No. 818,942.

PATENTED APR. 24, 1906.

L. L. DRIGGS.

GUN MOUNT.

APPLICATION FILED APR. 14, 1904.

5 SHEETS—SHEET 1.

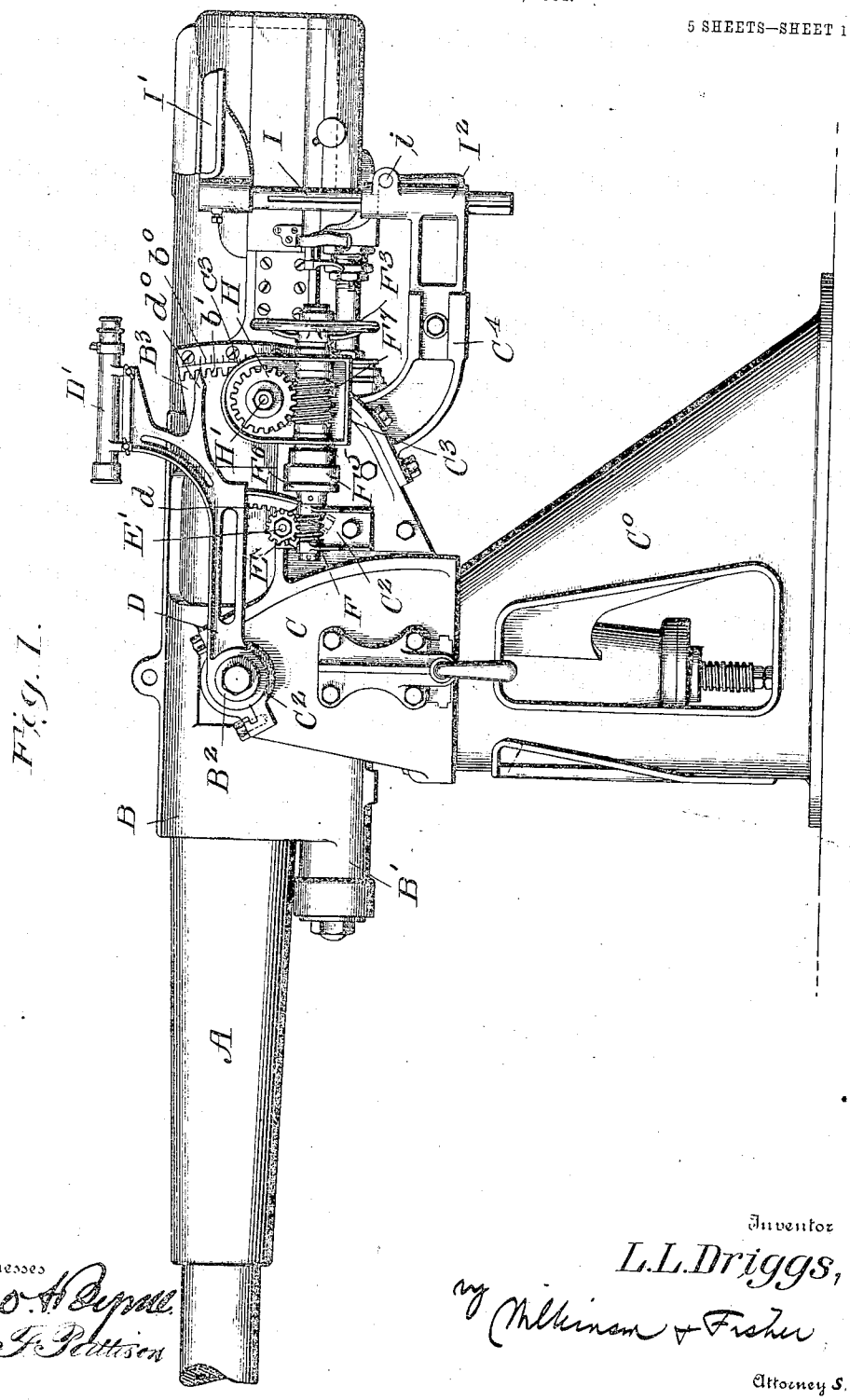



Fig. 1.

Witnesses
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5 SHEETS—SHEET 2.

