

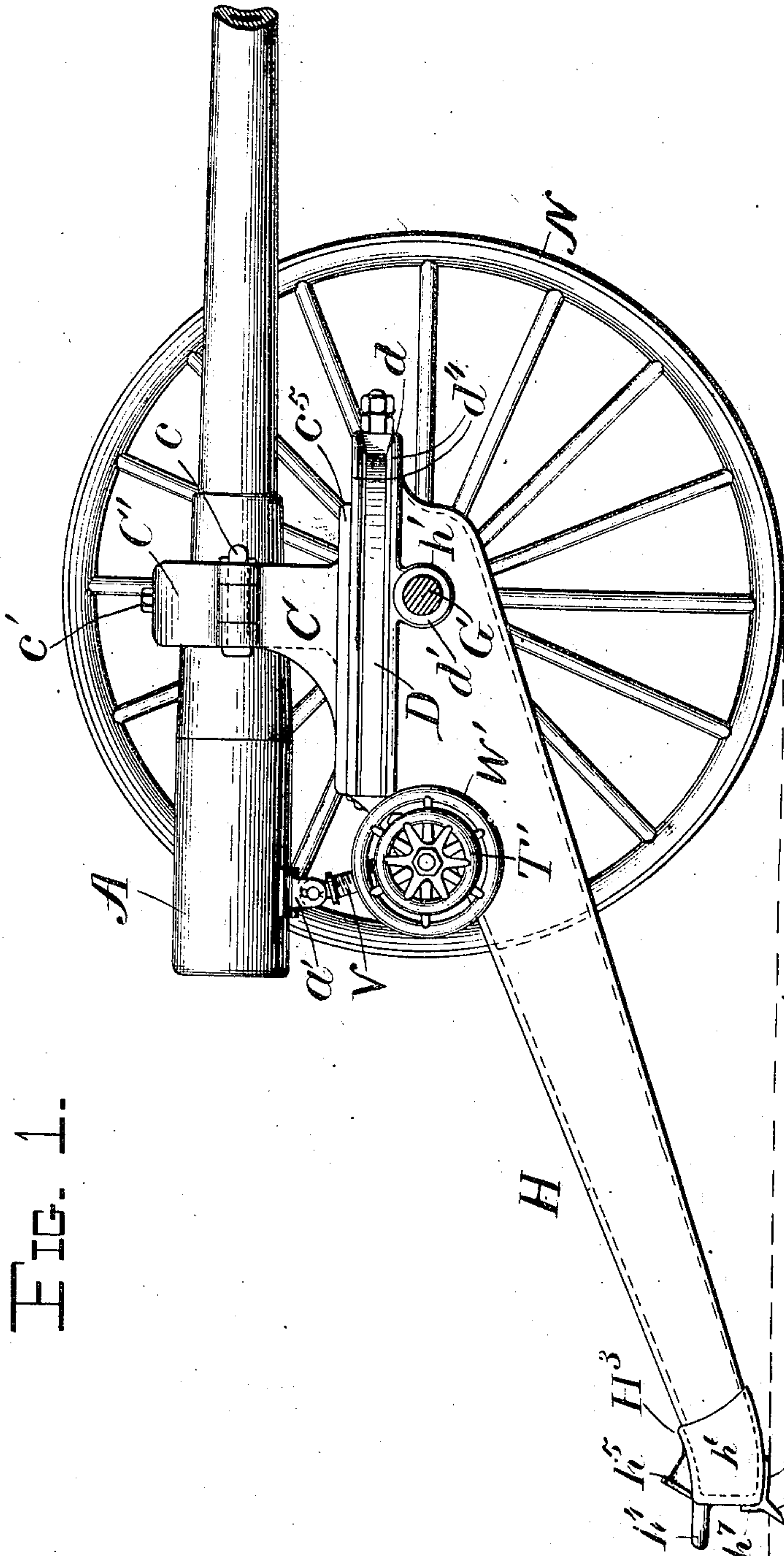
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3 Sheets—Sheet 1.

L. L. DRIGGS.  
MOUNT FOR FIELD ARTILLERY.

No. 575,506.

Patented Jan. 19, 1897.



