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Draftman

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ORDNANCE.
APPLICATION FILED FEB. 1, 1919.

1,346,794. **Patented July 13, 1920.**

2 SHEETS—SHEET 1.

FIG. 1.

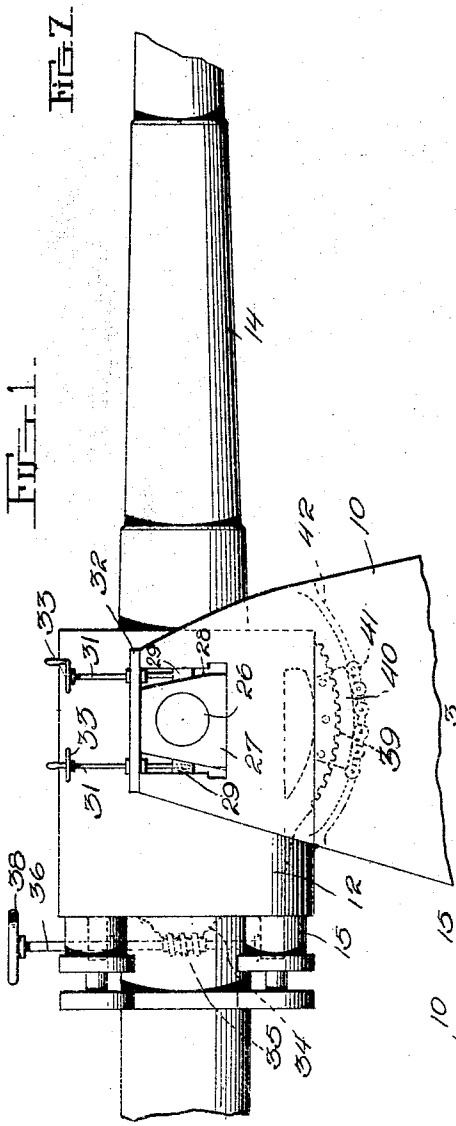


FIG. 2.

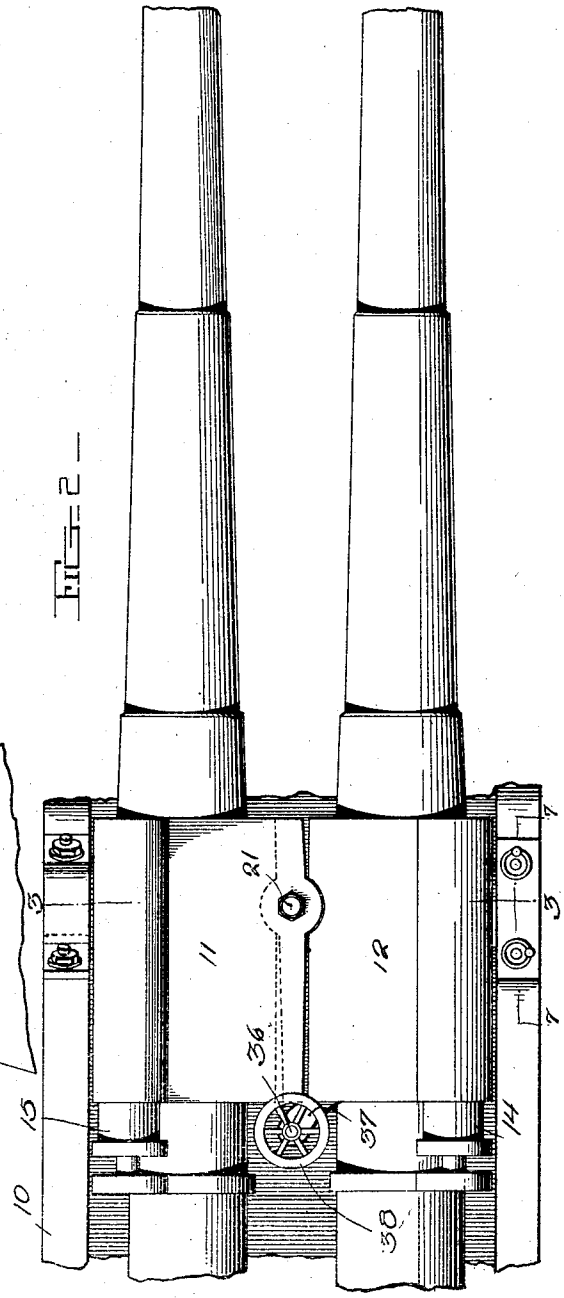
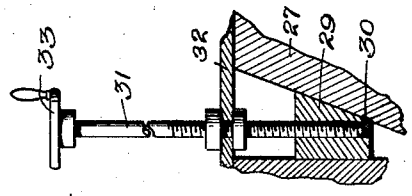