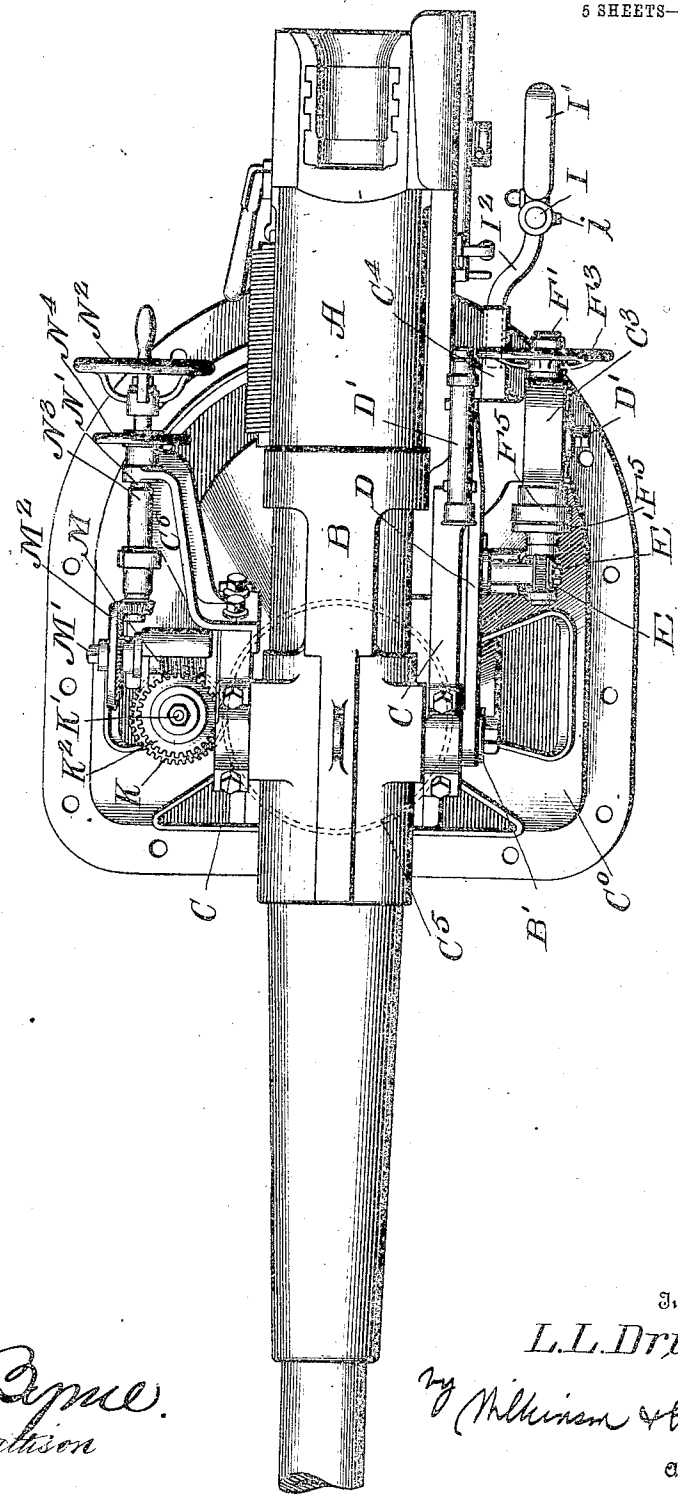



Fig. 2.

