Dec. 13, 1949 S. G. GREEN ET AL 2,491,005

GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 1

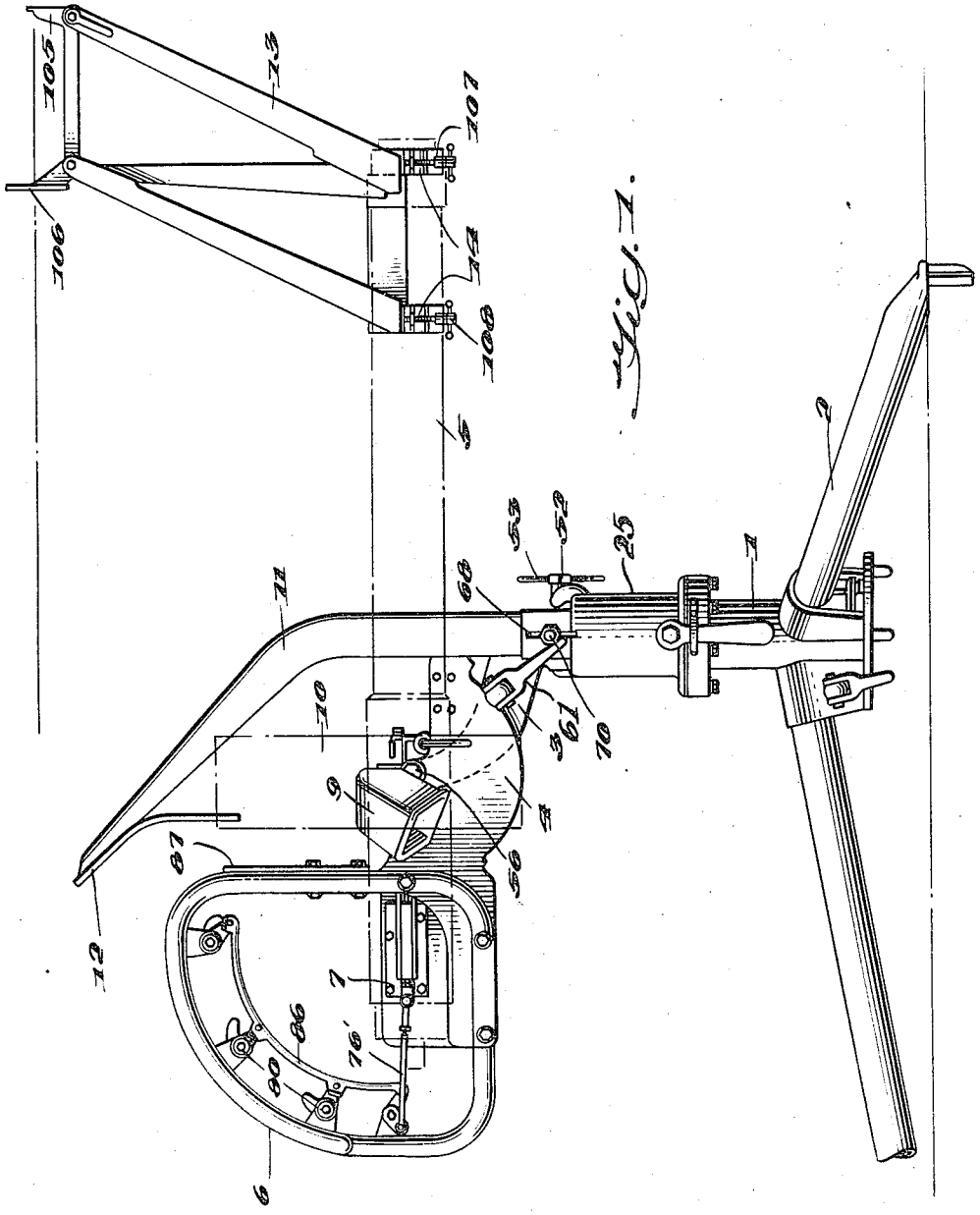


Fig. 1.

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GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 2

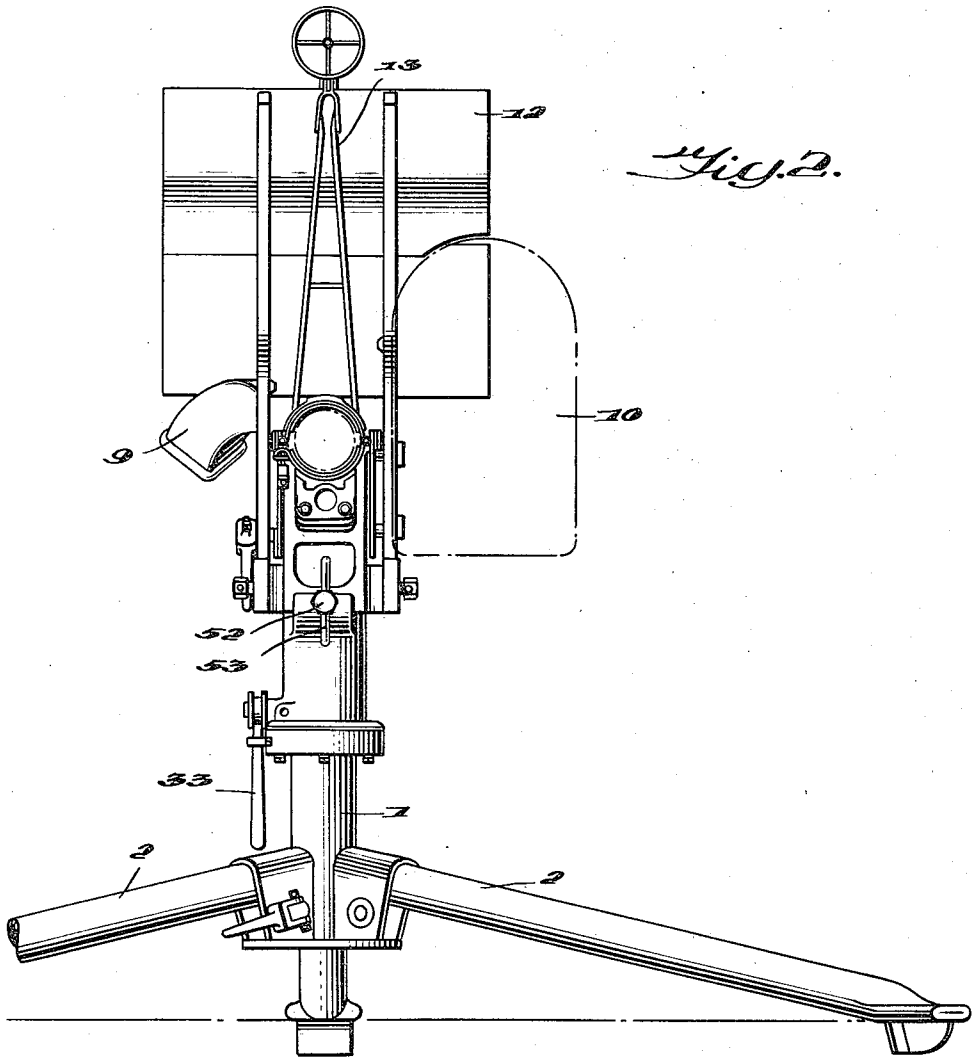


Fig. 2.

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GUN MOUNT

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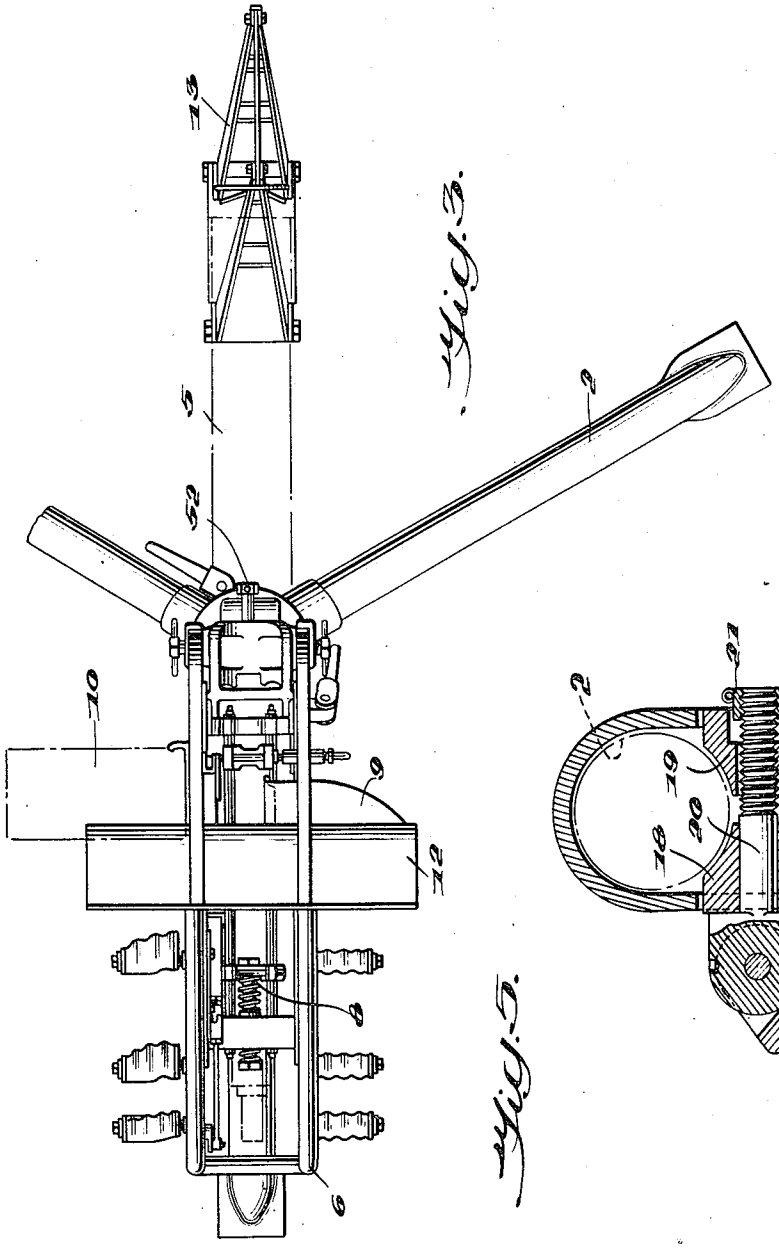