FIG. 7.



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2 SHEETS—SHEET 2.

FIG. 5.

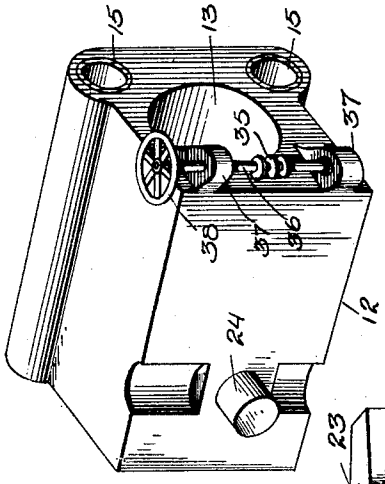


FIG. 6.

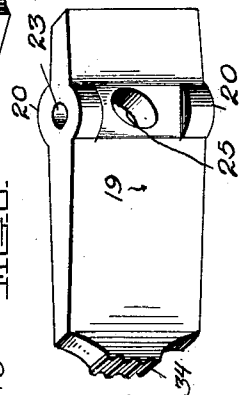


FIG. 3.

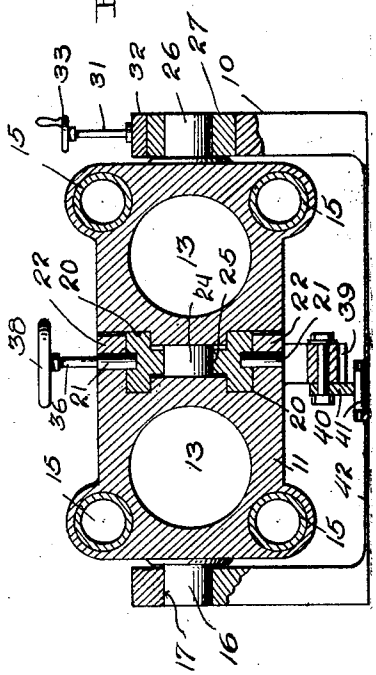
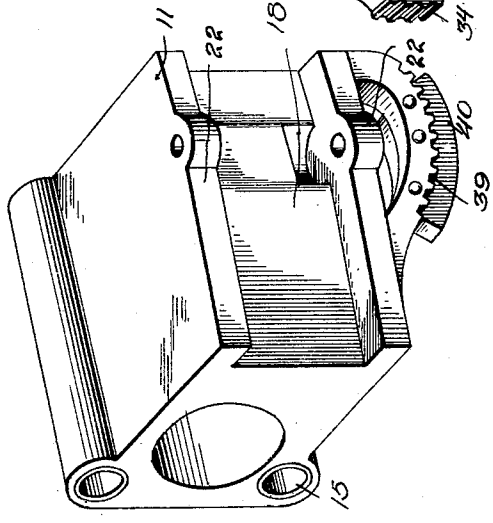


FIG. 4.



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UNITED STATES PATENT OFFICE.

EDWARD A. MUIR, DECEASED, LATE OF WASHINGTON, DISTRICT OF COLUMBIA, BY DORA K. MUIR, ADMINISTRATRIX, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE GOVERNMENT OF THE UNITED STATES.

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1,346,794. Specification of Letters Patent. **Patented July 13, 1920.**

Application filed February 1, 1919. Serial No. 274,830.