Witnesses
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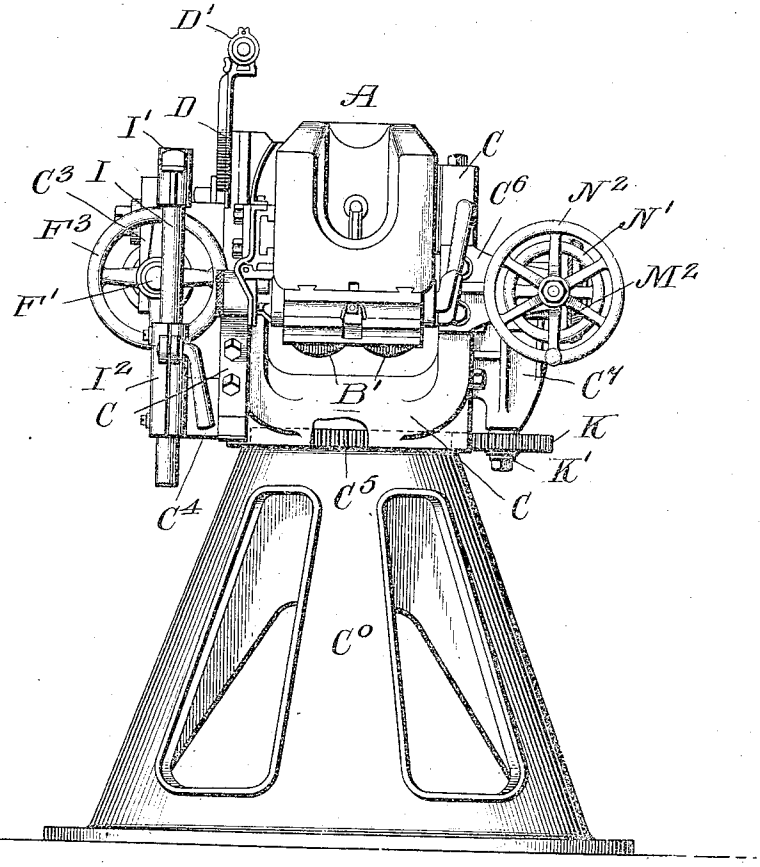
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GUN MOUNT.

APPLICATION FILED APR. 14, 1904.

5 SHEETS—SHEET 3.

Fig. 3.




Witnesses
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No. 818,942. PATENTED APR. 24, 1906.

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GUN MOUNT.

APPLICATION FILED APR. 14, 1904.

5 SHEETS—SHEET 4.

Fig. 4.

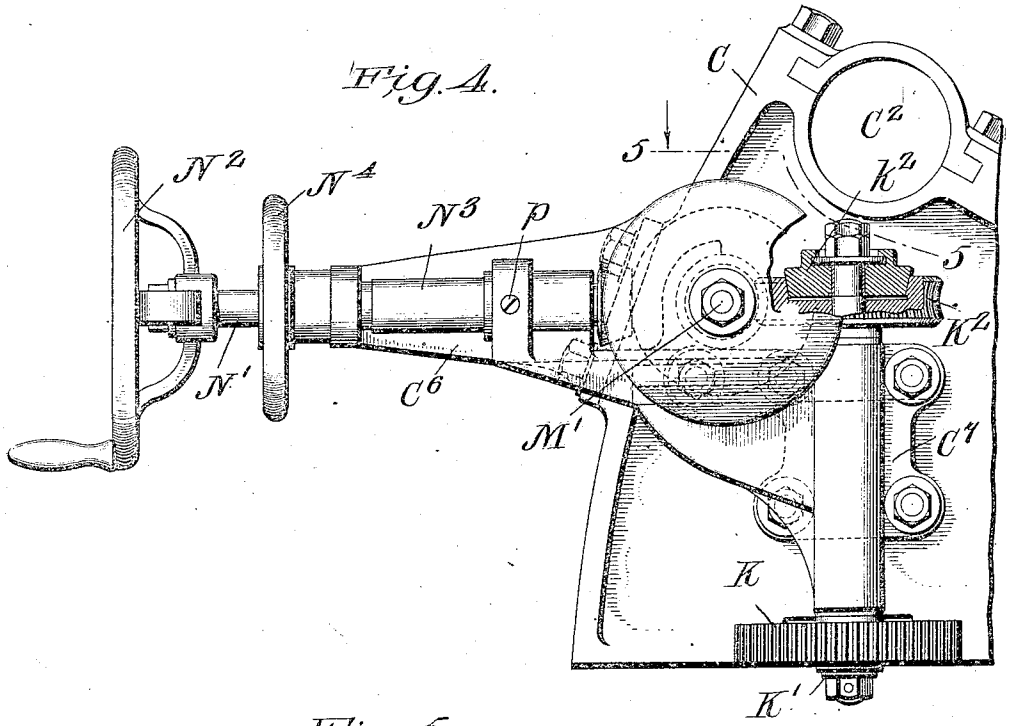



Fig. 5.

