C. D. WITHEROW.

MACHINE GUN MOUNT.

APPLICATION FILED AUG. 16, 1915.

1,196,197.

Patented Aug. 29, 1916.

3 SHEETS—SHEET 1.

Fig. 1.

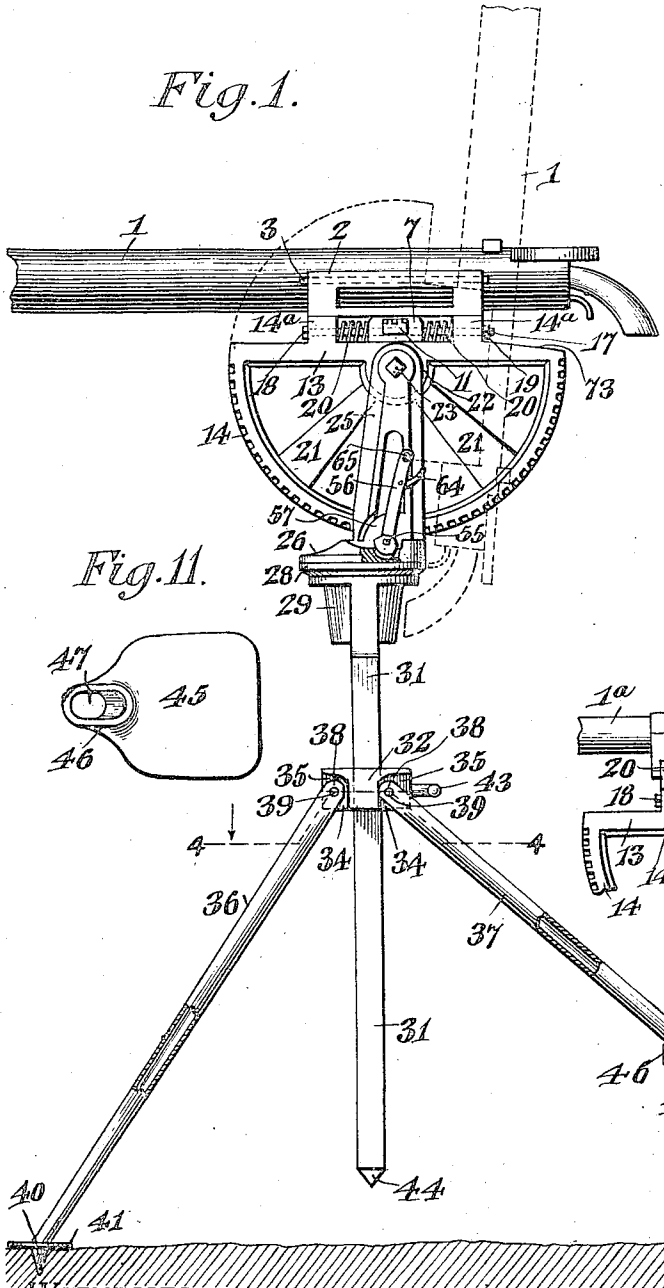


Fig. 13.

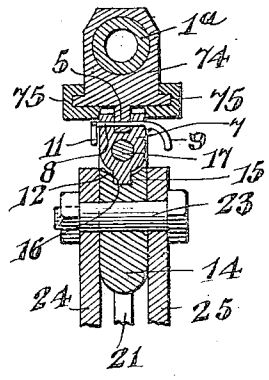
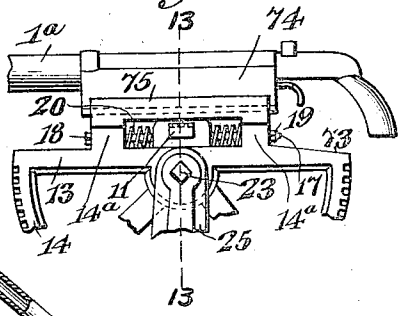


Fig. 11.

Fig. 12.





WITNESSES:

Jas. K. McCathran

F. J. Chapman

Clark D. Witherow,

INVENTOR

BY

E. G. Siggers

Attorney

C. D. WITHEROW.

MACHINE GUN MOUNT.

APPLICATION FILED AUG. 16, 1915.

1,196,197. Patented Aug. 29, 1916.

3 SHEETS—SHEET 2.

Fig. 2.