Fig. 3.

Fig. 4.

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GUN MOUNT

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Fig. 6.

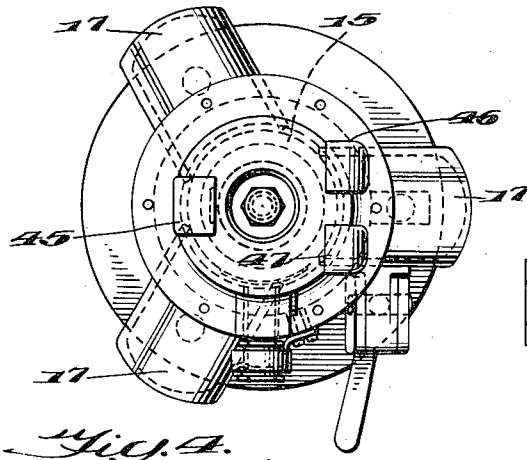


Fig. 8.

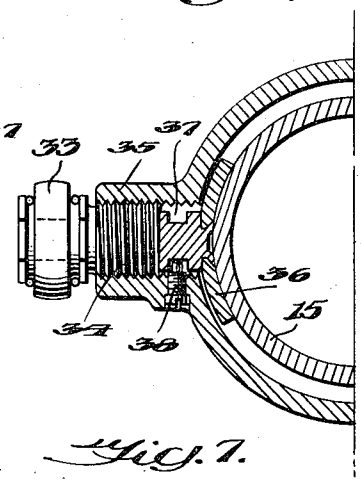


Fig. 4.

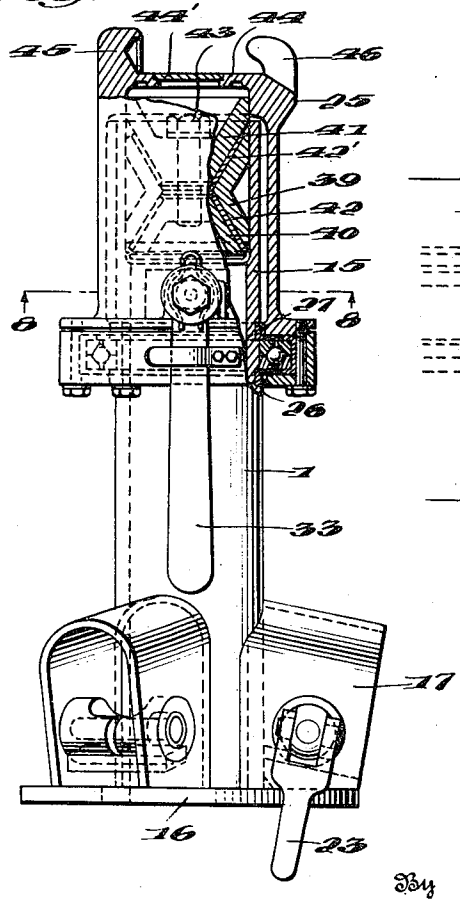
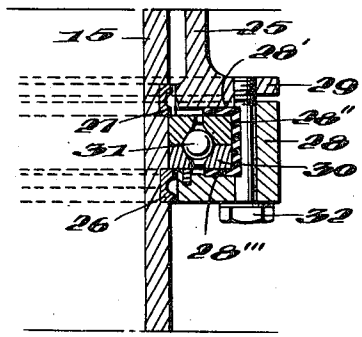


Fig. 7.



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GUN MOUNT

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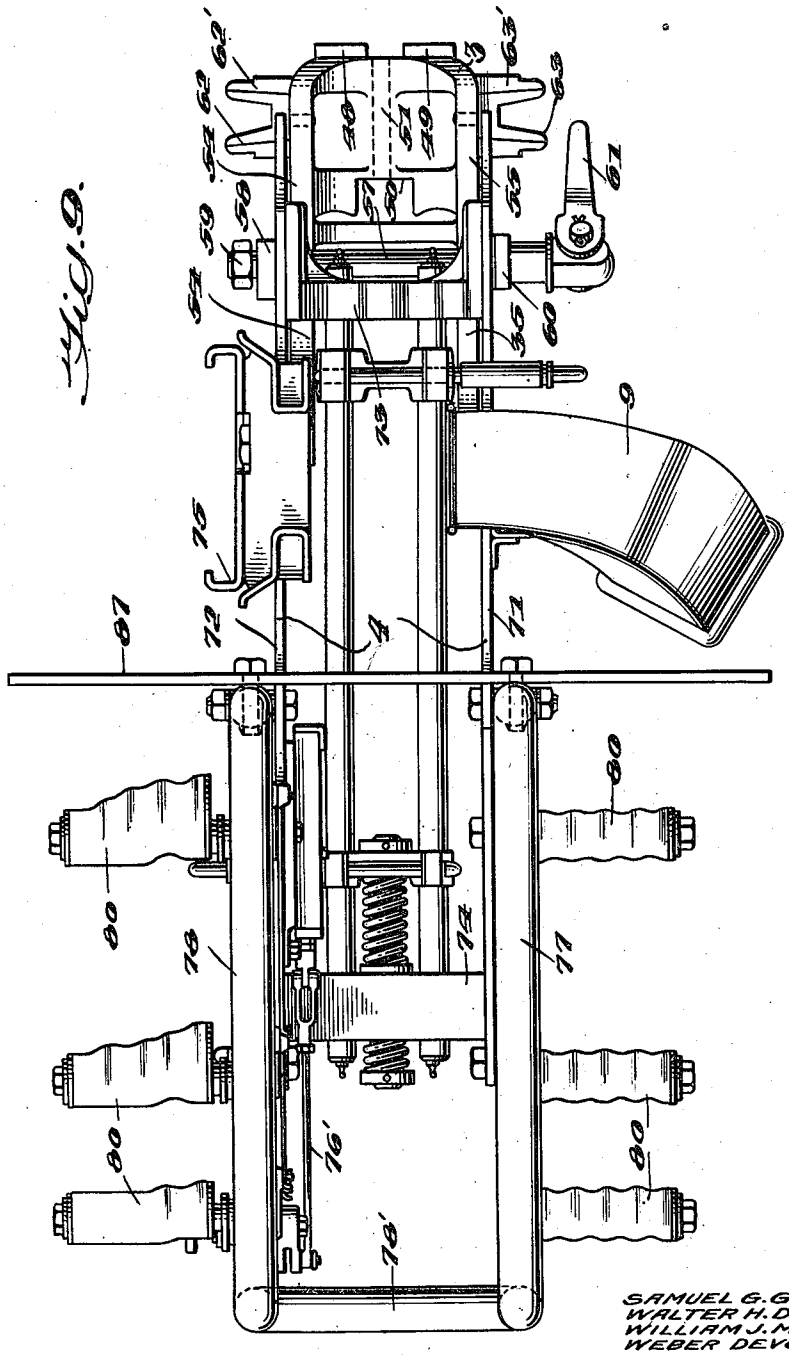


Fig. 9.