To all whom it may concern:

Be it known that EDWARD A. MUIR, late a citizen of the United States and resident of Washington, District of Columbia, did invent new and useful Improvements in Ordnance, of which the following is a specification.

This invention relates to gun mounts and has particular reference to mounts of the so-called "twin type" in which two guns are mounted in a single carriage.

The present invention has as its purpose to provide a mount of the "twin type" in which the relative angles between the two guns may be varied at will so as to obtain the desired dispersion of fire thus providing a mount which is of particular advantage in torpedo boat and aeroplane defense.

In accordance with the present invention, the arrangement is such that the alinement of one gun in elevation and azimuth with respect to the other gun may be altered through a very small angle. By changing slightly the relation between the elevations of the two guns, the danger space for the guns in a battery may be varied at will, and by slightly changing the relation between the train of the two guns a lateral dispersion is obtained.

Further objects of the invention are to provide a gun mount which is relatively simple in construction, reliable and efficient in action, and which is capable of being readily adjusted to meet various conditions.

This invention accordingly consists in certain novel features of construction and combination of parts, and in the unique relation of the members and the relative proportioning and distribution thereof.

In the accompanying drawings is shown one form of the improved mount, but it is to be understood that the present disclosure of the invention is by way of illustration only and is not restrictive thereof, the invention being susceptible of various modifications and changes which would be within the spirit of the invention without departing from the scope of the appended claims.

In said drawings:

Figure 1 is an elevational view of so much of a gun mount as is necessary to illustrate the application of the invention thereto.

Fig. 2 is a top plan view.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the "fixed" part of the slide.

Fig. 5 is a perspective view of the "movable" part of the slide.

Fig. 6 is a perspective view of a bearing plate adapted to be interposed between the parts of slide, and

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2.

Referring to the drawings in detail, and wherein like reference characters indicate similar parts in the several views, 10 designates the cheeks of a gun carriage, the lower portion of the gun mount not being shown in the present illustrated disclosure, as it may be of any suitable construction. Mounted within bearings at the upper ends of the cheeks 10 is a gun slide comprising two parts, 11 and 12. The former part 11 will hereinafter be referred to as the "fixed" part of the slide, as this part is fixed against lateral movement relative to the carriage, although its elevation may be varied, and the part 12 will be referred to as the "movable" part, as its azimuth or train relative to the cheeks of the carriage and the "fixed" part of the slide may be changed. Each of the parts 11 and 12 has a through opening 13 for guns 14 and a pair of openings for the reception of recoil mechanism 15.

The "fixed" part 11 of the gun slide has a trunnion 16 rotatably mounted in the bearing 17 in one of the cheeks 10 and this bearing may be similar to that now usually employed to receive the trunnions of gun slides. The inner face of the fixed part 11 of the slide is provided with a longitudinal groove 18 which receives a bearing plate 19, most clearly shown in Fig. 6. The bearing plate 19 has on its upper and lower edges and between its ends and preferably nearer the

forward end than the rear end, alined circular enlargements 20. The plate 19 tapers from these enlargements toward its opposite ends so as to provide sufficient clearance between the ends of the plate and the parts of the slide to permit the gun carried by the movable part 12 to be swung laterally through a small angle relative to the gun in the fixed part 11. The plate 19 is pivoted in the recess 18 by means of pintles 21 which pass through vertical openings in the ribs 22 at the top and bottom of the groove 18. The pintles 21 enter alined recesses or bearings 23 located centrally of the enlargements 20.

The movable part 12 of the slide has a trunnion 24 on its inner face, which is received by a bearing opening 25 in the plate 19, the center of this opening being in alinement with the recesses 23. An outer trunnion 26 of the movable part 12 is received by a bearing block 27 adjustably mounted in a rectangular recess 28 in one of the cheeks 10 of the carriage. The forward and rear edges of this bearing block, as most clearly shown in Fig. 1, are inclined upwardly toward each other, so that the block is of wedge shape, and between these inclined edges and the sides of the recess 28 are oppositely disposed wedges 29. For the purpose of raising and lowering the wedges 29 and thus moving the block 27 forwardly or rearwardly to vary the angle in train between the guns, each of the wedges has a threaded vertical opening 30 which receives the lower threaded end of its respective shaft 31, rotatably carried by openings in the plate 32 which closes the top of the recess 28. Each of the shafts 31 is provided with an operating handle 33.