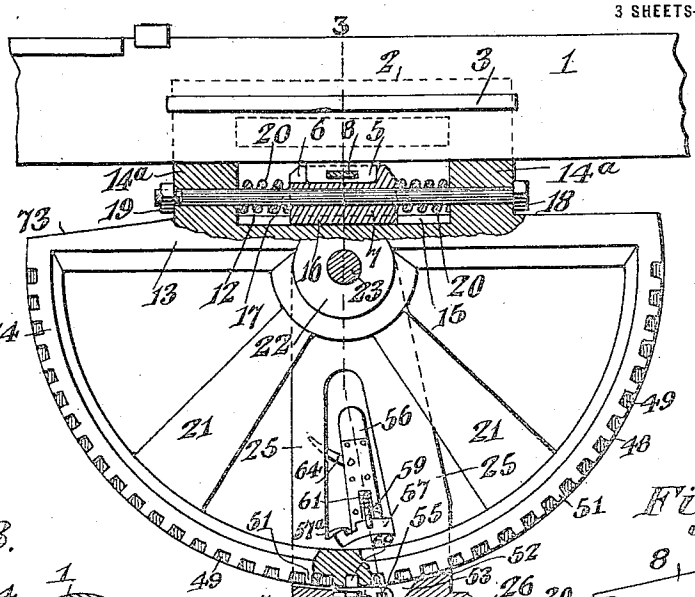


Fig. 10.

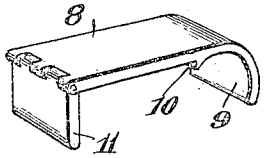


Fig. 3.

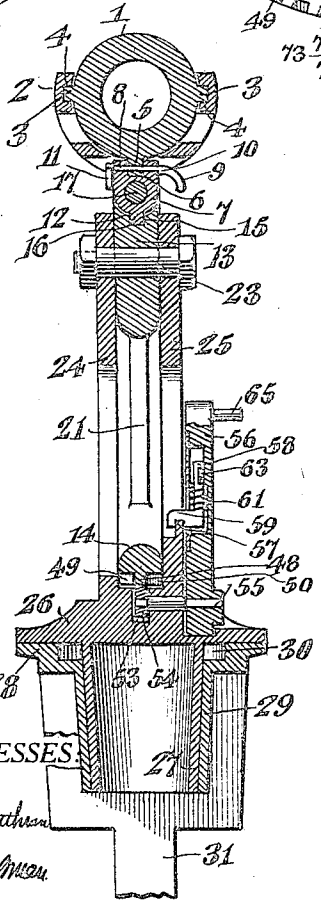
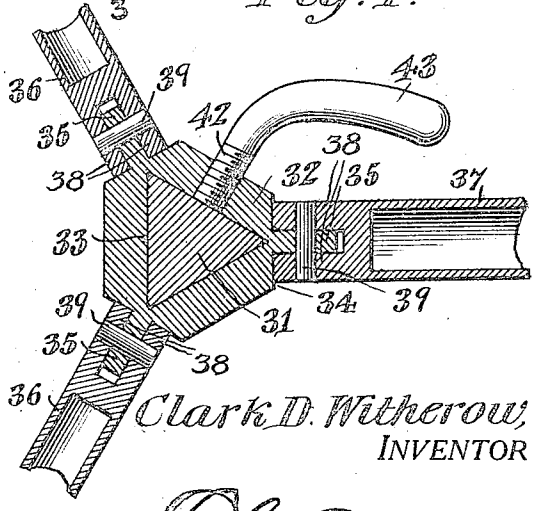


Fig. 4.



WITNESSES

Jas. K. McCutchen

F. T. Chapman

Clark D. Witherow,

INVENTOR

BY E. G. Siggers

Attorney

C. D. WITHEROW.

MACHINE GUN MOUNT.

APPLICATION FILED AUG. 16, 1915.

1,196,197. Patented Aug. 29, 1916.

3 SHEETS—SHEET 3.

Fig. 5.