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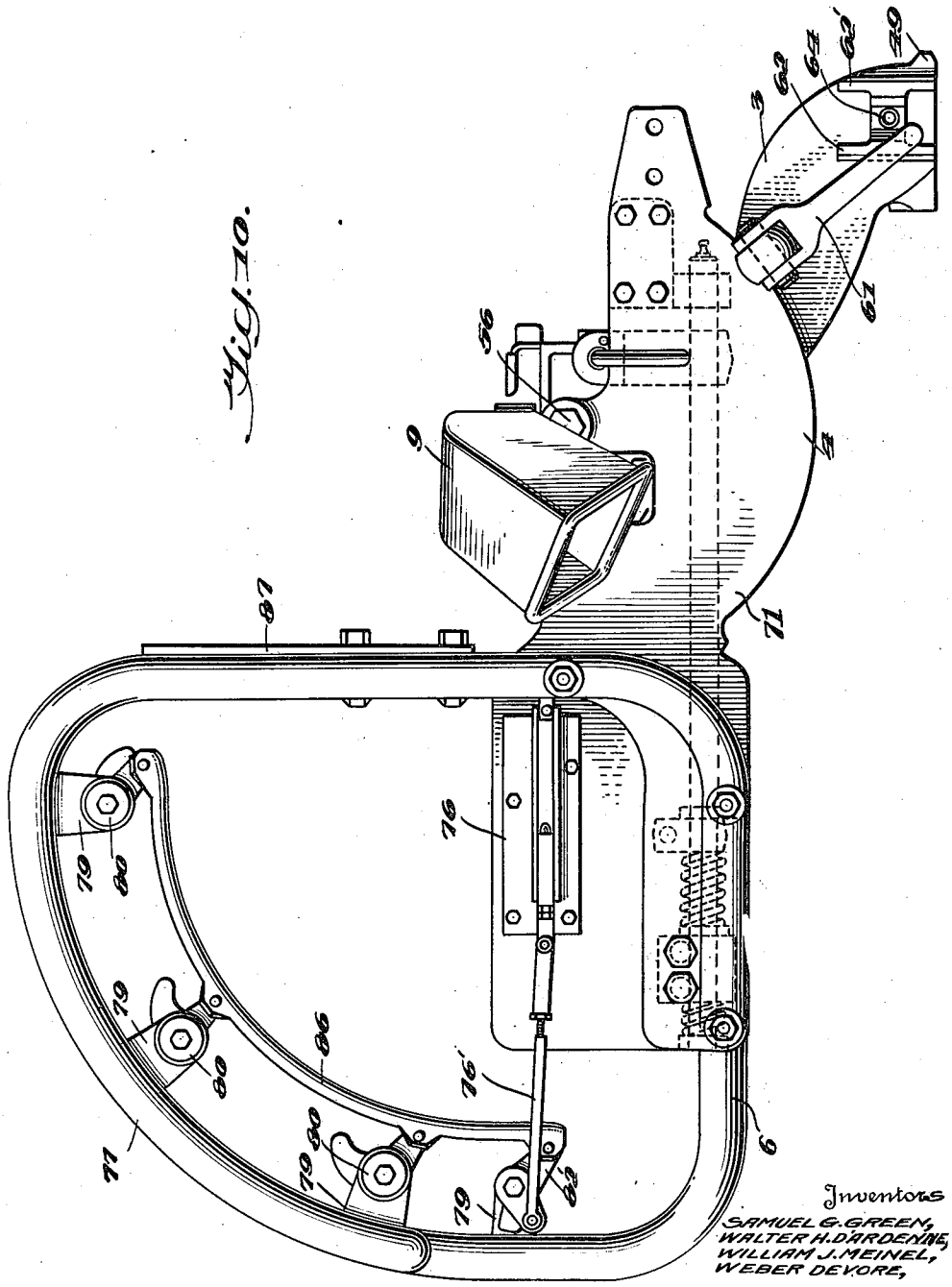
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Fig. 10.



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GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 7

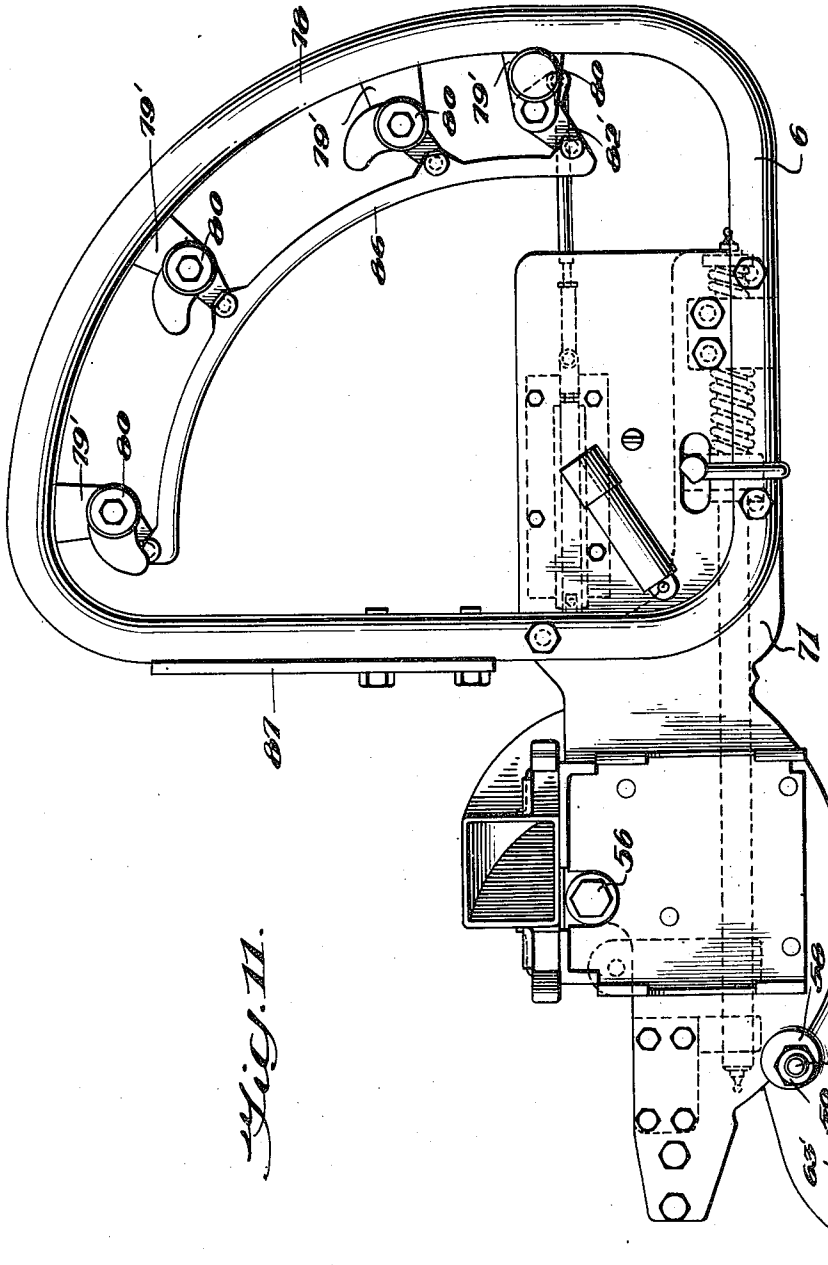


Fig. 11.

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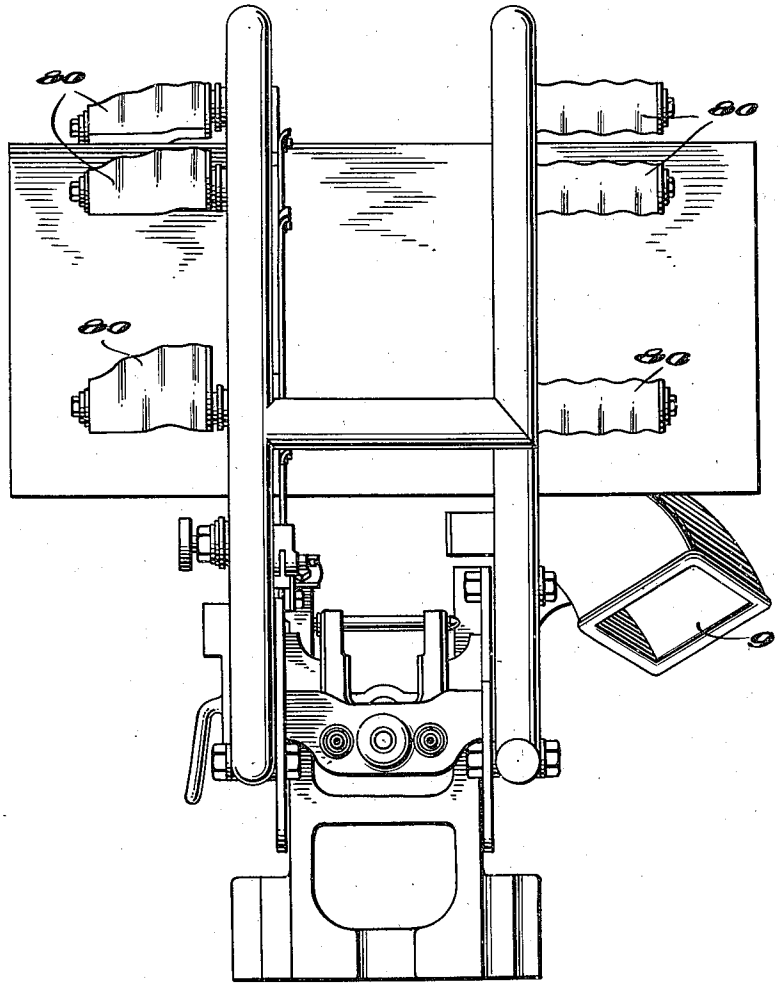
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GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 8

Fig. 12.