For the purpose of changing the angle in elevation between the two guns 14, the plate 19 is provided at its rear end with a segmental rack 34 with which is in mesh a worm 35 fixed on a shaft 36 carried by ears 37 extending rearwardly from the movable part 12. The shaft 36 has an operating handle 38. The numeral 39 designates an elevating rack carried by the fixed part 11 and with this rack the gear of the usual elevating mechanism is adapted to mesh, the elevating mechanism not being shown in the present illustrative disclosure, as the construction thereof is old and well known.

For the purpose of preventing the parts 11 and 12 of the slide from sagging where they are connected to the plate 19, a curved plate 40 is secured to the segment 39 and this plate rides upon a bed of rollers 41 carried by a bracket or brace 42 extending between the cheeks 10 of the carriage or other part thereof.

It will be seen from the foregoing description that the lateral angle between the two guns 14 carried by the parts 11 and 12 of the slide may be increased by moving the bearing block 27 rearwardly, this being accomplished by rotating the rearmost shaft 31 in a direction to raise the rear wedge 29 and rotating the foremost shaft 31 to move the front wedge 29 downwardly. To decrease the angle in train between the guns, the front wedge 29 is raised and the rear one lowered. When the block 27 is so moved, the plate 19 will swing about the pintles 21 while the fixed part 11 of the slide will remain in position. Sufficient clearance is provided for between the trunnion 26 and the bearing in the block 27 to permit this block to be adjusted as just described.

To vary the angle in elevation between the guns, the operating handle 38 is rotated to actuate the worm 35 whereupon the worm will ride upwardly or downwardly on the segment 34 depending upon the direction of rotation of the worm. It is understood that as the worm 35 is carried by the movable part 12 these two members will move in unison.

It is, of course, understood that in actual practice the change in angular relation, both in train and in elevation, of the two guns will be very slight, as an angle of a very small fraction of a degree will cause the projectiles fired from the guns to strike at an appreciable distance apart. In the drawings, however, the illustration is somewhat exaggerated so as to more clearly bring out the novel features and the operation of the improved structure.

By setting the movable gun at a slight vertical angle (a fraction of a degree) above or below the axis of the fixed gun, which is preferably boresighted, the danger space, which is considered as including the under run of the projectiles and their ricochets, would be increased several hundred yards. By slightly changing the relation between the train of the two guns and properly setting the time fuses of the shrapnel shells, when the latter are used, the cones of dispersion of the fragments and balls of the exploding shrapnel slightly overlap each other for any given time of flight thus making a screen of exploding shrapnel sweep a zone about the ship from which the gun is fired and making it almost impossible for an attacking craft to pass through this zone without being hit.

What is claimed is:

1. In a gun mount, a carriage having a two part gun slide, a pair of guns mounted in said gun slide, and means associated with the two parts of the slide permitting relative movement in elevation of said guns.

2. In a gun mount, a carriage having a two part gun slide, a pair of guns mounted in said gun slide, and means associated with said gun slide permitting relative movement of said guns in train.

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3. In a gun mount, a carriage having a two part gun slide, a pair of guns mounted in said gun slide, and means associated with said gun slide permitting relative movement of said guns in train and elevation.

4. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said slide, and means associated with the two parts of the slide permitting relative adjustment in train between said guns.

5. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two-part gun slide trunnioned in said bearings, and means for connecting the two parts of the slide permitting relative adjustment in elevation therebetween.

6. In a gun mount, a carriage having a pair of cheeks provided with bearings, a two-part gun slide, each part of said slide having on its outer face a trunnion positioned in its respective bearings of said cheeks, a bearing carried on the inner face of one part of the slide, a trunnion on the inner face of the other part of the slide and mounted in said last mentioned bearing, and means for changing the angle of one part of said slide relative to the other part.