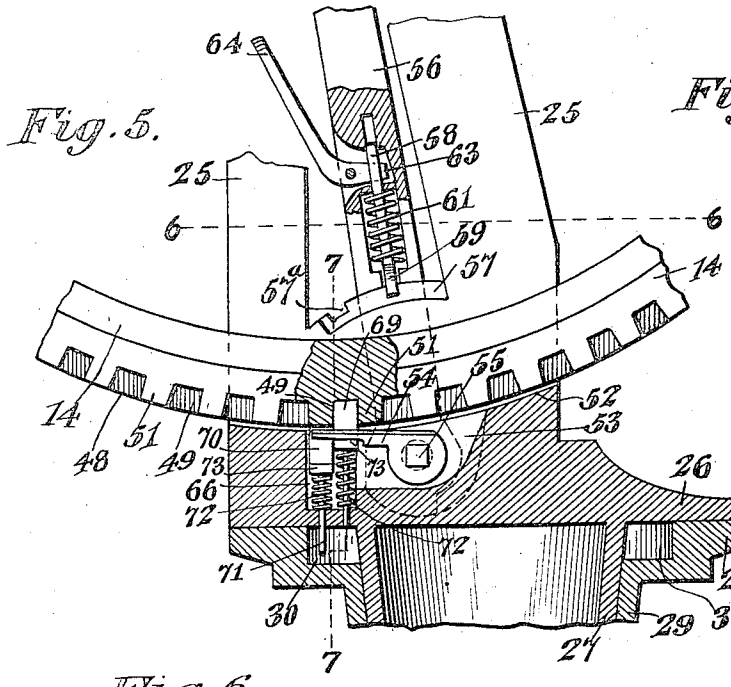


Fig. 9.

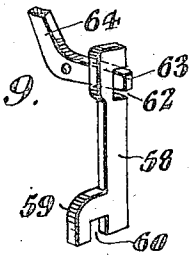


Fig. 8.

Fig. 6.

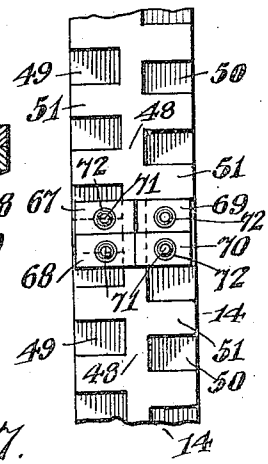
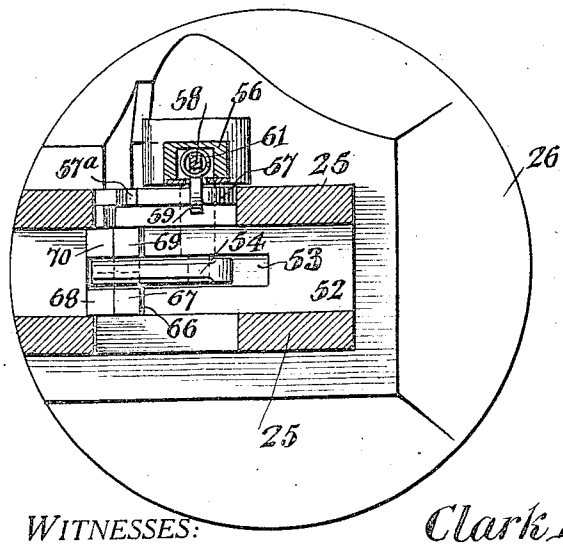
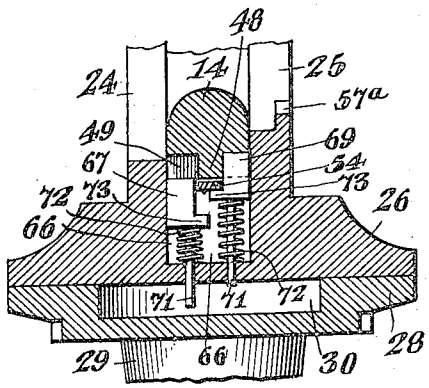


Fig. 7.





WITNESSES:

Jas. K. McCathran

F. T. Chapman.

Clark D. Witherow, INVENTOR

BY E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

CLARK DAVID WITHEROW, OF BROOKVILLE, PENNSYLVANIA.

MACHINE-GUN MOUNT.

1,196,197. Specification of Letters Patent. Patented Aug. 29, 1916.

Application filed August 16, 1915. Serial No. 45,772.

To all whom it may concern:

Be it known that I, CLARK D. WITHEROW, a citizen of the United States, residing at Brookville, in the county of Jefferson and State of Pennsylvania, have invented a new and useful Machine-Gun Mount, of which the following is a specification.

This invention has reference to machine gun mounts and is designed more particularly to provide a light portable mount for the purpose whereby the operator has control over the mount in a manner to vary the elevation and sweep of the gun at will and to lock the gun in any desired elevation so that on obtaining a range accuracy of aim is not interfered with because of unsteadiness or nervousness on the part of the operator.