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Witnesses  
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Attorneys

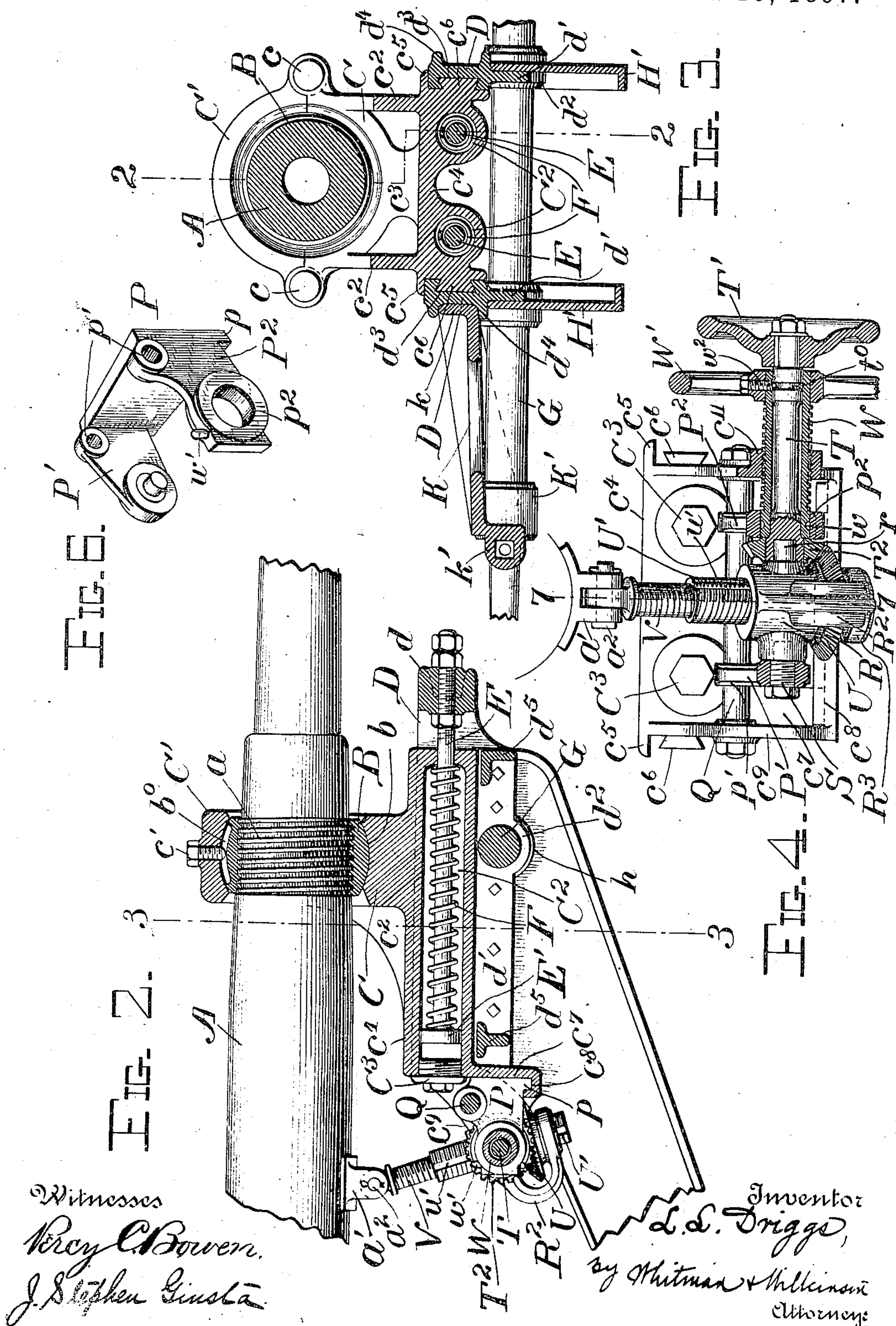
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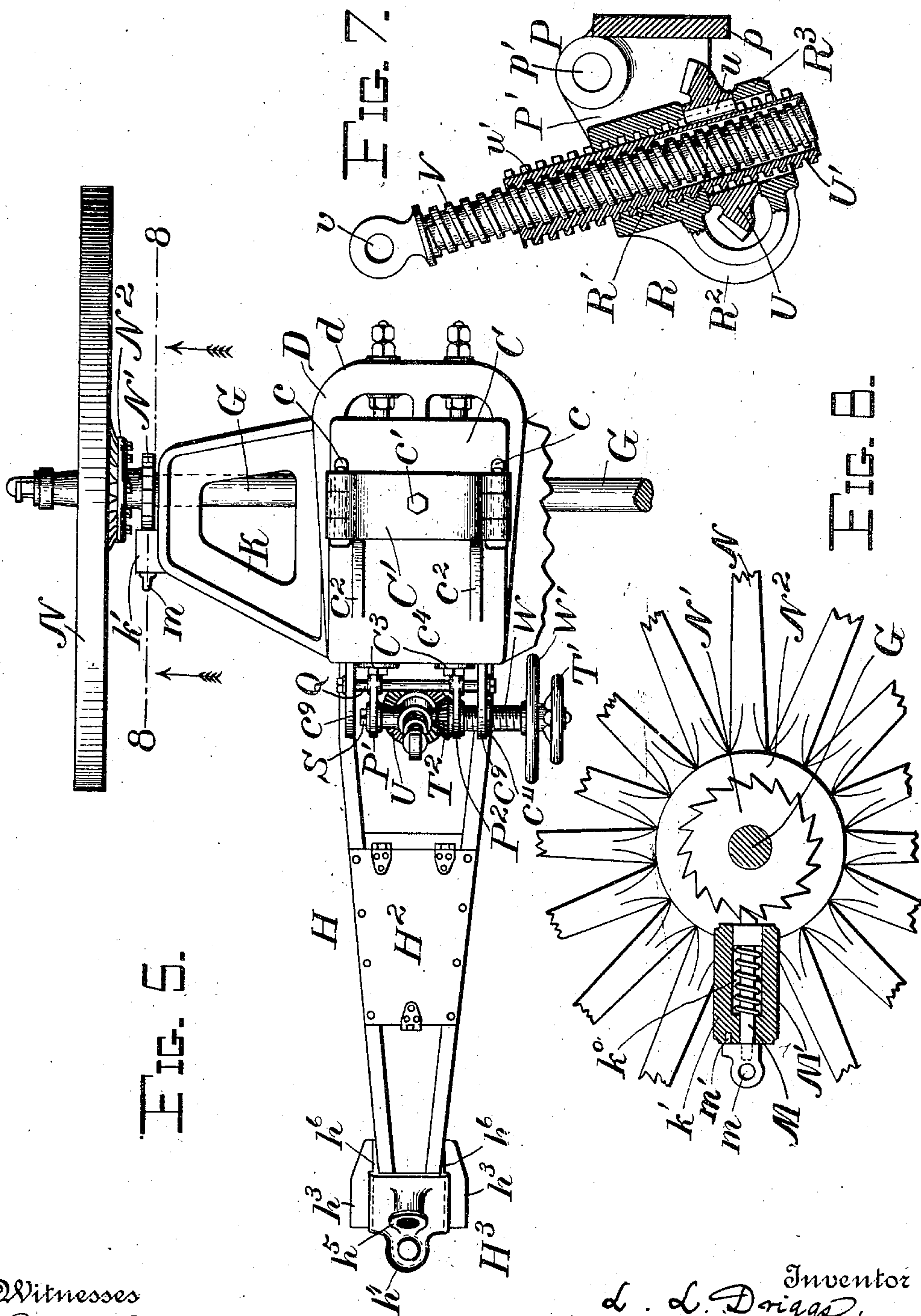
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# UNITED STATES PATENT OFFICE.

