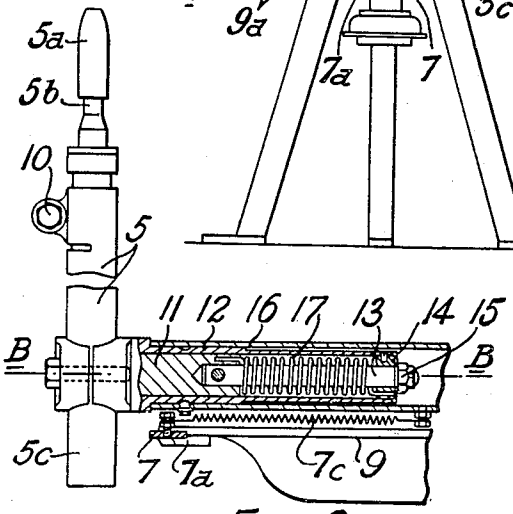


FIG. 2.

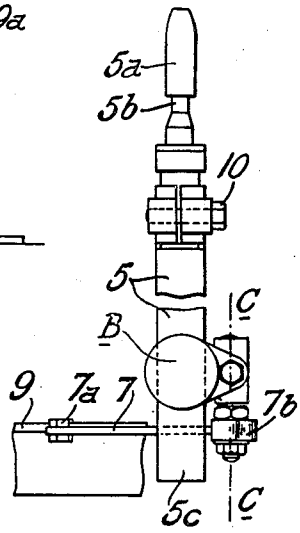


FIG. 3.

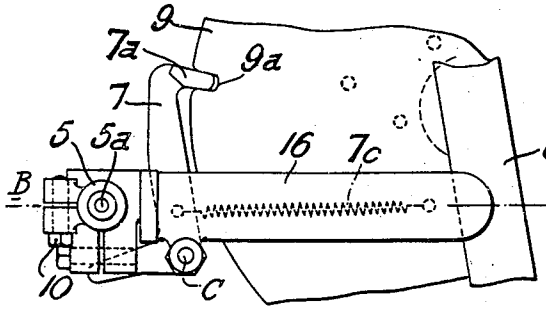


FIG. 4.

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GUN MOUNTING

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Application December 29, 1942, Serial No. 470,504
In Great Britain March 19, 1940

7 Claims. (Cl. 89—37)

This invention relates to means for securing pivotally mounted guns when the same are not in use, and refers particularly, but not exclusively, to the mountings of light anti-aircraft guns, such as machine guns and automatic rifles, which are mounted on motor vehicles or permanently fixed for ground defence against low flying aircraft.

In accordance with the invention I provide in a gun mounting for machine guns or automatic rifles in which the gun is mounted to swing freely—that is without the use of intermediate gearing—relative to a support, a device for securing the gun when not in use comprising two co-operating elements adapted to make secure engagement with one another and to be rapidly disengaged by means of a releasing handle, one of said elements being pivoted to the gun or a part on which the gun is rigidly mounted and the other element being pivoted to said support, said elements when disengaged from each other being each movable about its pivot to a normal position at which it is out of the way and quite clear of the other.

In those arrangements in which, as well as the gun or a part on which it is rigidly mounted being adapted to pivot relative to its support, said support is also rotatable about a vertical axis, the arrangement may be such that, when the element that is pivoted to the support is moved to the position to engage the other element, said support is locked against rotation.

In order that the invention may be the more clearly understood a gun mounting provided with locking means in accordance therewith will now be described, reference being made to the accompanying drawing, wherein:

Figure 1 is a general view of the gun mounting, the locking means being shown in full lines in the inoperative position, and in dotted lines in the operative position;

Figure 2 is an elevation shown partly in section of an element of the locking means and its mounting;

Figure 3 is an elevation of the same looking from the left of Figure 2; and

Figure 4 is a plan of the same.

Referring to this drawing the gun mounting is in general similar to that described in my prior United States specification No. 2,228,179. Thus said mounting comprises a rotatable seat 1 on which the gunner sits, and the gun (not shown) is rigidly mounted on a gun arm 2 passing to one side of the gunner, which gun arm turns with the seat so that the gun is always in front of the gunner and, in addition, is capable of rotating independently of the seat both about a vertical axis Y—Y and about a horizontal axis Z, located at the back of the seat. The gun arm 2 is balanced about the axis Z by means of springs 3. This construction is all similar to that described in said prior specification aforesaid and requires no further description.

The present arrangement comprises a locking device by which the gun arm 2 is locked against rotation, relative to the seat 1, about either of the axes Y—Y, Z, and simultaneously the seat itself is locked against rotation. This locking device is capable of being very rapidly released. Thus the mounting can be securely locked so that during transport its component parts will not swing about, and can be unlocked for action without delay.