In accordance with the present invention the gun is provided with a tripod to insure a broad, firm base, while the gun supporting portion of the mount is capable of being raised or lowered in the tripod throughout a considerable extent. The element of the mount directly supporting the gun is furnished with both forward and rear shock absorbers and with a rockable portion and a positively engaging latch permitting elevation or depression of the gun by minute steps in any one of which the gun may be locked for swinging on a substantially vertical axis. By releasing the latch the gun may be elevated to and beyond the vertical, such degree of elevation being advantageous when firing at aeroplanes and the like. Provision is made for the quick mounting or demounting of the gun and for meeting certain conditions, especially such as are met in firing at a high angle.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications come within the scope of the appended claims.

In the drawings: Figure 1 is an elevation with some parts in section of the gun mount with a machine gun thereon, and showing in dotted lines the extreme position of elevation. Fig. 2 is a vertical section with some parts in elevation of a portion of the gun mount of Fig. 1 but viewed from the opposite side and drawn on a larger scale. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section similar to and of a fragment of the showing of Fig. 2 but drawn on a larger scale and illustrating some parts hidden in Fig. 2. Fig. 6 is a section on the line 6—6 of Fig. 5 with the rack segment omitted. Fig. 7 is a section on the line 7—7 of Fig. 5. Fig. 8 is a bottom plan view on the scale of Fig. 5 of a fragment of the rack segment and the latch blocks for holding the segment in adjusted positions. Fig. 9 is a perspective view of a portion of a lock bar for controlling the latch arm in turn controlling the latch blocks. Fig. 10 is a perspective view of a flat connecting bolt for connecting the gun supporting member to the mount. Fig. 11 is a bottom plan view of a seat for the operator. Fig. 12 is an elevation of another form of gun supporting member. Fig. 13 is a section on the line 13—13 of Fig. 12.

Referring to the drawings there is shown a machine gun 1 without any attempt to show any of the mechanism of the gun or any particular type of such gun, since the present invention has nothing to do with any particular form of machine gun.

In Fig. 1 and associated figures the gun 1 is carried by a supporting member in the form of a cradle 2, the gun being provided with side ribs 3 slidable in grooves 4 in the cradle and with an elongated ear 5 adapted to seat in a groove 6 in a block 7. The ear 5 and block 7 on opposite sides of the groove 6 have matching passages for the reception of a flat connecting bolt 8 whereby the ear and block are removably secured together. At one end the connecting bolt is formed with a finger piece 9 suitably shaped for grasping, and adjacent to the finger piece the bolt has a lug or shoulder 10 limiting its movement in traversing relation to the block 7. At the end of the bolt 8 remote from the handle 9 there is hinged a flap 11 which when the bolt is in traversing relation to the block 7 hangs pendently and so prevents accidental withdrawal of the bolt, but does not interfere with the withdrawal of the bolt purposely, since the flap 11 may be readily alined with the bolt and is constructed to readily pass through the open-

ings in the block 7 and ear 5 designed to be traversed by the bolt.

The block 7 is adapted to an elongated channel 12 in one edge of a bar 13 connecting the ends of a segmental rack 14 of somewhat greater extent than 180°. The bar 13 is arranged to one side of the diameter of the rack so as to be on that side of the axis of the rack remote from the main body of said rack. The bar 13 has the channel 12 on that side of the bar remote from the rack and extending between two spaced lugs 14^a projecting from the channel edge or side of the bar 13. The channel 12 is formed with a central longitudinal groove 15 in which is seated a tongue 16 on the block 7. Extending through the lugs 14^a and also through the block 7 is a rod 17 having a head 18 at one end and threaded to receive a nut 19 at the other end, but it will be understood that this rod which is designed to guide and retain the block 7 in the channel 12 may be otherwise formed. The space between the adjacent faces of the lugs 14^a is considerably greater than the length of the block 7 and this block is normally centralized with relation to the lugs by coiled springs 20 surrounding the rod 17 and each abutting a lug 14^a and the corresponding end of the block 7. The purpose of the springs 20 is to take up recoil of the gun and also the rebound thereof so that when the gun is in action violent motion is practically eliminated and steadiness of aim is correspondingly obtained.

The bar 13 and spokes 21 of the rack 14 radiate from a hub 22 mounted on a pivot pin or bolt 23 carried by adjacent substantially parallel standards 24, 25, respectively, rising from a base 26 having an axial tapered neck 27 on the side of the base remote from the standards 24. Moreover, the standards or posts 24 are located near one edge of the base 26, whereby the posts or standards and the pivot 23 are eccentric to the longitudinal axis of the neck 27.

