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GUN MOUNT ASSEMBLY

Filed Jan. 5, 1956

3 Sheets-Sheet 1

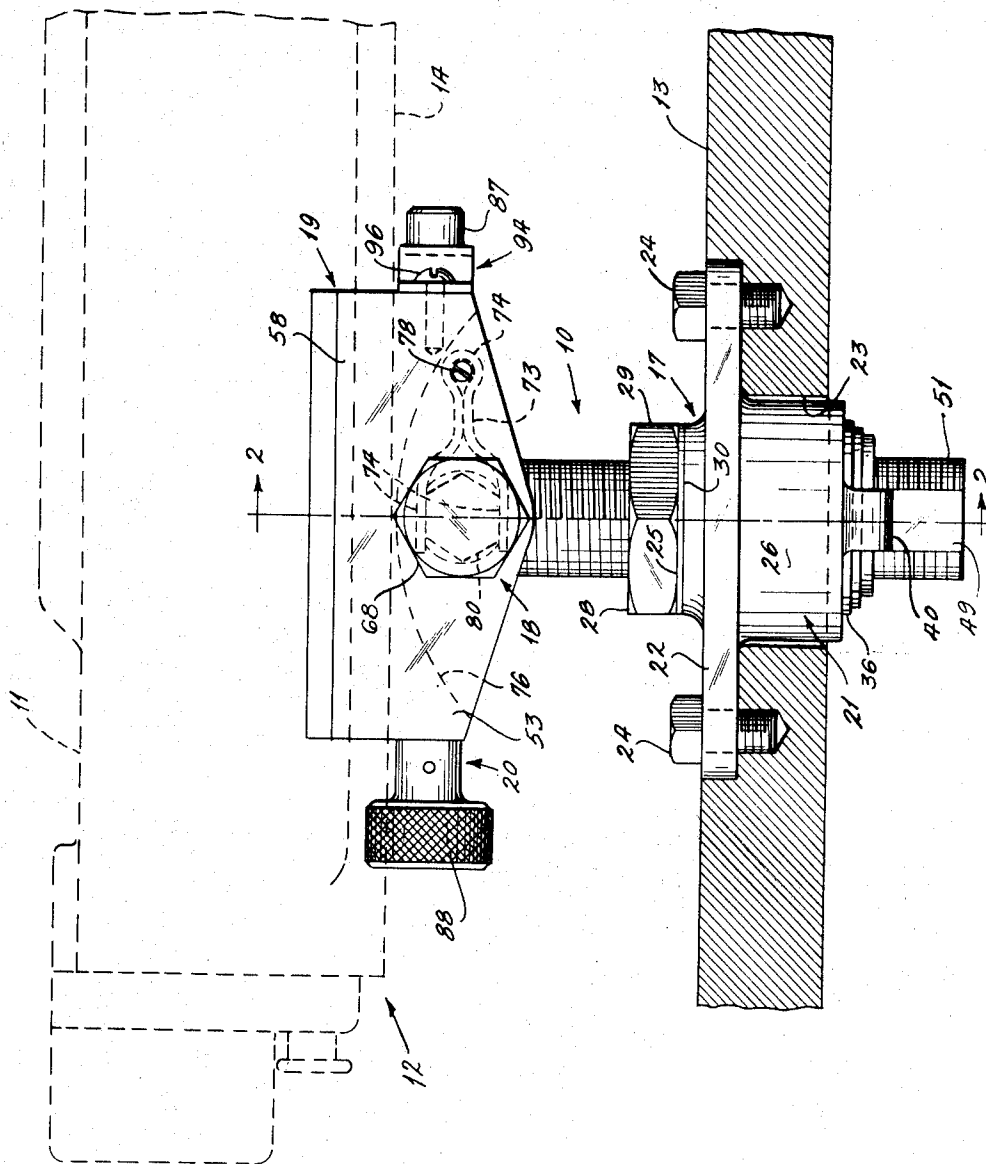


FIG. 1.

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FIG. 4.