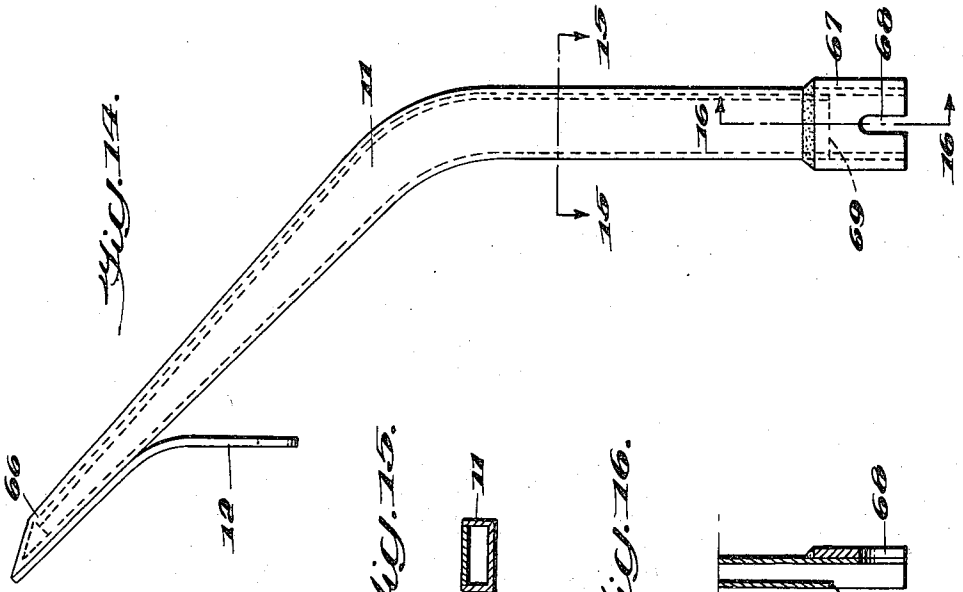
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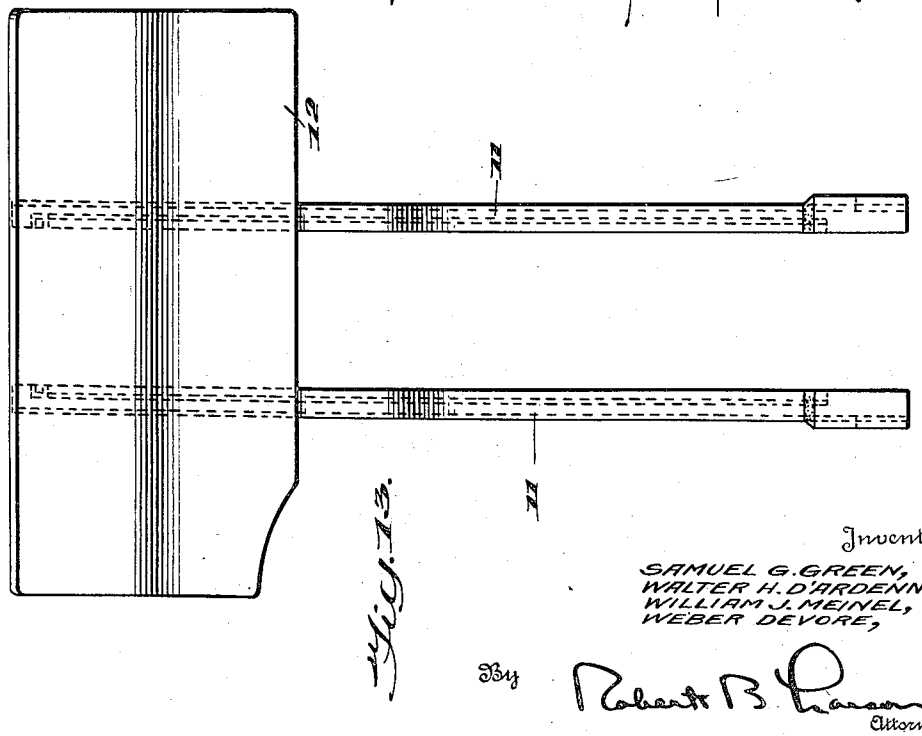
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GUN MOUNT

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Fig. 17.

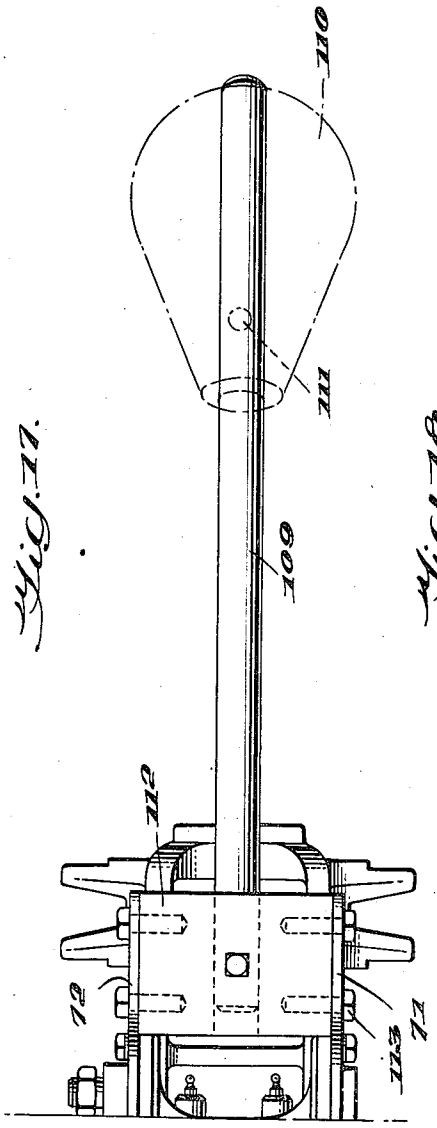
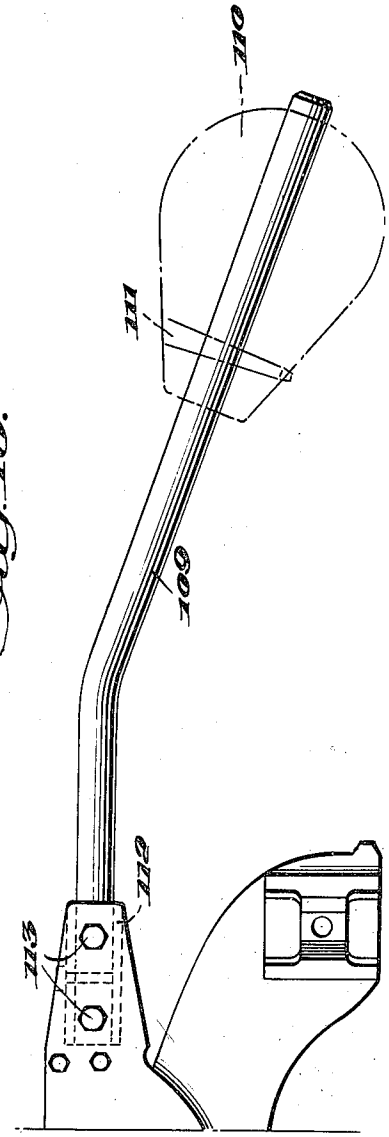


Fig. 18.



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GUN MOUNT

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Fig. 19.