The base 26 rests upon a circular flange 28 in radial relation to a cup 29 receiving the neck 27 and having its interior similarly tapered so that the neck has an elongated and snug yet free bearing in the cup. The flange 28 is formed adjacent to the cup with a circumferential groove 30 to provide for certain parts carried by the base 26 so that the base and parts carried thereby may be rotated in the cup without interference.

Extending axially from the cup and providing a support for the same is a stem 31, which stem is of non-circular shape and preferably triangular in cross-section although not necessarily so. The stem is of suitable length, which in practice may approximate two feet more or less, and traverses a tripod head 32 having a triangular passage 33 for the stem 31.

The tripod head 32 is formed with recesses 34 and ears 35 therein for the reception of the corresponding ends of tripod legs 36, 37, said legs having their ends bifurcated as shown at 38 to straddle the ears 35 to which they are connected by pivot pins 39. Of course it will be understood that any suitable means for connecting the tripod legs to the head, other than those described, may be employed. Each leg is hollow for the sake of lightness and terminates at the end remote from the head 32 in angle spurs 40 and at the junction of each spur with the respective leg there is provided a laterally extended plate 41 designed to rest upon the supporting surface with the spur entering the support to thereby prevent displacement of the tripod leg.

The head 32 has a set screw 42 tapped therethrough in position to clamp against the stem 31 and the screw 42 is provided with an angle handle 43 or other means for its manipulation. That end of the stem 31 remote from the cup 29 may be pointed as indicated at 44, so that if desired the stem may be forced into the ground and so constitute a support for the gun in the absence of the tripod.

The leg 37 is made longer than the legs 36, so that when the head 32 is approximately level the leg 37 makes a more acute angle with the ground than the other legs and is utilized to carry a seat 45 with an extension 46 at one end provided with an elongated opening 47 therethrough shaped to clamp on the leg 37 with the seat projecting therefrom, but so related to the leg 37 that the seat is readily moved along the leg to any position of adjustment.

With a gun mounted as so far described and with the manipulating end of the gun on the same side of the upright axis of the mount as the posts or standards 24, the gun may be moved about the longitudinal axis of the neck 27 to any degree desired and the gun may be elevated or lowered about the axis of the pivot 23 from a point far below the horizon completely to the zenith and for a few degrees beyond the zenith, this latter position being made possible with the gun close to the pivot 23 by the out of center or eccentric position of the posts 24 and 25. Because of the relatively great extent of rise and fall permitted by the length of the stem 31 the gun may be arranged in a comparatively low position for approximately horizontal shooting and may be elevated to a relatively high position for vertical shooting, in which latter case ample room is provided for the operator to sight vertically and for a short distance on the operator side of the vertical. This provides an especially valuable feature in the event of shooting at aeroplanes or other air vessels, since the operator is enabled to obtain

a line on the air vessel and follow to the overhead position, and then by swinging the gun about continue the attack as the air vessel proceeds on its course. This feature greatly enhances the chance of hitting the air vessel.

In order to relieve the operator from the tension of maintaining the gun in any position with respect to elevation, provision is made for locking the gun in any desired position of elevation within the entire range of movement from a point below the horizon to the zenith and beyond the zenith.

The rack segment 14 is provided with a central peripheral rib or web 48 on opposite sides of which are two rows of sockets 49, 50, respectively, with the sockets of one row in staggered relation to those of the other row. Furthermore, the sockets are separated by ledges or plateaus 51 each of which may have a breadth about the same as that of a socket. The arrangement is such that each socket has one edge opposite the middle portion of a plateau between two sockets on the other side of the web 48 of the segment and the other edge opposite the mid point of a socket on the other side of the web.

The head 26 has a ledge 52 between the posts 24 and 25, and this ledge is curved in conformity with the curvature of the rack segment 14 so that the plateaus or teeth 51 come into close relation to the curved portion of the ledge. Extending longitudinally of the ledge is a recess 53 conforming in position to the web 48. This recess has lodged in it a radial latch arm 54 mounted on one end of a rock shaft 55 journaled in the head 26 and extending to one side of one of the posts at which point it has attached to it a radial arm 56 rising from the axis of the shaft 55 so as to rock across one face of the corresponding post. The arm 56 is arranged adjacent to a curved plate 57 having a single notch 57ª therein. The curvature of the plate 57 is on an arc having the axis of the shaft 55 as its center and the arm 56 carries a lock bar 58 movable lengthwise of the arm and provided with a laterally extended angle nose 59 forming between it and the bar a recess 60 into which the plate 57 engages. The arm 56 is suitably recessed to contain and guide the lock bar with the extension of the nose end 59 which projects to one side of the arm 56 and the bar 58 is urged toward the plate 57 by a spring 61 housed in the arm 56. At the end of the bar 58 remote from the nose 59 the bar is provided with a notch 62 into which is received one end 63 of a pivoted latch lever 64 carried by the arm 56 in readily accessible position. The end of the arm 56 remote from the shaft 55 is provided with a handle 65 by means of which the arm 56 may be rocked as desired, while the latch lever 64 is so positioned with respect to the handle 65 that it may be manipulated by the same hand operating the arm 56 and at the same time.