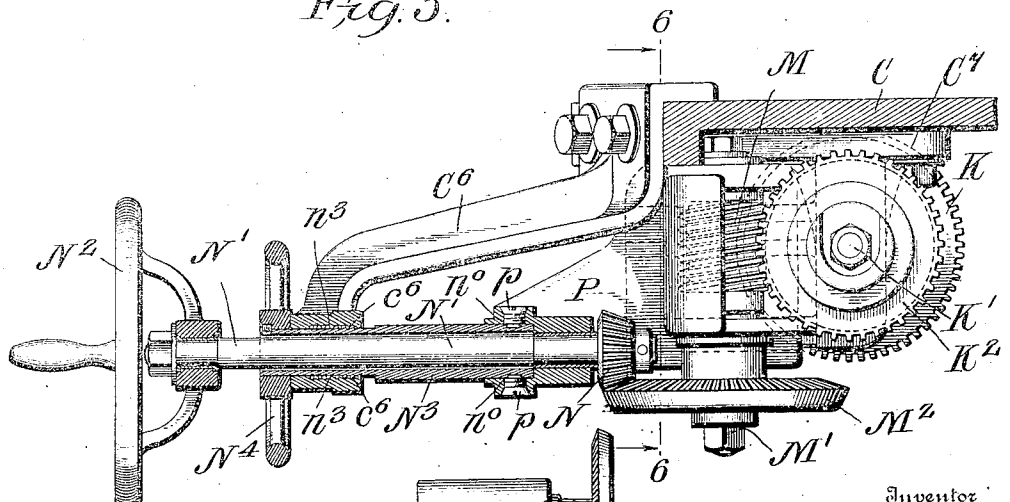
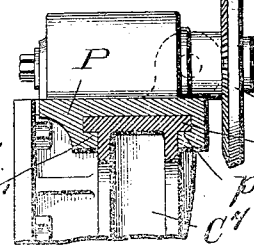



Fig. 6.




Witnesses

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5 SHEETS—SHEET 5.

Fig. 7.

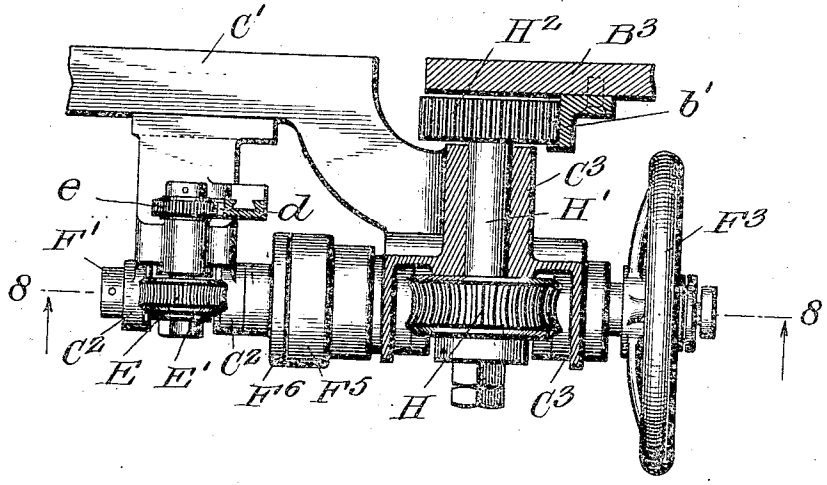
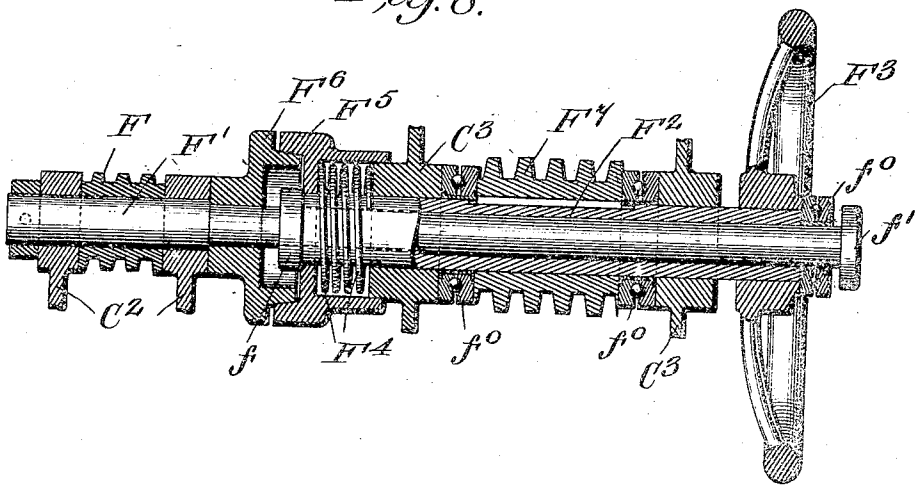