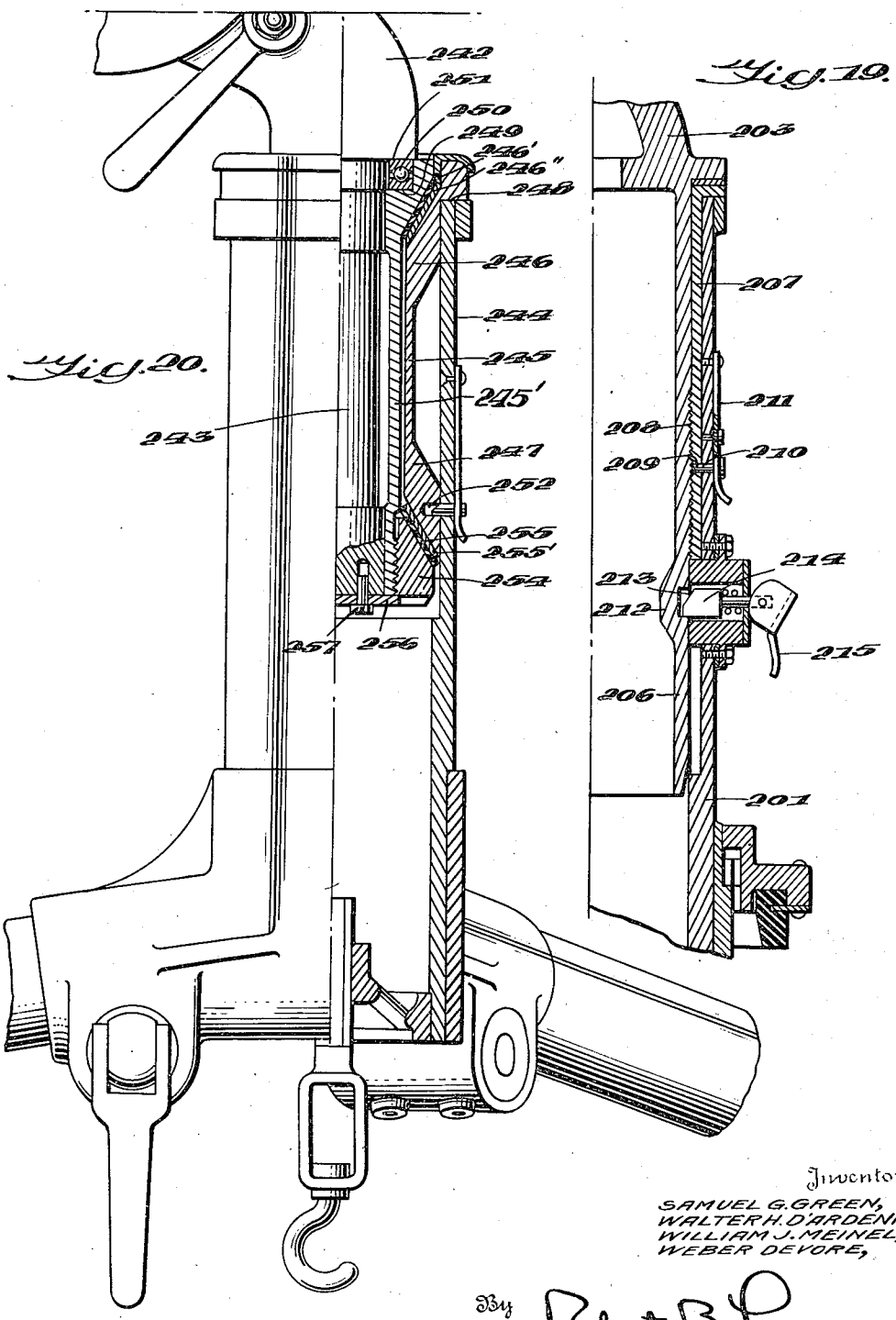


Fig. 20.

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GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 12

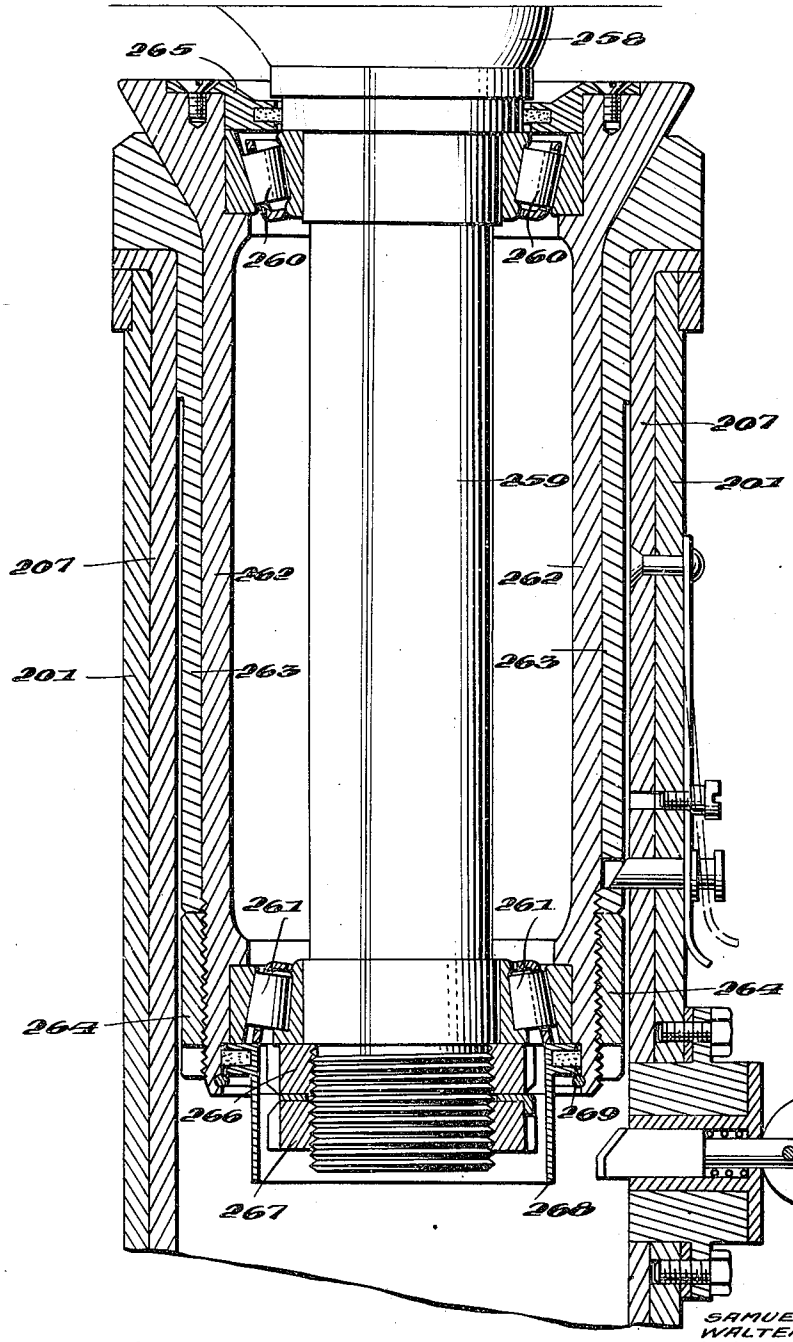


Fig. 21.

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GUN MOUNT

Original Filed Dec. 31, 1943 13 Sheets-Sheet 13

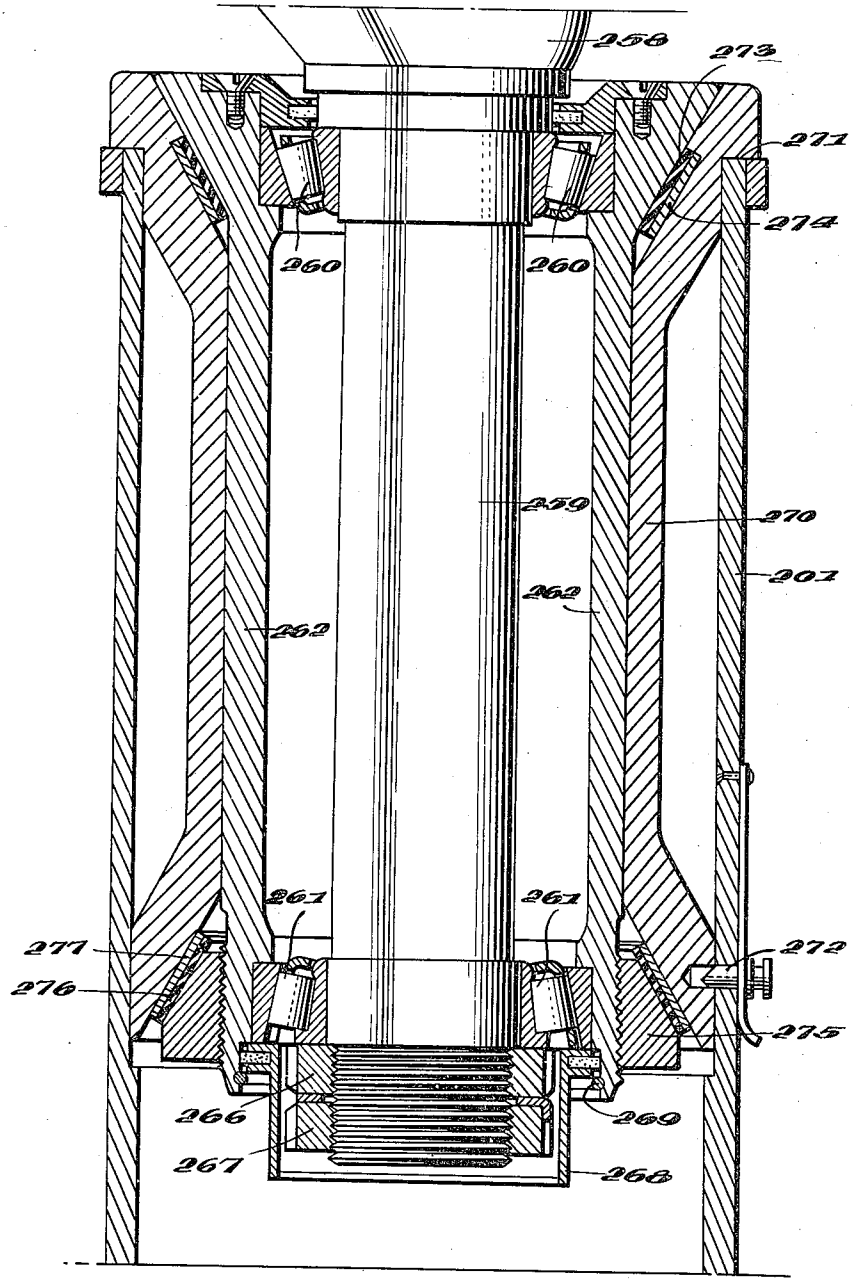


Fig. 22.