This locking device comprises two co-operating parts 4 and 5 adapted to snap into secure engagement with one another and to be rapidly disengaged by means of a releasing handle 4b as hereinafter described, one part 4 of said parts being mounted on the gun arm 2 and the other part 5 on the seat structure. Thus, when said two structures are engaged as shown in dotted lines, the gun arm 2 is locked against movement about either of the axes Y—Y and Z. In addition, a locking element 7 for locking said seat against rotation about its axis is mounted on the seat structure, and this element 7 is automatically controlled, by means of the part 5, into and out of the locking position, according to whether said two parts 4 and 5 are engaged with or released from one another. Thus, when the gun is required for action all that is necessary is to disengage said two parts 4 and 5 whereupon the gun arm 2 and the seat 1 are instantaneously released for swinging about the said three axes.

More particularly, the upper part 4 of said two parts consists of a rod pivoted at one end to the gun arm 2 about an axis A parallel to the axis Z and the lower part 5 consists of a rod pivoted at one end to the seat structure about a horizontal axis B—B. By manipulating these two rods about their respective axes, and also manipulating the gun arm about its axes Y—Y, Z, these two rods may be brought into alignment, end to end, and they may be engaged together to form a single strut by virtue of an end projection 5a on the rod 5 entering an end bore hole in the rod 4, said end projection being formed with an annular recess 5b which "clicks" into engagement with a locking pawl 4a carried by the rod 4 and capable of release by a suitable handle 4b.

The upper rod 4 is biased about its axis A to

a limiting position alongside and underneath said gun arm, and the lower rod 5 is biased about its axis B—B to a limiting upright position, slightly sloping back, at the side of the seat where it rests in a bracket 8.

The aforesaid locking element 7 takes the form of a bell-crank lever pivotally mounted on the seat-supporting member 6 about a vertical axis C—C and having at one end a wedge-shaped tooth 7a adapted to engage in any of a number of notches or serrations 9a in the edge of a fixed disc 9, which is rigid with the tripod legs, and thereby lock the seat 1. Said bell-crank lever 7 is biased about its pivot by means of a spring 7c to the locking position and its end 7b remote from the tooth 7a lies in the path of the tail end 5c of the rod 5 beyond its pivotal axis B—B, so that, when said rod swings back to its normal or inoperative position, said bell-crank lever 7 is forced to the unlocking position. The locking element could of course take the form of a plunger instead of a bell-crank lever, said plunger being operated by the lower rod through a cam action.

In construction, the pivotal mounting of the rod 5 to the seat structure is effected by clamping said rod 5 rigidly to one end of a journal 11 which bears rotatably in a bearing 12. Said journal 11 has a rod 13 rigidly extending therefrom and passing rotatably through an end bearing 14 rigidly secured in the end of the bearing 12, a nut 15 being provided on the end of the rod 13 to prevent its return. Thus the rod 5, journal 11 and bearing 12 form one complete unit. This unit is mounted on the seat structure by the bearing 12 being rigidly secured in a tubular member 16 which in turn is secured to the tubular member 6 on which the seat is rigidly mounted. For biasing the rod 5 to its normal position, a spring 17 is provided biasing the journal 11 relative to its bearing 12. For biasing the upper rod 4 to its normal position a spring 18 is provided as shown.

The locking pawl 4a of the upper rod 4 is mounted at one end of a lever pivoted between its ends whose other end bears the handle 4b. This will be clear from the drawing.

The locking element 7 is pivotally mounted on the tubular member 16 as best shown in Figures 3 and 4.

The rod 5 is made in two telescoping parts, tightened and loosened by the nut 10 as will be clear from the drawing, so that its length, and therefore the angle at which the gun arm 2 is locked, may be adjusted.

It will be noted that although the gun arm must, when locked, be at a given predetermined position relative to the seat, the locking of the whole relative to the fixed mounting can be at any angular position about the axis of the seat.

What I claim and desire to secure by Letters Patent is:

1. In a gun mounting of the class described, a support which is rotatable about a vertical axis, a part on which a gun is adapted to be rigidly mounted, means for mounting said part so that it is adapted to swing freely relative to said support, a device for securing the gun when not in use comprising two co-operating elements, one of said elements being pivoted on said part on which said gun is rigidly mounted, the other element being pivoted to said support, means for detachably interlocking said two elements with one another to secure the gun in rigid relation to said support, a releasing handle mounted on one of said elements for rapidly disengaging the interlocking means aforesaid from each other to render the gun ready for use, said elements when disengaged from each other being each movable about its pivot to a normal position at which it is out of the way and quite clear of the other, and means responsive to the movement of said element which is pivoted to said support to the position for engaging the other element, for locking said support against rotation.

2. In a gun mounting of the class described, a support which is rotatable about a vertical axis, a part on which a gun is adapted to be rigidly mounted, means for mounting said part so that it is adapted to swing freely relative to said support, a device for securing the gun when not in use comprising two co-operating elements, one of said elements being mounted on said part on which said gun is rigidly mounted, the other element being pivoted to said support, means for detachably interlocking said two elements with one another to secure the gun in rigid relation to said support, a releasing handle mounted on one of said elements for rapidly disengaging the interlocking means aforesaid from each other to render the gun ready for use, and means responsive to the movement of said element which is pivoted to said support to the position for engaging the other element, for locking said support against rotation.