Fig. 8.




Witnesses

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Inventor

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# UNITED STATES PATENT OFFICE.

LOUIS LABADIE DRIGGS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE DRIGGS-SEABURY ORDNANCE CORPORATION, OF SHARON, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## GUN-MOUNT.

No. 818,942. Specification of Letters Patent. Patented April 24, 1906.

Application filed April 14, 1904. Serial No. 203,161.

*To all whom it may concern:*

Be it known that I, LOUIS LABADIE DRIGGS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Gun-Mounts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in gun-mounts, and it is more especially intended to provide means whereby the gun may be quickly and accurately pointed.

The improved means for pointing the gun comprises mechanism for adjusting the gun in elevation while the line of sight is kept on the target, thus regulating the adjustment between the line of sight and the line of fire without taking the sight or sights off the target, and also in improved means whereby the gun may be trained either from the shoulder-bar or by power-gearing, as may be desired.

My invention also consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter more fully described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 shows a side elevation of the gun and mount and shows the elevating-gear and sighting-arm with connected parts. Fig. 2 is a plan view of the gun and mount. Fig. 3 is a rear view of the gun-mount. Figs. 4 and 5 are detail views showing the training-gear on a larger scale, Fig. 5 being a section on the line 5 5 of Fig. 4 and looking down. Fig. 6 is a detail view, on a smaller scale, taken along the line 6 6 of Fig. 5 and looking in the direction of the arrows. Fig. 7 is a detail view showing parts of the elevating-gear and the sighting mechanism on an enlarged scale; and Fig. 8 represents a section of the parts mounted on the main elevating-shaft, the said section being along the line 8 8 of Fig. 7 and looking in the direction of the arrows.

A represents the gun, which is mounted to recoil in the rocking slide B against the resistance of the recoil-cylinders B'. This slide is mounted on trunnions $B^2$ on the top carriage C, which top carriage is turned on the bottom carriage $C^0$ in training the gun. The top carriage has a rearwardly-projecting web C', carrying the brackets $C^2$ and $C^3$.

D represents the sighting-arm, which is pivoted on one of the trunnions $B^2$ and is curved upward to carry a suitable sight—such, for instance, as the telescope D'. This sighting-arm is provided with an index $d^0$, which points to a graduated scale $b^0$ on the web $B^3$, which projects rearward from the slide B. This web also carries a curved rack $b'$. (See Figs. 1 and 7.) The sighting-arm D has a downwardly-projecting curved rack $d$ secured thereto, which rack meshes in the pinion $e$ on the shaft E', which shaft carries a worm-gear E, which meshes with the worm F, fast on the shaft F'. This shaft F' has loosely mounted thereon the sleeve $F^2$, carrying at one end the hand-wheel $F^3$ for turning said sleeve and provided at the other end with an annular rib $f$ to engage the clutch member $F^5$, which is normally pressed into engagement with the clutch member $F^6$ by means of the spring $F^4$. The clutch member $F^5$ is fast to the sleeve $F^2$, and the clutch member $F^6$ is fast to the shaft F', the shaft being journaled in the bracket $C^2$ and the sleeve $F^2$ being journaled in the bracket $C^3$. The end of the shaft F' is provided with a head $f'$ to limit the longitudinal motion of the sleeve thereon, and suitable antifriction-bearings $f^0$ are provided where desired. It will be seen from an inspection of Fig. 8 that the spring $F^4$ will normally tend to hold the clutch members $F^5$ and $F^6$ in frictional engagement, in which case if the hand-wheel $F^3$ be turned both the sleeve $F^2$ and the shaft F' will be turned with it, while if the hand-wheel be drawn out slightly against the action of the spring $F^4$, releasing the frictional engagement of the clutch members $F^5$ and $F^6$, the sleeve $F^2$ may be turned freely on the shaft F' without turning said shaft.