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UNITED STATES PATENT OFFICE

2,491,005

GUN MOUNT

Samuel G. Green, Alexandria, Va., and Walter H. D'Ardenne, Jenkintown Manor, William J. Meinel, Huntington Valley, and Weber Devore, Horsham Township, Montgomery County, Pa., assignors, by direct and mesne assignments, to Heintz Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

Original application December 31, 1943, Serial No. 516,520. Divided and this application May 23, 1946, Serial No. 671,875

3 Claims. (Cl. 89—42)

1

This application is a division of copending application, Serial No. 516,520, filed December 31, 1943, which issued on July 30, 1946, as Patent No. 2,404,958.

This invention relates to gun mounts and more particularly to a shielded machine gun mount primarily for anti-aircraft use and employable at ease through 360° in traverse and at all angles from a depression —15° to an elevation of +90°. It is a principal object of the invention to provide such a mount.

In the more modern and now conventional gun mounts for anti-aircraft use it has been necessary to employ shoulder braces and back supports for the gunner, for without such accessories the mounts could not be operated with any degree of efficiency. While this comprised an advantage in one sense, the use of such appendages possessed two principal disadvantages. First, much of the recoil upon firing was transmitted directly to the gunner, and secondly, the gunner was thus forced in operation to assume a squatting and somewhat cramped position.

It is another principal object of this invention to obviate these disadvantages and the present mount is so constructed and arranged so that the gunner operates at all times from a standing position which results in greater freedom of action, faster operation and greater accuracy. Moreover, the arrangement makes possible the elimination of shoulder braces and back straps thus greatly reducing the amount of recoil shock transmitted to the gunner.

A further object of the invention resides in providing such a mount which may be used either as a tripod or a fixed pedestal mount.

Moreover, the invention has for another object the provision of a mount the pedestal support construction of which is adapted, through a novel cushioning arrangement, to withstand shock and to dampen the vibration caused by normal recoil thus increasing the accuracy of fire.

The invention has for an important object the provision of a mount of relatively simple and rugged construction, comprised of a number of light weight components capable of easy transport and ready assembly.

These and other important objects of the invention will become more apparent from the following description and claims when read in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation of the preferred form of the invention.

Figure 2 is a front view.

Figure 3 is a top plan view.

2

Figure 4 is an elevational view, partly in section, of the pedestal or stand.

Figure 5 is a section taken on the line 5—5 of Figure 4.

Figure 6 is a top plan view of the stand illustrated in Figure 4.

Figure 7 is an enlarged detail of the bearing support shown in Figure 4.

Figure 8 is a section taken on the line 8—8 of Figure 4.

Figure 9 is a top plan view of the cradle assembly.

Figure 10 is a side elevational view of the cradle assembly.

Figure 11 is a side elevational view of the cradle assembly showing the opposite side.

Figure 12 is a rear end elevation of the cradle assembly.

Figure 13 is a front elevation of the shield support and armor plate shield.

Figure 14 is a side elevation of the shield support and shield.

Figure 15 is a section taken on the line 15—15 of Figure 14.

Figure 16 is a section taken on the line 16—16 of Figure 14.

Figure 17 is a top plan view of the counterbalance arrangement for lighter barrel guns.

Figure 18 is a side elevation of the arrangement shown in Figure 17.

Figure 19 is a detail vertical section through the wall of the pedestal support of a modified form of mount.

Figure 20 is an elevation, partly in section, of another modified form of pedestal support.

Figure 21 is an enlarged section through a further modified form of pedestal support.

Figure 22 is an enlarged section through another modified form of pedestal support.

The preferred embodiment of the invention is illustrated in Figures 1 to 18, inclusive. The general assembly of this mount is shown in Figures 1–2 inclusive. The mount includes a vertical pedestal support or stand 1 adapted to support detachable legs 2 forming a tripod support. A trunnion bracket 3 is detachably secured to the upper end of the stand 1. The upper portion of the stand 1 is mounted for rotary movement about the vertical axis of the stand so that trunnion bracket 3 is capable of movement in a horizontal plane over 360°.

The upper end of the trunnion bracket 3 supports the cradle assembly 4 for pivoting movement in a vertical plane. The cradle assembly is adapted to carry a gun, such as a cal. .50 Browning water-cooled machine gun 5 (shown in

broken lines). The cradle assembly 4 and gun may be elevated from minus 15° to plus 90°.

The cradle assembly 4 further includes a trigger frame, indicated generally by the reference numeral 6, a trigger side plate mechanism 7 adapted to be secured to the side of the gun 5, a recoil mechanism 8 (see Fig. 3), and a spent ammunition link chute 9. The cradle assembly 4 is adapted to detachably receive an ammunition chest 10 (shown in broken lines).

The trunnion bracket 3, at its base, is provided with means for detachably receiving a shield support 11 carrying an armor plate shield 12 at its upper end.

The invention further includes a sighting assembly 13 adapted to be supported by clamping means 14 to the forward end of the barrel of the gun 5.

This mount, as can already be appreciated, is constructed of a number of separate assemblies or units which render the mount capable of easy transportation and quick assembling and equally facile disassembling.

In order to make clear the structural features of the mount, the various units and assemblies will be separately described.

Pedestal support or stand

The stand 1 is comprised of a tubular member 15 (Fig. 4) the lower end of which is provided with a circular base plate 16. Disposed circumferentially around the lower end of the tubular member 15 and welded to it and to the base plate 16 are three socket or leg housing members 17 adapted to receive the inner ends of the tubular legs 2 (see Fig. 2).

The inner ends of the tubular legs 2 are adapted to be clamped in the leg housing members 17 by means of the clamping arrangement shown in Figures 4 and 5. This arrangement is comprised of two clamping jaws 18 and 19 disposed on a shaft 20 passing through transverse openings in the leg housing member 17. One end of the shaft 20 is threaded through the clamping jaw 19 and a threaded locking collar 21 and locking pin 22 keep the jaw from disengaging from the shaft. The other end of the shaft 20 is provided with a pivoted handle 23 which can be adjusted to permit operation in a limited space to turn the shaft 20. The lower surface of the jaws 18 and 19 are flat and having sliding arrangement with a transverse flat bar 24 rigid with the leg housing member 17.

It will be noted that turning of handle 23 in one direction will turn the shaft 20 thus causing the jaws 18 and 19 to be drawn together to clamp the leg 2 in the leg housing member. Operation of handle 23 in the other direction will move the jaws apart thus unclamping the leg 2. Such a clamping means provides a quick, accurate and simple mechanism for clamping and unclamping the legs.

The pedestal support or stand 1 is provided with a trunnion bracket supporting member 25 at its upper end. This member is mounted coaxially on the main portion of the pedestal stand 1 for rotary turning movement about the vertical axis of the stand. The details of the structure are illustrated in Figures 4, 5, 6, 7 and 8.

With reference to Figures 4 and 7 it will be noted that the supporting member 25 is itself supported by means of a bearing unit in the following manner. The outer circumference of the tubular member 15 is provided with two spaced annular grooves which receive the rings 26, 27 (similar to piston rings). The reference numeral 28 indicates an annular channel bearing race housing which is secured to a flange 29 on the lower end of the support 25. A four ring ball race 30 is disposed within the housing 28 but is vibration insulated therefrom by element 28', 28'' and 28'''. The vibration insulating element is of laminated cloth and rubber material of the type generally known as "Fabreeka." This bearing assembly is completed by the ball bearings 31 and the bolts 32, the latter serving to secure the housing 28 to the flange 29 of the support 25. The support 25 is thus adapted to rotate 360° about the vertical axis of the pedestal stand 1.