3. In a gun mounting of the class described, a fixed part, a support which is rotatable relative to said fixed part about a vertical axis, a part on which a gun is adapted to be rigidly mounted, means for mounting said gun mounting part so that it is adapted to swing freely relative to said support, a device for securing the gun when not in use comprising two co-operating elements, one of said elements being mounted on said part on which said gun is rigidly mounted, the other element being pivoted to said support, means for detachably interlocking said two elements with one another to secure the gun in rigid relation to said support, a releasing handle mounted on one of said elements for rapidly disengaging the interlocking means aforesaid from each other to render the gun ready for use, a locking member mounted on said support and movable in response to the movement of the pivoted element, in such a way that it engages lockingly with, and disengages from, said fixed part according to whether said pivoted element is in the position to engage the other element or is at another out of the way inoperative position, respectively.

4. In a gun mounting of the class described, a fixed part, a support which is rotatable relative to said fixed part about a vertical axis, a part on which a gun is adapted to be rigidly mounted, means for mounting said gun mounting part so that it is adapted to swing freely relative to said support, a device for securing the gun when not in use comprising two co-operating elements, one of said elements being mounted on said part on which said gun is rigidly mounted, the other element being pivoted to said support, means for detachably interlocking said two elements with one another to secure the gun in rigid relation to said support, a releasing handle mounted on one of said elements for rapidly disengaging the interlocking means aforesaid from each other to render the gun ready for use, a movable locking member mounted on said support, means for biasing said locking member to a position at which it engages lockingly with the fixed part, and means operable when the pivoted element is moved to an out of the way inoperative position,

for moving said locking element in opposition to its bias out of engagement with said fixed part, and when said pivoted element is moved to the position to interlockingly engage the other element, said locking element is permitted to engage lockingly with said fixed part.

5. In a gun mounting of the class described, a fixed part, a support which is rotatable relative to said fixed part about a vertical axis, a part on which a gun is adapted to be rigidly mounted, means for mounting said gun mounting part so that it is adapted to swing freely relative to said support, a device for securing the gun when not in use comprising two co-operating elements, one of said elements being mounted on said part on which said gun is rigidly mounted, the other element being pivoted to said support, means for detachably interlocking said two elements with one another to secure the gun in rigid relation to said support, a releasing handle mounted on one of said elements for rapidly disengaging the interlocking means aforesaid from each other to render the gun ready for use, means for biasing said pivoted element to an out of the way inoperative position when it is disengaged from the other element, a movable locking member mounted on said support, means for biasing said locking member to a position at which it engages lockingly with the fixed part, and means operable when the pivoted element moves under its bias to said inoperative position for moving said locking element in opposition to its bias out of engagement with said fixed part, and when said pivoted element is moved to the position to interlockingly engage the other element, said locking element is permitted to engage lockingly with said fixed part.

6. In a gun mounting of the class described, a rotatable gunner's seat, means for mounting a gun on said seat so that it is adapted to swing freely relative to said seat about axes both for traverse and elevation, which axes are located behind said seat, a device for securing the gun when not in use, comprising two rods, one of said rods being pivoted at one end to the means on which said gun is mounted, the other rod being pivoted to said seat, means for detachably interlocking said rods in coaxial engagement with each other at their ends remote from their pivots, on being pressed together, to secure the gun in rigid relation to said seat, a releasing handle mounted on one of said rods for actuating said interlocking means to permit said rods to be readily disengaged from each other to render the gun ready for use, said rods when disengaged from each other being each movable about its pivot to a normal position at which it is out of the way and quite clear of the other, and means responsive to the movement of said rod which is pivoted to said seat to the position for engaging the other rod, for locking said seat against rotation.

7. In a gun mounting of the class described, a fixed part, a gunner's seat rotatable relative to said fixed part, means for mounting a gun on said seat so that it is adapted to swing freely relative to said seat about axes both for traverse and elevation, which axes are located behind said seat, a device for securing the gun when not in use, comprising two rods, one of said rods being pivoted at one end to the means on which said gun is mounted, the other rod being pivoted to said seat, means for detachably interlocking said rods in coaxial engagement with each other at their ends remote from their pivots, on being pressed together, to secure the gun in rigid relation to said seat, a releasing handle mounted on one of said rods for actuating said interlocking means to permit said rods to be readily disengaged from each other to render the gun ready for use, said rods when disengaged from each other being each movable about its pivot to a normal position at which it is out of the way and quite clear of the other, means for biasing each of said rods to said normal position, a movable locking member mounted on said seat, means for biasing said locking member to a position at which it engages lockingly with the fixed part aforesaid, and means operable when the said rod which is pivoted to the seat moves under its bias to said normal position, for moving said locking element in opposition to its bias, out of engagement with said fixed part, and, when said last named rod is moved to the position to interlockingly engage the other rod, said locking element is permitted to engage lockingly with said fixed part.

LEWIS MOTLEY.