The recess 53 leads at one end into another recess 66 extending laterally of the recess 53 and deeper into the head 26. This recess is as wide as the ledge 52 and in it are lodged four blocks 67, 68, 69 and 70, respectively, these blocks constituting latch blocks or dogs. Each block 67 to 70 is provided with a stem 71 extending through the portion of the head forming the lower wall of the recess 66 and between said wall and the block the stem 71 is surrounded by a spring 72 tending at all times to move the block toward the rack segment 14 where in the path of the block. Each block 67 to 70 is provided with a laterally extended tongue 73 in position to be engaged by that end of the latch arm 54 remote from the shaft 55. The blocks 67 to 70 are arranged in pairs on opposite sides of the web 48 with the tongues 73 of one pair of blocks projecting toward the similar tongues of the other pair of blocks and underriding the web 48 and at the same time being overridden by the free end of the arm 54. These latch blocks or dogs 67 to 70 are of such size that any one of the blocks will enter a corresponding one of the sockets 49 or 50, as the case may be, between two adjacent plateaus or teeth 51. Because of the staggered arrangement of the sockets and the even arrangement of the blocks but one block at a time can enter a socket in the rack segment. Assuming, for instance, that the block 69 is lodged in a socket 50 in the showing of Fig. 8, the block 70 will be on the next adjacent plateau 51, while the two blocks 67 and 68 both engage upon the same plateau and hence neither can enter a socket 49. The movement of the rack segment 14 to the extent of half the width of a socket 49 or 50 from the position shown in Fig. 8 will cause another one of the dogs to enter a corresponding socket. It is thus possible to adjust the gun carriage by the mount through extents represented by half the circumferential length of a dog receiving socket.

The tendency of the springs 72 is to move the latch arm 54 in a direction which will carry the arm 56 away from the notch 57ª and when the lock bar 58 is moved out of the notch 57ª some one of the springs 72 propels the arm 56 in the direction which will move the latch bar 58 on to the smooth part of the segment 57 provided one of the sockets 49 or 50 is in the path of the dog controlled by the spring 72 under consideration. In any event a very slight rocking movement of the segment 14 will bring about the conditions permitting a dog to enter a socket 49 or 50, whereby the gun mount is locked against movement about the pivot 23.

When, however, the lock bar 58 is engaged in the notch 57ª the latch arm 54 is then in such position that all the dogs 67 to 70 are moved in a direction against the action of the springs 72 and away from the rack segment 14. Under such circumstances the gun may be rocked on the pivot 23 at the will of the operator and without interference from the locking means. The latch arm 54 is in line with the web 48 so that at no time can it engage any one of the sockets 49 and 50. That end of the bar 13 toward the stock end of the gun is beveled lengthwise, as shown at 73, so that when the rack segment is rocked from the horizontal beyond the zenith it may be there locked by the latch dogs engaging the beveled portion 73, since this beveled portion is then nearer to the axis of rotation of the head 27 than are the dogs.

In Figs. 12 and 13 there is shown a block 74 slidable in oppositely disposed channel members 75 carried by and formed with the lugs 14ª. The block 74 carries a gun 1ª which may be of a different type from the gun 1 requiring a somewhat different carrier.

The gun mount shown and described is adapted to various types of machine guns and the only change that is necessary in most instances is to appropriately construct the gun supporting member.

What is claimed is:—

1. A machine gun mount, comprising a support having a substantially upright pivotal axis and provided with upstanding means thereon to one side of said pivotal axis, another pivotal support mounted on the upper end of the upstanding means upon a substantially horizontal axis and to one side of the upright axis, and means for locking the second-named pivotal support upon its axis, said means engaging said second support upon the same side of the upright axis as the horizontal axis of said second support, whereby the second-named pivotal support is movable to elevate the gun progressively to and beyond the zenith.