Splined on the sleeve $F^2$ is a worm $F^7$, which meshes in the worm-gear H on the shaft H', journaled in the bracket $C^3$, which shaft carries on its inner end the gear-wheel $H^2$, which meshes with the curved rack $b'$, fast to the vertical web $B^3$, which is secured to or integral with the slide B. Thus it will be seen

that if the hand-wheel $F^3$ be turned the gear-wheel $H^2$ will cause the rack $b'$ to rock the slide B about its trunnions $B^2$, thus elevating or depressing the gun. If the clutch members $F^5$ and $F^6$ are not in engagement, this turning of the hand-wheel $F^3$ will merely elevate and depress the gun without affecting the position of the sighting-arm; but when these clutch members are in engagement turning the hand-wheel $F^3$ will not only elevate or depress the gun, but will also impart a corresponding motion to the sighting-arm D by means of its rack $d$ and the gearing connecting said rack with the shaft F'.

In practice the sight is first brought to bear on the target irrespective of the elevation at which the gun is to be fired. Then keeping the sight on the target, the hand-wheel $F^3$ is drawn back, releasing the clutch members $F^5$ and $F^6$, and the gun is elevated or depressed until the pointer $d^0$ on the sighting-arm points to the proper elevation on the scale $b^0$. (See Fig. 1.) Now if the sight is still on the target the gun will be properly pointed. Now the hand-wheel is released and the sleeve $F^2$ is allowed to press forward under the action of the spring $F^4$, causing the clutch members $F^5$ and $F^6$ to engage, and both gun and sight may be rocked in unison about the trunnions $B^2$ by turning the hand-wheel $F^3$.

The worms and gear for operating the two racks $b'$ and $d$ are preferably so proportioned that both the sleeve and sighting-arm will be rocked through an equal angle, no matter what may be the motion of the hand-wheel $F^3$, and thus the relative bearing between the line of sight and the line of fire will be maintained constant, except, of course, for the slight difference due to setting the sight at an angle to compensate for drift, &c. This, however, is a feature well known in the art and need not be further considered in this specification.

Thus it will be seen that I provide means by which the desired angle between the line of sight and line of fire may be quickly and accurately arrived at without requiring the gun-pointer to take his sight off of the target, and as the gun is further elevated or depressed incident to pointing this angle between the line of sight and the line of fire will be maintained. This is of special importance in that in the method of sighting guns now most commonly in use when it is desired to change the elevation of the gun it is the practice to reset the rear sight and then to try to find the target by elevating or depressing the gun; but with the herein-described mechanism the sight is first brought on the target and then is kept there while the line of fire of the gun is brought into proper relation with the line of sight. In this way no time is lost in picking up the target and greater rapidity and accuracy of fire are obtainable.

For convenience in operating the gun the gun-pointer is provided with a shoulder-rest I', attached to the vertically-adjustable bar I, which is clamped at the desired height in the socket $I^2$ by means of the clamp $i$. This socket $I^2$ is detachably connected to the arm $C^4$, secured to the top carriage C.

The herein-described device for elevating and depressing the gun is intended to operate by mechanical means only independent of the shoulder-bar; but this bar may be used in training from the shoulder independently of or in connection with the training-gear that will now be described.

The training-gear proper is preferably on the opposite side of the gun from the shoulder-bar and elevating-gear and is operated by another member of the gun's crew, under the direction, of course, of the gun-pointer.