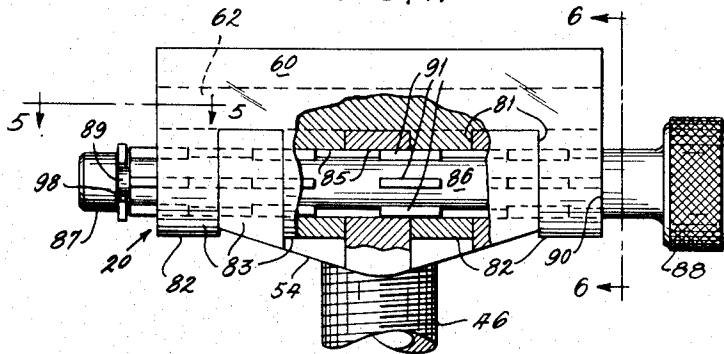


FIG 5

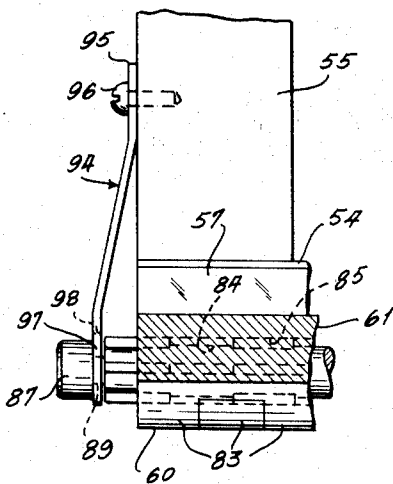
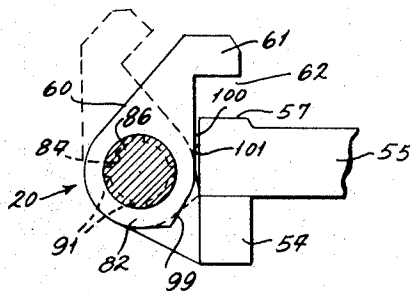


FIG 6



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GUN MOUNT ASSEMBLY

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This invention relates generally to ordnance and more particularly to improvements in gun mount assemblies.

The principal object of the present invention is to provide a gun mount assembly facilitating rapid and accurate azimuth and elevational adjustments of a gun mounted thereon.

Another object is to provide a gun mount assembly having quick release coupling means for rapidly and easily emplacing and removing a gun from the assembly.

Another object is to provide a gun mount assembly adapted to emplace a variety of light caliber automatic guns without the need for adapted couplings, the assembly being simple and sturdy in construction but sensitive for obtaining the adjustments desired with a high degree of accuracy.

These and other objects and advantages will become apparent hereinafter.

Briefly, the invention comprises a gun mount assembly including carrier means for slidably supporting a gun thereon, elevation adjusting means for non-rotatable vertical movement of the carrier means, azimuth adjusting means for relative horizontal movement between the carrier means and elevation adjusting means, and latch means associated with the carrier means and releasably lockable therewith for retaining the gun in slidable position on the carrier means.

The invention also consists in the parts and in the combinations and arrangements of parts hereinafter described and claimed. In the accompanying drawings which form a part of this specification and wherein like numerals refer to like parts wherever they occur:

Fig. 1 is a side elevational view of a gun mount assembly embodying the present invention and showing a gun (in phantom outline) mounted thereon,

Fig. 2 is a transverse view taken along line 2—2 of Fig. 1 and showing the details of the gun mount assembly partly in sectional elevation, and partly broken away,

Fig. 3 is an enlarged fragmentary view of the elevational adjustment mechanism for the gun mount assembly,

Fig. 4 is a fragmentary side elevational view, partly broken away, of the gun mount assembly opposite to the side shown in Fig. 1,

Fig. 5 is a fragmentary top plan view taken substantially along line 5—5 of Fig. 4, and

Fig. 6 is a fragmentary end elevational view taken substantially along line 6—6 of Fig. 4.

Referring now to Fig. 1 of the drawings, a gun mount assembly 10 embodying the present invention is shown supporting the receiver housing 11 of an automatic gun 12 (illustrated in phantom lines) on a suitable emplacement platform or base 13. The gun 12 is also provided with a front swivel mount (not shown) so that vertical or horizontal movement of the receiver housing 11 by operation of the gun mount assembly 10 will align the bore of the gun 12 in the desired elevational or azimuth adjustment. The receiver housing 11 is provided with conventional longitudinal gibs 14 by which the receiver housing 11 is slidably mounted on the gun mount assembly

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10 so that smooth rectilinear recoil of the gun 12 during firing is facilitated.