2. A machine gun mount, comprising a pivotal support on which the gun may be turned about an upright axis, another pivotal support participating in the turning movements of the first support and permitting movements of the gun for elevation, the pivotal axis of the second-named support being eccentric to the pivotal axis of the first-named support, and means for locking the second support on its pivotal axis and located on the same side of the upright pivotal axis as the pivotal axis of the second support, whereby said second-named support may have a range of movement to direct the gun to a point below the horizon and then moved progressively to and beyond the zenith.

3. A machine gun mount, comprising a rotatable head movable about a substantially upright axis, a support erected on the head to one side of the axis of rotation of the head, carrying means for the gun on said support and mounted thereon to move about a substantially horizontal axis, and means on the head for locking the carrying means for the gun and located on the same side of the upright pivotal axis of the head as the support erected on the latter, whereby the carrying means for the gun may be moved progressively on a substantially horizontal axis to and beyond the zenith.

4. A machine gun mount comprising a rotatable head movable about a substantially upright axis, a support erected on the head eccentric to the axis of rotation, and carrying means for the gun on said support erected on the head and movable on a substantially horizontal axis, said carrying means being provided with a device for positively locking it in different positions of adjustment about its substantially horizontal axis and said locking device being provided with means for positively holding it in a position to release the carrying means for free movement about a substantially horizontal axis.

5. A machine gun mount comprising a member movable about an upright axis, a rack segment carried by said member and rockable about a substantially horizontal axis eccentric to the first-named axis and provided with means for carrying the gun, and locking means for the rack segment mounted on the first-named member and movable to lock and release the rack at will, said locking means having means for positively holding it in the position for releasing the rack.

6. A machine gun mount, comprising two members one mounted for sweeping movements of the gun and the other carried by the first-named member and mounted for elevation of the gun, the axis of movement of the second-named member being eccentric to that of the first-named member, and means for locking the second-named member carried by the first-named member on the same side of the axis of the first-named member as the axis of the second-named member, whereby the gun has a range of progressive movement sufficient to move the gun to point to and beyond the zenith when the axis of movement of the first-named member is vertical.

7. A machine gun mount, comprising two members one having a pivotal support about which it may be turned for sweeping movements in a substantially horizontal plane when its axis of turning is vertical, and the other member having a pivotal support on which it may be rocked for elevation and which is located on the first-named member

to one side of the axis of the pivotal support of the first-named member, and means for locking the second-named member located on the same side of the pivotal axis of the first-named member as the pivotal axis of the second-named member, whereby the range of progressive movement of the gun is such that it may be directed to a point below the horizontal and then elevated continuously to point toward and beyond the zenith.

8. A machine gun mount comprising a rotatable member movable about an upright axis, a rockable rack segment carried by the first-named member and movable about a substantially horizontal axis when the axis of the first member is vertical, said rack segment comprising peripheral rows of notches and intervening teeth arranged in alternation on opposite sides of a mid line, and locking means for the rack comprising a plurality of dogs arranged in opposition to engage a notch between two teeth on one side of the mid line when the dog on the other side of the mid line is in engagement with the outer end of a tooth.

9. In a machine gun mount, a segmental rack mounted for varying the elevation of the gun and provided with a peripheral mid rib and rows of sockets and intervening teeth on opposite sides of the mid rib with the sockets and teeth on one side in alternation with those on the other side of the mid rib, and spaced dogs in opposition on opposite sides of the mid rib, said dogs being adapted to the sockets between the teeth whereby one dog will enter a socket while the other dogs engage the outer ends of respective teeth.

10. In a machine gun mount, a segmental rack for supporting the gun and mounted to permit variations in elevation of the gun, said rack having peripheral series of sockets and intervening teeth on opposite sides of a circumferential mid line with the sockets and teeth on one side in alternation with those on the other side of the mid line, pairs of oppositely disposed dogs on opposite sides of the mid line and constantly constrained to enter the sockets, a rockable latch arm in position to engage all of the dogs simultaneously, and manipulating means for the latch arm for moving any one of the dogs engaged in a socket from said socket to release the rack segment.

11. In a machine gun mount, a segmental rack for supporting the gun and mounted to permit variations in elevation of the gun, said rack having peripheral series of sockets and intervening teeth on opposite sides of a circumferential mid line with the sockets and teeth on one side in alternation with those on the other side of the mid line, pairs of oppositely disposed dogs on opposite sides of the mid line and constantly constrained to enter the sockets, a rockable latch arm in position to engage all of the dogs simultaneously, and manipulating means for the latch arm for moving any one of the dogs engaged in a socket from said socket to release the rack segment, said manipulating means being provided with locking and releasing means whereby when the manipulating means is locked all the dogs are locked against movement into any of the sockets.