Means are provided for locking the support 25 in any position. Such means is shown in Figures 4 and 8 particularly as comprising a handle 33 mounted on a shaft 34 threaded in projection 35 extending laterally from the support 25 and formed integrally therewith (see Fig. 8). The inner end of the shaft 34 carries a clamping element 36 having a surface complementary to the outer surface of the pedestal tube 15 and adapted to bear against the same tightly when the handle 33 is actuated to turn shaft 34 in one direction. This locks the support 25 against rotary movement. Actuation of the handle in the other direction moves the shaft 34 and clamping element 36 out of engagement with the tubular member 15 thus permitting free rotation of the support 25. The shaft 34 is provided with a groove 37 and the limit screw 38 of lesser diameter than the width of the groove projects into this groove to prevent the shaft 34 from being removed while still permitting limited movement sufficient to lock and unlock the support 25.

In accordance with an important feature of the invention a shock absorber or dampener is disposed between the support 25 and the tubular member 15. The structure embodying this is shown in Fig. 4. It includes an outer cone member 39 shaped substantially as a hollow diabolo provided with a narrow slit from top to bottom. Two inner hollow frusto-conical members 40 and 41 are adapted to fit respectively in each end of the diabolo 39. The conical member 40 is provided with a central threaded bore. Fiber composition packing pieces 42, 42' are disposed between the member 39 and the members 40 and 41. Each packing piece is cone-shaped and is provided with a slit from top to bottom. A bolt 43 is adapted to pass through members 41, 42, 42' and to be threaded in member 40 so as to draw the two members 40 and 41 together thus clamping them to the member 39 with the fiber composition pieces 42, 42' therebetween. The member 39 engages the inner wall of the tubular member 15. The lower member 40 also engages this inner wall. The upper conical member 41 engages the inner wall of the support 25.

The physical properties of the composition are important and should equal or closely approximate a composition known under the trade name of "Fabreeka."

It is possible to employ two or more laminations of packing pieces and by this means and by adjusting the tightness of the bolt 43 it is possible to obtain the desired preload. It has been demonstrated, the proper preload will have the effect of dampening the shock caused by normal recoil thus materially increasing the accuracy of fire within the target area.

The upper end of the support 25 is provided with an opening 44 to permit access to the bolt

43 when assembling and for adjustment and a cover plate 44' normally closes this opening.

The upper end of the support is provided with clamping means to enable the trunnion bracket 3 to be removably secured thereto. Such clamping means (see Figs. 4 and 6) are comprised of three upstanding lugs 45, 46 and 47, the lug 45 having a conical recess and the lugs 46 and 47 each having an undercut recess as clearly noted in Fig. 4.

The trunnion bracket

The trunnion bracket 3 is provided at its lower end with a pair of forwardly projecting lugs 48, 49 (Figs. 9 and 10) adapted to nest in the undercut recesses of the lugs 46 and 47 on the support 25. The base of the trunnion bracket 3 is also provided with a notch 50 (see Fig. 9) in which the rear lug 45 on the support 25 is disposed when the trunnion bracket is positioned on the support 25.

A clamping bolt 52 threaded on its inner end and also provided with an operating handle 53 (see Figs. 2 and 3) which is threaded into a bore 51 in the base of the trunnion bracket 3. When the handle 53 is turned in one direction the trunnion bracket 3 will be secured tightly to the support 25, due to the fact that the end of bolt 52 engages the undercut portion of lug 45 (Figs. 4 and 6) and urges lugs 48 and 49 of trunnion bracket 3 (Figs. 9 and 10) more tightly into wedging engagement with lugs 46 and 47 (Figs. 4 and 6).

The trunnion bracket 3 has two curved arms 54, 55 extending upwardly from each side of its base (see Fig. 9). The general outline of these curved arms 54, 55 is indicated in dotted lines in Fig. 1. The upper ends of these arms are provided with aligned openings for receiving the trunnion bearing pin 56 (Figs. 1, 9 and 10) which comprises the pivot point for permitting the cradle assembly 4 and gun 5 (with the parts they carry) to pivot in a vertical plane, as will be described hereinafter. The trunnion bearing pin 56 comprises the principal means for supporting the cradle 4, gun 5 (and parts carried thereby) on the carriage trunnion 3.

From Figs. 1, 9, 10 and 11 in particular it will be seen that the trunnion bracket 3 carries clamping means for clamping the cradle 4 with respect to the trunnion bracket 3 thus locking the gun in elevation in any of a plurality of its positions from minus 15° to plus 90°. Such clamping means is comprised of a shaft 57 (Fig. 9) extending through aligned openings in the arms 54, 55 of the trunnion bracket 3 and provided on one end with a clamping block 58 and a threaded nut 59, and on the other end (Figs. 1, 9 and 10) with a similar clamping block 60 and a pivoted operating handle 61. When the shaft 57 is turned in one direction by the handle 61, the clamping blocks 58 and 60 bear against the side plates of the cradle 4 to lock the cradle assembly 4 with respect to the trunnion bracket 3.

Finally, the trunnion bracket 3 has side brackets 62, 62' and 63, 63' (Figs. 9, 10 and 11) with threaded holes 64, 65 adapted to receive bolts to secure the shield support 11 (Fig. 1) to the trunnion bracket 3 as will be described.

The shield

The armor plate shield 12 and its support 11 are shown particularly in Figs. 1, 2, 13, 14, 15 and 16. The shield assembly is comprised of the two uprights 11, the upper ends of which bend rearwardly.

The upper portion of the armor plate shield 12 is welded to the rear side of the supports 11. The upper edge of the shield extends slightly above the upper ends of supports 11 so as to provide room for a weld joint at 66 (Fig. 14). The lower portion of the shield 12 is bent away from the supports 11 into a vertical plane. From Figs. 2 and 13 it will be seen that the one lower corner of the shield is cut away to prevent interference with the ammunition chest 10.

The lower ends of the supports 11 are reinforced on three faces by a reinforcing member 67, and the outer sides are each provided with a notch 68 (see Figs. 13, 14 and 16). The inner side of each support 11 is cut short as at 69. With such an arrangement the lower reinforced ends of the supports 11 are adapted to be received by the side brackets 62, 62' and 63, 63' (Figs. 9, 10 and 11) of the trunnion bracket 3 with bolts 70, 70' (Fig. 1) which pass through the notches 68 and into the threaded openings 64 and 65 respectively in the trunnion bracket 3. The arrangement is such that the shield support 11 can be quickly and easily assembled and removed.

The cradle assembly

The cradle assembly 4 is perhaps best shown in Figs. 9, 10, 11 and 12. It is comprised generally of two parallel spaced side plates 71, 72 bolted in spaced relation by the blocks 73, 74 of a recoil device, the details of which will be described later.

The forward lower edges of the side plates 71 and 72 are cut on the arc of a circle the center of which is the pivot point 56 at which the cradle is supported on the trunnion bracket 3 for vertical pivoting movement. These arcuate edges of the side plates 71 and 72 are adapted to be clamped by the clamping means 57, 58, 59, 60, 61 previously described. The cradle assembly can thus be clamped at will in any of the positions of its vertical pivoting movement.

The cradle side plate 72 also carries an ammunition chest bracket 75 while the cradle side plate 71 supports the ammunition link chute 9.

The rear portion of the cradle plate 71 carries the trigger plate assembly 76 (Fig. 10) connected by a rod 76' to a trigger operating system which is carried by the tubular trigger frame 6 bolted to the side plates 71, 72.

The tubular trigger frame 6 is comprised of two endless tubular members 77, 78 disposed in upright parallel planes (and each of which is bolted to a cradle side plate), and a tubular rear cross support 78' (see Fig. 9).

Each of the members 77, 78, is provided with a series of brackets 79, 79' respectively, for supporting the operating handle grips 80. All of the handle grips 80 carried by one of the members 77, 78 are rotatably mounted and are pivotally attached to an arcuate connecting member 86 which is in turn connected to a bell crank lever 82'. Lever 82' is connected to the trigger plate assembly 76 by a rod 76' so that actuation of any one of the rotatable handle grips 80 fires the gun. The gunner may thus control the gun entirely from a standing position since when the gun is elevated and the tubular trigger frame is depressed, it is only necessary for the gunner to grasp a pair of handle grips disposed higher up on the tubular trigger frame 6 and operate the gun thereby.

The forward part of the tubular trigger frame 6 is adapted to carry a small armor plate shield 87 which may be removably bolted thereto as seen for example in Figs. 9, 10 and 11.

The trigger control mechanism just described and a modification thereof are described in greater detail and claimed in copending application, Serial No. 516,520, filed December 31, 1943 (Patent No. 2,404,958).

The mount described is well balanced so that the gunner can rapidly swing it through 360° in traverse and from minus 10° to 90° in elevation. Moreover, because of the tubular frame and the trigger firing arrangement, the gunner may operate at all times from a standing position. The arrangement of the two shields 12 and 87 are such that the gunner is protected in all positions of fire.