Briefly, the gun mount assembly 10 comprises an elevational adjustment mechanism 17 for raising and lowering the receiver housing 11 of the gun 12 relative to the base 13, an azimuth adjustment mechanism 18 co-operably associated with the elevational adjustment 17 for moving the receiver housing 11 horizontally relative to the elevational adjustment, a slide carrier 19 for supporting the receiver housing 11 of the gun 12 for adjustment by the mechanisms 17 and 18, and a latch mechanism 20 associated with the slide carrier 19 for releasably retaining the gun gibs 14 in slidable position thereon.

As shown in Figs. 1 and 2, the elevational adjustment 17 includes a mounting plate 21 having a peripheral flange 22, which is secured, if desired, in a suitable stepped opening 23 in the base 13 by machine screws 24 or the like. The mounting plate 21 has a shoulder 25 located above the flange 22 and a body portion 26 extending therebelow, a smooth vertical bore 27 being formed through the mounting plate 21 in which a bushing 28 is rotatably positioned.

The upper end of the bushing 28 is provided with a hexagonal head 29 or the like so that it may be engaged by a suitable tool (not shown) for effecting rotation of the bushing 28 in the mounting plate 21. An annular abutment shoulder 30 is formed adjacent to the head 29 for sliding abutment with the shoulder 25 of the mounting plate 21. The lower end of the bushing 28 is provided, as seen in Fig. 3, with an annular groove 31 having a beveled lower face 32, the groove 31 being spaced from the bushing shoulder 30 a predetermined distance so that it will be positioned below the lower end of the mounting plate body 26 when the shoulders 25 and 30 are in abutment. The bushing 28 is also provided with an axial threaded bore 33.

A lock washer or clip 36 having a central opening 37 (Fig. 3) circumscribes the lower end of the bushing 28 adjacent to the groove 31 and is positioned against the lower end of the mounting plate 21, Figs. 2 and 3. An upstanding lug 38 is formed on the outer periphery of the washer 36 for engagement in a notch 39 formed in the outer periphery of the body portion 26 of the mounting plate 21. The lock washer 36 is also provided with a downwardly curved and inwardly extending resilient tongue 40 having a flat free end surface 41, the tongue being formed on the side of the washer 36 diametrically opposite to the lug 38.

A thrust ring 42, which is preferably a resilient split ring having an opening 43 smaller than the diameter of the annular bushing groove 31, has a beveled face 44 complementary to the beveled face 32 of the annular groove 31, Fig. 3. The thrust ring 36 is positioned in the groove 31 by enlarging the ring so that it will slide over the end of the bushing 28. In use the thrust ring 42 has a wedging action exerting an upward force on the lock washer 36 maintaining it in frictional contact with the lower end of the mounting plate 21 and exerting a downward force on the bushing 28 so that the shoulders 25 and 30 of the mounting plate 21 and bushing 28 are maintained in frictional abutment.

A shaft or post 45 having an externally threaded periphery 46 is threadedly received in the bore 33 of the bushing 28 and is vertically adjustable relative thereto. The upper end of the vertical shaft 36 is provided with a transverse sleeve 47 having an internally threaded bore 48, the sleeve 47 forming an integral portion of the azimuth adjustment 18 as will become apparent hereinafter. A flat longitudinal surface 49 (Figs. 1, 2 and 3) is formed on the outer periphery 46 of the shaft 45 and extends from the lower end of the shaft to a point that will be positioned above the lower end of the bushing 28 when

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the sleeve 47 of the shaft 45 is in abutment with the upper surface of the bushing head 29. This flat surface 49 of the shaft 45 is contacted by the free end 41 of the lock washer tongue 40 to prevent relative rotational movement therebetween. Inasmuch as the lock washer 36 is in frictional contact with the mounting plate 21 and has its lug 38 positioned in the notch 39, no appreciable rotation of the lock washer 36 takes place and the shaft 34 is maintained in non-rotating relationship with the mounting plate 21. As shown best in Fig. 2, the shaft 45 may be provided with a smooth axial bore 50 extending upwardly from its lower end to a point adjacent the sleeve 47 in which a guide shaft 51 may be positioned for strengthening and supporting the shaft 45 on which the entire gun mount assembly 10 and receiver housing 11 of the gun 12 are carried.