K represents a pinion meshing in a circular rack $C^6$, (see Fig. 3 and in dotted lines in Fig. 2,) fast on the lower carriage $C^0$. This pinion is fast on the shaft K', journaled in the bracket $C^7$, fast to the upper carriage C. This shaft K' has a worm-gear $K^2$ loosely mounted on the same near its upper end, which gear is caused to turn normally with said shaft by means of the friction-disk $k^2$. (See Fig. 4.) The purpose of this frictional engagement is to prevent the stripping of teeth or injury to other parts of the training-gear when excessive strains are imposed thereon. This worm-gear $K^2$ meshes with the worm M on the shaft M', which shaft carries the bevel-gear $M^2$, meshing with the pinion N on the shaft N', which shaft carries the hand-wheel $N^2$ and is journaled in the sleeve $N^3$, carrying the hand-wheel $N^4$. This sleeve is provided with a limited number of screw-threads $n^2$, which engage in a screw-threaded collar $c^6$, carried by the arm $C^5$, fast to the upper carriage C. By having these screw-threads $n^3$ not extending the full length of the screw-threads in the collar $c^6$ the sleeve may be moved longitudinally through a limited distance only; but it will be obvious that the threads of both sleeve and collar might be continuous, if desired. The sleeve $N^3$ is provided with an annular groove $n^0$, into which project the points of the screws $p$, carried by the block P, in which block the shaft M' is journaled. This block is provided with a guideway $p'$ (see Fig. 6) to engage the flanges $c^7$, so that the shaft M', and with it the worm M, may be moved toward or away from the worm-gear $K^2$ when desired. Thus when desired the man at the training-gear by turning the hand-wheel $N^4$ may throw the worm M into or out of engagement with the worm-gear $K^2$. When it is desired to train the gun quickly, a quick motion of the hand-wheel $N^4$ will cause the worm M to be drawn out of engagement from the gear $K^2$; and the gun may be trained from the shoulder-bar. If, however, it is desired to use the power mechanism for training or to secure nice adjustments

the hand-wheel $N^4$ is turned in the reverse direction, causing the block P to move toward the shaft K', which will cause the worm M to engage with the gear $K^2$, at which time the training of the gun may be effected by means of the hand-wheel $N^2$, which will rotate the pinion N and will turn the bevel-gear $M^3$ and the worm M, causing the latter to turn the pinion K, which will turn the upper carriage on the lower. Thus it will be seen that I have provided mechanism by means of which the gun may be roughly and quickly trained, as from the shoulder, while extremely accurate training is effected by suitable power mechanism, and that I have also provided mechanism by which the line of sight may be brought on the target and may be held there while the line of fire of the gun is brought into its proper relation with the line of sight.

It will be seen that the gun-pointer can hold one hand on the trigger-guard and with the other by manipulating the single wheel $F^3$ he is able to either change the angle between the line of fire and the line of sight or may swing both line of fire and line of sight simultaneously, as may be desired.

It will be evident that the sighting-arm D may be pivoted to any part of the top carriage, and the proportions of the same and the gearing for operating the same might be so altered to correspond to such change as to give the desired movement. This is a mechanical detail which may be worked by any one skilled in the art.

It will be obvious that various modifications might be made in the herein-described apparatus which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, gearing for elevating said rocking slide and other gearing for elevating said sighting-arm, with means for operating the first gearing alone, and clutch mechanism connecting said gearings for operating both simultaneously, substantially as and for the purposes described.

2. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a hand-wheel and gearing operated thereby for elevating said rocking slide, other gearing for elevating said sighting-arm, with clutch mechanism normally connecting said latter gearing with said hand-wheel, substantially as described.

3. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, gearing for elevating said rocking slide and a shaft with other gearing for elevating said sighting-arm, a hand-wheel and sliding sleeve secured thereto for operating the first gearing alone, and clutch mechanism normally connecting said sleeve and shaft for operating both gearings simultaneously, substantially as and for the purposes described.

4. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, with clutch mechanism normally connecting said shaft and sleeve, substantially as described.

5. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, a hand-wheel fast on said sleeve, and a spring-impressed friction-clutch normally holding said sleeve in frictional engagement with said shaft, substantially as described.

6. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage carrying a graduated scale, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, and provided with a pointer registering with said scale, worm-gearing for elevating said rocking slide and other worm-gearing for elevating said sighting-arm, with means for operating the first worm-gearing alone, or both worm-gearings simultaneously, substantially as and for the purposes described.

7. In a gun-mount, the combination with a lower carriage and an upper carriage pivot-

ed thereto, with hand-operated mechanism for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, gearing for elevating said rocking slide and other gearing for elevating said sighting-arm, with means for operating the first gearing alone, and clutch mechanism connecting said gearings for operating both simultaneously, substantially as and for the purposes described.

8. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with hand-operated mechanism for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a hand-wheel and gearing operated thereby for elevating said rocking slide, other gearing for elevating said sighting-arm, with clutch mechanism normally connecting said latter gearing with said hand-wheel, substantially as described.

9. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with a shoulder-bar fast to the upper carriage, and independent detachable means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, gearing for elevating said rocking slide and a shaft with other gearing for elevating said sighting-arm, a hand-wheel and sliding sleeve secured thereto for operating the first gearing alone, and clutch mechanism normally connecting said sleeve and shaft for operating both gearings simultaneously, substantially as and for the purposes described.

10. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with a shoulder-bar fast to the upper carriage, and independent detachable means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, with clutch mechanism normally connecting said shaft and sleeve, substantially as described.

11. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with a shoulder-bar fast to the upper carriage, and independent detachable means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a sighting-arm pivoted about the axis of the trunnions of the rocking slide, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, a hand-wheel fast on said sleeve, and a spring-impressed friction-clutch normally holding said sleeve in frictional engagement with said shaft, substantially as described.

12. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a pivoted sighting-arm, gearing for elevating said rocking slide and other gearing for elevating said sighting-arm, with means for operating the first gearing alone, and clutch mechanism connecting said gearings for operating both simultaneously, substantially as and for the purposes described.

13. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a pivoted sighting-arm, a hand-wheel and gearing operated thereby for elevating said rocking slide, other gearing for elevating said sighting-arm, with clutch mechanism normally connecting said latter gearing with said hand-wheel, substantially as described.

14. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a pivoted sighting-arm, gearing for elevating said rocking slide and a shaft with other gearing for elevating said sighting-arm, a hand-wheel and sliding sleeve secured thereto for operating the first gearing alone, and clutch mechanism normally connecting said sleeve and shaft for operating both gearings simultaneously, substantially as and for the purposes described.

15. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide trunnioned in the upper carriage, with a gun mounted to recoil therein, a pivoted sighting-arm, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, with clutch mechanism normally connecting said shaft and sleeve, substantially as described.

16. In a gun-mount, the combination with a lower carriage and an upper carriage pivoted thereto, with means for training the upper carriage on the lower, of a rocking slide

trunnioned in the upper carriage, with a gun mounted to recoil therein, a pivoted sighting-arm, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, a hand-wheel fast on said sleeve, and a spring-impressed friction-clutch normally holding said sleeve in frictional engagement with said shaft, substantially as described.

17. In an apparatus for pointing guns, the combination with a single hand-wheel, of mechanism operated thereby for varying the angle between the line of fire and the line of sight, and other mechanism also operated by said hand-wheel, for moving both line of sight and line of fire simultaneously in elevation, when desired substantially as described.

18. In a gun-mount, the combination of a rocking slide, a gun mounted to recoil therein, a pivoted sighting-arm, gearing for elevating said rocking slide, and other gearing for elevating said sighting-arm, with means for operating the first gearing alone, and clutch mechanism connecting said gearings for operating both simultaneously, substantially as described.

19. In a gun-mount, the combination of a rocking slide, a gun mounted to recoil therein, a pivoted sighting-arm, a hand-wheel, and gearing operated thereby for elevating said rocking slide, other gearing for elevating said sighting-arm, with clutch mechanism normally connecting said latter gearing with said hand-wheel, substantially as described.

20. In a gun-mount, the combination with a rocking slide, and a gun mounted to recoil therein, of a pivoted sighting-arm, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, with clutch mechanism normally connecting said shaft and sleeve, substantially as described.

21. In a gun-mount, the combination with a rocking slide, of a gun mounted to recoil therein, a pivoted sighting-arm, a shaft with gearing operated thereby for elevating said sighting-arm, a sleeve sliding on said shaft, and gearing operated thereby for elevating said rocking slide, a hand-wheel fast on said sleeve, and a spring-impressed friction-clutch normally holding said sleeve in frictional engagement with said shaft, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS LABADIE DRIGGS.

Witnesses:

G. A. BRERETON,

WM. H. DRIGGS.