It will be noted that the arrangement described eliminates the necessity for conventional shoulder braces and back strap and thus not only affords the gunner greater freedom of movement, but also results in less shock recoil being transmitted to the gunner, both of which factors lead to quicker and more accurate operation.

From Fig. 1 it will be seen that the gun 5 is provided with a sighting arrangement comprising front and rear sights 105, 106, respectively, carried by a bracket arrangement adapted to be removably clamped to the water jacket of the gun by the clamps 107, 108. The line of sight through sights 105, 106 (indicated by the broken line) extends slightly above the shield 12. This sighting arrangement is normally used only for initial sighting after which, according to the usual practice, the gun is maneuvered as the result of watching the tracer bullets.

Counterbalance for lighter guns

While the mount has so far been illustrated and described as employed with a Browning cal. .50 water cooled machine gun, other types of guns may be employed. For example, it is possible to employ a heavy barrelled air cooled machine gun. Since the barrel of this gun is lighter than the water cooled barrel including the water jacket, the balance of mount would be disturbed. To compensate for this lightness at the forward end of the gun, use may be had of a counterbalance weight such as illustrated in Figs. 17 and 18.

The counterbalance shown in Figures 17 and 18 is comprised of a bent tubular member 109 adapted to carry at its outer end a weight which advantageously may be of pear shape. The weight 110 is provided with a central passage to receive the tubular member 109 and after adjustment may be secured to the member 109 by a tapered pin 111 passing downwardly through the weight and through a transverse bore in the member 109.

The other, inner end of the tubular member 109 is rigidly secured to a rectangular block 112 the width of which is equal to the distance between the cradle plates 71, 72. The block 112 is provided with threaded openings to receive the bolts 113 which also are adapted to pass through openings in the cradle plates 71, 72. In this manner, the block 112 can be quickly secured to the cradle plates when it is desired to use the mount with a heavy barrel gun instead of the heavier water cooled gun.

The counterbalance compensates for the difference in weight at the forward end of the guns and thus enables the gunner to maneuver the mount with a heavy barrel gun with equal ease and facility.

Modified forms

Figures 19 through 22 disclose modified forms of mounts having some features in common with the mount heretofore described.

In the modification shown in Fig. 19, the lower end of the trunnion bracket 203 corresponding to trunnion bracket 3 in the preferred form of the invention described in Figs. 1 through 16 is formed as a tubular member 206 which is adapted to be disposed within the pedestal support 201 corresponding to supporting member 25 in the preferred form of the invention described in Figs. 1 through 16. The upper wall of the pedestal support 201 is of reduced thickness and a sleeve 207 is interposed between the wall and the tubular member 206. A portion of the tubular member 206 and of the sleeve 207 is threaded as at 208.

The sleeve 207 is provided with a hole 209 for reception of a pin 210 which passes through the wall of the tubular support 201 and is under tension of the leaf spring 211.

The tubular member 206 is provided with an inward bulge 212 to make room for the annular recess 213 which is engaged by a spring pressed lug 214 carried by the tubular support 201. This lug 214 normally retains the member 206 in operative position in which it may rotate about its vertical axis but cannot be drawn upwardly. The lug 214 may be disengaged by moving handle 215 thus permitting the member 206 to be removed.

In the modification shown in Fig. 20 the trunnion bracket 242 is provided with a cylindrical portion 243 adapted to extend downwardly within the pedestal support 244. The cylindrical portion 243 is supported for rotary movement within the pedestal support 244 by the member 245 which is provided with frusto-conical ends 246, 247.

The end 246 is provided with a shoulder 248 which rests on the upper edge of the pedestal support 244. This end 246 is also provided with a circular cut-out 249 in which the bearings 250 are disposed. A shoulder 251 on the trunnion bracket 242 rests on the bearings.

The end 247 is provided with a hole 252 adapted to receive a spring pressed pin 253 which retains the member 245 in place.

The member 245 is formed of outer and inner pieces, the inner piece having the reference numeral 245'. At its lower end, inner piece 245' is threaded to receive a ring nut 254 having a beveled surface which is separated from the other piece by a cushioning means 255 and a steel cone 255'. The cushioning means 255 is preferably of material having the same characteristics as the insulation pads 42, 42' in the embodiment of Fig. 4. A plate 256 is secured to the cylindrical portion 243 by means of the bolt 257 and keeps the cylindrical portion 243 from rising upwardly with respect to the member 245.

The two parts of member 245 at its upper end are separated by a similar cushioning means 246' and a steel cone 246''.

The two part construction of element 245, 245', together with cushioning means 255 and 246', provides a shock absorbing mounting for cylinder 243 which supports the gun, and thereby increases the accuracy of fire.

Figure 21 shows an adapter for use in the ar-

rangement of Fig. 19 so that a trunnion bracket for a different type machine gun may be used in place of trunnion bracket **203** (Fig. 19).

As shown in Fig. 21, the trunnion bracket **258** is provided with a long downwardly extending cylindrical portion **259** which is supported for rotation by tapered bearings **260, 261** supported by the adapter sleeve **262** having a flared upper end.

Concentric with the sleeve **262** and surrounding the latter is a second adapter sleeve **263** which in turn fits within sleeve **207** within the cylindrical wall of the pedestal support **201**. The lower end of the sleeve **262** is threaded to receive the threaded ring **264** which bears against the lower edge of sleeve **263**.

The upper end of the cylindrical portion **259** is sealed by the sealing means **265**.

The lower end of the cylindrical portion **259** is threaded to receive two ring nuts **266, 267** disposed within a sealed housing **268** held in place by the wire ring **269**.

It will be observed that the use of the adapter sleeves **262** and **263** and parts carried thereby readily permit the pedestal support **201** to receive a trunnion bracket **258** (Fig. 21) differing from trunnion bracket **203** (Fig. 19), thus rendering a single pedestal support **201** capable of use with trunnion brackets for different types of guns.

Fig. 22 illustrates a form of pedestal support which embodies some of the features of the types shown in Figures 20 and 21. Like Figure 21, this new embodiment includes a trunnion bracket **258** having a downwardly depending shaft **259** which is rotatably mounted in a sleeve **262** by means of the bearings **260** and **261**. Like Figure 21 this new embodiment is provided with ring nuts **266** and **267**, housing **268** and wire ring **269**. Also like Figure 21 the sleeve **262** is disposed within pedestal support **201**. It is, however, held in spaced relation to the pedestal support by means similar to that employed in Figure 20.

These means comprise the member **270** which has frusto-conical top and bottom ends. The top end has a shoulder **271** engaged by the upper end of the pedestal support **201**. The lower end of member **270** rests within the pedestal support **201** and is removably held in place by means of the spring pressed pin **272** adapted to engage in a hole in member **270**.

At its upper end the member **270** abuts the flared upper end of the sleeve. A cushioning pad **273** and steel cone **274** similar to those employed in Figure 20 are disposed between the two.

At its lower end the sleeve **262** is threaded to receive a beveled nut **275**. A cushioning pad **276** and steel cone **277** separate the beveled surface of the nut from the lower frusto-conical end of the member **270**. The cushioning means and cone are similar to those already described.

It will be obvious that the structure can be easily assembled and that the effect of the cushioning means can be adjusted by tightening the nut **275**. Here, as in the previously described embodiments having the cushioning feature, the construction which includes members **262** and **270** and cushioning pads **273** and **276**, provides absorption of vibration which increases the accuracy of fire.

While several preferred embodiments of the invention have been illustrated and described, it is to be understood that changes in structure and arrangement may be made without departing from the inventive concepts which are only to be limited to the extent defined in the following claims.

What is claimed is:

1. In a gun mount, a standard including an upright tubular element, a member mounted over and covering the upper end of said tubular element, said member being mounted for rotation about the axis of said element, means on the upper end of said member for detachably receiving gun supporting means, and shock absorbing means in the mounting between said tubular element and said member, said shock absorbing means including outer cone-shaped means bearing against the inner wall of said tubular element, inner cone-shaped means bearing against the inner wall of said member at the top thereof and vibration insulation means between said outer and inner cone-shaped means.

2. In a gun mount, a standard including an upright tubular element, a member mounted over and covering the upper end of said tubular element, said member being mounted for rotation about the axis of said element, means on the upper end of said member for detachably receiving gun supporting means, and shock absorbing means in the mounting between said tubular element and said member.

3. In a gun mount, a standard including an upright tubular element, a member mounted over and covering the upper end of said tubular element, said member being mounted for rotation about the axis of said element, means on the upper end of said member for detachably receiving gun supporting means, shock absorbing means in the mounting between said tubular element and said member, said shock absorbing means including outer cone-shaped means bearing against the inner wall of said tubular element, inner cone-shaped means bearing against the inner wall of said member at the top thereof and vibration insulation means between said outer and inner cone-shaped means, and adjustable means for placing the insulation means under a predetermined pressure.

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