When elevational adjustment of the gun mount assembly 10 is desired, the bushing head 29 is engaged with a suitable tool and rotated in the mounting plate 21. Inasmuch as the shaft 45 does not rotate relative to the mounting plate 21 because of the abutment of the lock washer tongue 40 with the flat surface 49 of the shaft 45, rotation of the bushing 28 effects only vertical movement of the shaft 45. Accordingly, the transverse sleeve 47 on the upper end of the shaft 45 is elevated or lowered, but does not turn.

Referring to Fig. 2, it will be seen that the slide carrier 19 includes a pair of longitudinal side members 53 and 54 connected in spaced relation by a pair of transverse members 55 (Figs. 5 and 6), which are also spaced apart to provide an elongated or rectangular transverse opening 56. Each of the side members has a horizontal slide surface 57 on which the receiver housing 11 of the gun 12 is slidably positioned, and one of the side members 53 has an upstanding portion 58 integrally connected thereto to form a fixed channel 59 in which one of the gun gibs 14 is positioned. The other side member 54 carries a latch member 60 having an upstanding portion 61 which is formed to define a channel 62 opposite to the fixed channel 59 for receiving the other of the gun gibs 14 therein. It is now apparent that a guideway is formed by the channels 59 and 62 in which the gun gibs 14 are slidably retained. However, the latch member 60 is pivotally connected to the side member 54 by the latch mechanism 20 so that the channel 62 may be opened up and the gun 12 removed from the gun mount assembly 10, as will become apparent hereinafter.

The azimuth adjustment 18 includes a screw 65 which is externally threaded as at 66 intermediate its end portions for coaction with the threaded bore 48 of the transverse sleeve 47. One end portion of the screw 65 has a smooth cylindrical periphery 67 and is provided with a hexagonal head 68 or the like for engagement by a tool (not shown) to effect adjustment of the screw in the sleeve. The other end portion of the screw 65 is reduced in diameter as at 69 to form an abutment 70. The screw 65 is rotatably journaled in aligned openings 71 and 72 in the side members 53 and 54 of the carrier 19 so that the screw 65 and sleeve 47 are positioned in the opening 56 between the transverse members 55. The length of the screw 65 is predetermined so that the head 68 will abut the side member 53 of the carrier 19 when the abutment 70 at the reduced periphery 69 of the screw 65 is in contact with the side member 54.

The azimuth adjustment also includes retaining means for maintaining the screw 65 in assembled position with the carrier 19, the retaining means comprising a bifurcated spring clip 73 having spaced legs 74 and a loop 74', as shown in the broken lines in Fig. 1. The smooth periphery 67 of the screw 65 is provided with an annular groove 75 which is spaced from the head 68 so that it is positioned between the outer and inner walls of the side member 53. The side member 53 is provided with an arcuate groove 76 in alignment with the groove 75 so that the bifurcated end or spaced legs 74 of the

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clip 73 may be inserted into the groove 75. The side member 53 is also provided with a screw opening 77 in position to have the loop end 74' of the clip 73 aligned therewith for receiving a screw 78 or the like through the loop 74'. Accordingly, the clip 73 is secured in fixed position in the arcuate groove 76 and prevents transverse displacement of the screw 65.

It is now apparent that the slide carrier 19 is mounted on the shaft 45 of the elevational adjustment 17 by the screw 65. When azimuth adjustment of the gun mount assembly 10 is desired, the screw head 68 is engaged and rotated with a suitable tool (not shown). The threaded engagement of the screw 65 with the sleeve 47 effects transverse horizontal movement of the slide carrier 19 relative to the sleeve 47, which is maintained in fixed position by the elevational adjustment mechanism 17. The bottom surface of the groove 75 in the screw 65 may be formed into a hexagonal shape, as at 80, so that the legs 74 of the spring clip 73 will be compressively engaged with opposed flat surfaces thereof. Therefore, accidental rotation of the screw 65 is prevented since such rotation would cause the legs 74 of the clip 73 to be spread further apart thereby increasing their compressional force against the bottom surface of the groove 75.