12. In a machine gun mount, a rockable rack segment with means for supporting the gun to vary the elevation of the latter, said rack segment having peripheral series of sockets with intervening teeth on opposite sides of an intermediate circumferential web with the sockets and teeth on one side of the web alternating with those on the other side of the web, a pair of latch dogs for each series of sockets with the pairs of latch dogs on opposite sides of the intermediate web and with the dogs of one pair in direct opposition to those of the other, each dog being provided with a spring constantly urging it to enter a socket, a rockable latch arm in the path of all the dogs and movable to hold the dogs from entrance into any socket, and manipulating means for the latch arm having means for locking it in position to hold all the dogs from entrance into any of the sockets.

13. In a machine gun mount, a rockable rack segment with means for supporting the gun to vary the elevation of the latter, said rack segment having peripheral series of sockets with intervening teeth on opposite sides of an intermediate circumferential web with the sockets and teeth on one side of the web alternating with those on the other side of the web, a pair of latch dogs for each series of sockets with the pairs of latch dogs on opposite sides of the intermediate web and with the dogs of one pair in direct opposition to those of the other, each dog being provided with a spring constantly urging it to enter a socket, a rockable latch arm in the path of all the dogs and movable to hold the dogs from entrance into any socket, and manipulating means for the latch arm having means for locking it in position to hold all the dogs from entrance into any of the sockets, said manipulating means comprising a rockable arm with a spring actuated latch bar and a latch lever controlling the bar, and a guide plate with a notch therein for receiving the lock bar whereby the manipulating means may be positively locked in position to hold the latch arm in engagement with all the dogs to in turn hold the dogs from movement into any of the sockets.

14. In a mount for machine guns, a support for the gun movable about an axis for the elevation and depression of the gun, and a carrying means for the said support mov-

able about an upright axis when the gun is in firing position, said support comprising a rotatable head with a tapered stem and a cup with a tapered bore receiving the stem, said cup having means for sustaining it in a substantially upright position, said sustaining means comprising an axial stem carrying the cup and a tripod with a head through which the stem extends and provided with means for locking the stem to the tripod at any point along the length of the stem.

15. In a machine gun mount, a member rockable about a substantially horizontal axis for determining the elevation of the gun, another member carrying the first member and rotatable about a substantially upright axis to permit sweeping movements of the gun, a tripod for sustaining the gun, and an elongated stem carrying the second-named member and movable lengthwise through the head end of the tripod and said head end being provided with locking means for holding the stem to the head at any point along the length of the stem.

16. A machine gun mount having a basic support, a member carried by the basic support and comprising a cup or socket member with an elongated stem movable lengthwise through the basic support with the latter provided with means for locking the stem in different positions of elevation, another member mounted on the first-named member for rotation thereon about a substantially upright axis to provide for sweep of the gun, and another member mounted on the second-named member to one side of the axis of rotation of the latter and rockable upon a substantially horizontal axis when the axis of the second-named member is substantially vertical, said third-named member having a range of movement to admit of change of elevation of the gun from a point below the horizon to the zenith.

17. A machine gun mount comprising a tripod, a seat adjustable along one leg of the tripod, a member having an elongated stem movable lengthwise of the stem through the head of the tripod with the said head having means for holding the stem in different positions of elevation, a rotatable member carried by the member provided with the stem and movable about an axis lengthwise of the stem, said member having carrying means erected thereon to one side of its axis of rotation, a rockable member mounted in the carrying means and movable about a substantially horizontal axis when the axis of the rotatable member is vertical, and means for attaching a machine gun to the rockable member, said rockable member having a range of movement for the elevation of the gun to point toward the zenith, and the extent of adjustment of the seat along the length of the tripod carrying it being adaptable to the extremes of position of the gun with respect to its elevation.

18. A machine gun mount having slidable connections between the gun and the mount movable in the direction of the length of the gun, said connections comprising a block, removable connections between the gun and block, a guide rod for the block and springs on the rod on both sides of the block and engaging relatively fixed portions of the mount, whereby one spring takes up the recoil and the other spring the rebound of the gun.

19. A machine gun mount provided with a separable support for the gun and a bolt for securing the separable parts together, said bolt being movable transversely of the parts and provided at one end with a hinged part movable into pendent position when the bolt is in locking relation to the parts, whereby the pendent member serves to lock the bolt against accidental withdrawal.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLARK DAVID WITHEROW.

Witnesses:

E. C. BUFFINGTON,

FRED B. HENDERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."