7. In a gun mount, a carriage having a pair of cheeks, a two-part gun slide each part of which has a trunnion positioned in its respective bearing on said cheeks, and a member pivoted on one of said parts of the slide, the other part of said slide being rotatably connected to said member.

8. In a gun mount, a carriage having a pair of cheeks, a two-part gun slide, each part of which has a trunnion positioned in its respective bearing in said cheeks, a member pivoted on a vertical axis on the inner face of one part of said slide and a bearing and trunnion between the other part of said slide and said member.

9. In a gun mount, a carriage having a pair of cheeks, a two-part gun slide trunnioned in said cheeks and a connection between the parts of said slide permitting relative movement in elevation and in train therebetween.

10. In a gun mount, a carriage having a pair of cheeks provided with bearings, a two-part gun slide trunnioned in the bearings of said cheeks and a member between the parts of said slide and pivoted to one part on a vertical axis and having a bearing, the other part of said slide having a trunnion positioned in said bearing.

11. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two-part gun slide trunnioned in said bearings, a bearing plate between said parts of the slide and pivoted on a vertical axis to one of them, said bearing plate having a bearing in substantial alinement with the bearings of said cheeks, and a trunnion on the other part of the slide positioned in said bearing.

12. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two-part gun slide trunnioned in said bearings, a member between said parts of the slide and pivoted on a vertical axis to one of them and having a bearing, a trunnion carried by the other part of the slide and positioned in said bearing of said member, means for adjusting the bearing of one of the cheeks of the carriage, and means for changing the elevation of one part of the slide relative to the other part.

13. In a gun mount, a carriage having a pair of cheeks each provided with a bearing and one of said bearings being adjustable, a two-part gun slide trunnioned in said bearings, a bearing plate between the parts of the slide and pivoted on a vertical axis to one of them, a trunnion carried by the other gun slide and mounted in the bearing of said plate, and means between said bearing plate and the last mentioned part of the slide for changing the relative angle in elevation between the parts of the slide.

14. In a gun mount, a carriage having a pair of cheeks each provided with a bearing and one of which bearings is adjustable, a two-part gun slide trunnioned in said bearings, a plate between said parts of the slide provided with a bearing and pivoted on a vertical axis to one of them, the other part of said gun slide having a trunnion engaging in the bearing of said plate, a segmental rack on said plate, and a worm carried by said last mentioned part of the gun slide.

15. In a gun mount, a carriage having a pair of cheeks, a fixed bearing in one of said cheeks, an adjustable wedge shaped bearing block carried by the other cheek, a pair of wedges for adjusting said bearing block, a two-part gun slide trunnioned in said bearings, and means for connecting the two parts of the slide and permitting relative adjustment in elevation and train therebetween.

16. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two part gun slide trunnioned in said bearings, means for connecting the two parts of the slide and permitting relative adjustment in elevation therebetween, and a support carried by the slide adjacent the connection between the parts thereof and being adapted to slide on a part of said carriage for preventing the slide from sagging at its center.

17. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said slide, and means associated with the two

parts of the slide for permitting relative adjustment in elevation between said guns.

18. In a gun mount, a carriage having a pair of cheeks each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said slide, and means associated with the two parts of the slide for permitting relative adjustment in elevation and train between said guns.

19. In a gun mount, a carriage having a pair of cheeks, each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said gun slide, means for simultaneously varying the angle in elevation of said guns, and means associated with the two parts of the slide for varying the elevation of one gun relative to the other.

20. In a gun mount, a carriage having a pair of cheeks, each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said gun slide, means associated with the two parts of the slide for varying the elevation of one gun relative to the other.

21. In a gun mount, a carriage having a pair of cheeks, each provided with a bearing, a two part gun slide trunnioned in said bearings, a pair of guns carried by said gun slide, means associated with the two parts of the slide for varying the elevation and train of one gun relative to the other.

DORA K. MUIR,
Administratrix of Edward A. Muir, deceased.