Referring now to Figs. 4, 5, and 6, it will be seen that the side member 54 is provided with a plurality of notches 81 adapted to receive depending projections 82 formed on the latch member 60 therein. Therefore, the side member 54 and the latch member 60 have aligned, but alternate, ears or bosses 83. A longitudinal bore 84 is formed through the bosses 83 of each of the members 54 and 60, the bosses 83 being broached in any suitable manner to provide axially directed slots 85 circumferentially spaced about the internal periphery of the bore 84. As shown in Fig. 4, a latch pin 86 is slidably positioned in the bore 84 for retaining the side member 54 and latch member 60 in assembled pivotal relationship and to lock the member 60 in its engaged position (Fig. 2). The pin 86 includes an end portion 87 and a knurled knob 88 at the other end, an annular groove 89 being formed in the pin 86 adjacent to the end portion 87. The periphery of the pin 86 adjacent to the knob 88 is enlarged to provide an abutment 90 for positioning the pin 86 in locking relation with the side member 54 and latch member 60. The pin 86 is also provided with mutilated splines 91 spaced about its outer periphery for sliding engagement in the slots 85.

The latch mechanism 20 also includes a spring clip 94 (Fig. 5) of resilient metal having one end 95 attached to the transverse member 55 by a cap screw 96 or the like. The other end 97 of the clip 94 is offset from the end 95 and has a slot 98 in which the pin 86 is received at the groove 89 so that the clip 94 is engaged with the end portion 87. Therefore, the clip 94 exerts a force on the end portion 87 (to the left in Fig. 5) biasing the abutment 90 into contact with the latch member 60 at the opposite end of the latch mechanism 20. When the abutment 90 is thus engaged, the mutilated splines 91 are positioned across the interstices of adjacent side and latch member bosses 83 whereby the side and latch members 54 and 60 are locked in fixed relationship. The length of each section of spline 91 is predetermined so that when the knob 88 is grasped and pulled away (to the right in Fig. 4) from the latch member 60 against the biasing action of the spring clip 94, the splines 91 will be retracted into the bosses 83 of the movable latch member 60. Accordingly relative rotation between the latch member 60 and the side member 54 may be effected by turning knob 88 so that the channel 62 will be opened up and the gun 12 may be removed, as described hereinbefore.

Referring to Fig. 6, the projections 82 of the latch member 60 are provided with beveled faces 99, the lower edge of which is at a greater distance from the turning axis of the pin 86 than the vertical surface 100 of the latch member 60 adjacent to the vertical face 101 of the side member 54. Accordingly, the pivotal relationship of the

members 54 and 60 is limited by the abutment of the face 99 against the vertical surface 101 of the side member 54. Although the degree of pivoting permitted by the construction shown in Fig. 6 is substantially 45°, the beveled face 99 may be formed to permit any desired increment of limited pivotal movement between the members.

When it is desired to move the latch member 60 back into locking position with the side member 54, the latch member 60 may be pushed or slapped into a vertical position and the pressure of the spring clip 94 will move the pin 86 into locking position with the members 54 and 60 as soon as the splines 91 are aligned with the slots 85.

It is now apparent that a novel gun mount assembly 10 having a mutilated spline type of quick release latch mechanism for rapidly emplacing or removing a gun 12 has been provided. It is also apparent that quick and accurate elevational and azimuth adjustment mechanisms have been provided for aligning the bore of the gun 12. The length of the longitudinal channels 59 and 62 provide a guideway for rectilinear recoil of the gun 12 relative to the gun mount assembly 10, and are adapted to emplace a variety of automatic guns therein.

It is to be understood that the foregoing description and the accompanying drawings have been given only by way of illustration and example, and that changes and modifications in the present disclosure, which will be readily apparent to all skilled in the art, are contemplated as within the spirit and scope of the present invention, which is limited only by the claims which follow.

What I claim is:

1. A gun mount assembly comprising carrier means having gun supporting surfaces and a first channel defining element adapted to enclose a gib on one side of a gun; latch means including a latch member releasably lockable with said carrier means to provide a second channel defining element adapted to enclose a gib on the opposite side of the gun, said latch member and carrier means having aligned alternate bosses with a bore extending therethrough, said bore having spaced axial slots about its periphery, a latch pin slidable in said bore and having interrupted splines adapted to extend across the interstices of adjacent bosses to prevent relative movement between said latch member and said carrier means, and resilient clip means biasing said latch pin into latch locking position; elevational adjustment means adapted to raise and lower said carrier means; and azimuth adjustment means adapted to effect lateral movement of said carrier means.

2. The latch means according to claim 1 wherein said latch pin is movable against the biasing action of said clip means to retract said splines into said bosses of said latch member so that said second channel defining element may be pivoted away from said first channel defining element, said latch member bosses being provided with beveled faces adapted to contact said carrier means to limit the pivotal movement of said second channel defining element.

3. A gun mount assembly comprising carrier means including spaced longitudinal side members adapted to have the gibs of a gun positioned thereon, one of said side members having an upstanding channel defining portion integrally connected thereto, the other of said side members having a notch formed therein to provide transversely extending bosses; latch means including a latch member having a boss positioned in the notch in said

other side member and an upstanding channel defining portion, said bosses of said other side member and said latch member having aligned bores with axially-directed circumferentially-spaced slots formed about its periphery, a latch pin slidably positioned in said bores of said bosses and having interrupted splines received in said slots, and clip means adapted to releasably maintain said splines in latch and side member locking position, said latch pin being movable against the biasing action of said clip means to move said splines to a position permitting the pivotal movement of said latch member relative to said other side member; elevational adjustment means adapted to raise and lower said carrier means relative to a fixed base; and azimuth adjustment means cooperably associated with said elevational adjustment means for providing relative lateral movement between said carrier means and said elevational adjustment means.

4. In combination, a gun having a receiver housing with longitudinal gibs on opposite sides thereof; a front swivel mount for said gun; a base; and a rear gun mount assembly comprising a slide carrier having longitudinal side members with supporting surfaces for said gun gibs, one of said side members having a gib receiving channel portion formed integral therewith, and said other side member having a plurality of spaced transverse bosses formed thereon; a latch mechanism including a latch member having a plurality of spaced transverse bosses alternately aligned with said side member bosses, said bosses having a peripherally slotted bore receiving a latch pin therethrough, said latch pin having interrupted splines slidably positioned in the peripheral slots of said bore and adapted to extend across the interstices of adjacent latch and side member bosses in gib locking position, and first resilient clip means releasably maintaining said latch member in gib locking position, said latch member having a gib receiving channel opposite said first mentioned gib receiving channel portion whereby said receiver housing may be slidably retained on said slide carrier and said latch pin being movable axially to position said splines in the bosses of said latch member whereby said latch member is adapted to be pivoted away from the supporting surface of said one side member; an elevational adjustment including a mounting member fixed to said base, a bushing rotatable in said mounting member, a post threadedly engaged with said bushing, second resilient clip means in frictional contact with said post and said mounting member to prevent relative rotation therebetween, and thrust means for maintaining said second clip means in frictional contact with said post and mounting member; an azimuth adjustment including a sleeve fixedly secured to said post, a screw threadedly engaged with said sleeve and having smooth peripheral ends rotatably journaled in said side members of said slide carrier, and third resilient clip means in frictional contact with said screw to retain it in assembled relationship with said slide carrier.

References Cited in the file of this patent

UNITED STATES PATENTS

2,346,172	Lennon et al. _____	Apr. 11, 1944
2,350,122	Martin _____	May 30, 1944
2,383,985	Ogg _____	Sept. 4, 1945
2,386,015	Thompson _____	Oct. 2, 1945
2,410,614	Trotter _____	Nov. 5, 1946
2,612,819	Johnson _____	Oct. 7, 1952