LOUIS LABADIE DRIGGS, OF WASHINGTON, DISTRICT OF COLUMBIA.

## MOUNT FOR FIELD-ARTILLERY.

SPECIFICATION forming part of Letters Patent No. 575,506, dated January 19, 1897.

Application filed March 20, 1896. Serial No. 584,167. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS LABADIE DRIGGS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Mounts for Field-Artillery; 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 invention relates to improvements in mounts for field-artillery; and it consists in certain novel features hereinafter 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 represents a side elevation of the improved field-mount, one of the wheels being removed for the sake of clearness in the drawing and the axle being shown in section. Fig. 2 represents a section along the broken line 2 2 of Fig. 3 and looking to the left. Fig. 3 represents a section along the line 3 3 of Fig. 2 and looking to the right. Fig. 4 represents a rear view, partly in section, of the elevating and training gear. Fig. 5 represents a plan view of part of the field-mount, the gun being removed. Fig. 6 is a perspective view of the bracket plate or frame used in the training-gear. Fig. 7 represents a section along the line 7 7 of Fig. 4, and Fig. 8 represents a section along the line 8 8 of Fig. 5 and looking in the direction of the arrows. Fig. 9 represents a rear view of the lower end of the trail.

A represents the body of the gun, which is provided with screw-threads, as at  $a$ , on which the band B is screwed. This band is in the form of a zone of a sphere extending on either side of a great circle thereof and curved outward, as shown at  $b$ , while the said band is provided with a longitudinal circular groove  $b'$ , adapted to receive the point of the screw  $c'$ , which passes through the cap-piece  $C'$ , attached to the saddle C by means of the pins  $c$ . This saddle is provided with ribs  $c^2$  and the neck  $c^3$ , terminating in the base-piece, which is bored out with hydraulic cylinders  $C^2$ , constructed to allow a graduated recoil in any of the well-known ways. The upper portion of

this base piece or casting is preferably made flat, as at  $c^4$ , and the ends of the hydraulic cylinder are preferably closed by screw-plugs  $C^3$ . The sides of this base-piece are provided with dovetailed ribs  $c^6$ , adapted to engage in the slideway  $d^3$  of the slide D. The base-piece may also be provided with ribs  $c^5$ , projecting above the upper edge of the said slideway. The travel of the saddle in the slide is limited by the piston-rods E, carrying the pistons E, which move in the hydraulic cylinders  $C^2$ . The cylinders inclose the springs F, which tend to return the gun to the initial or firing position. These piston-rods E are connected to the yoke-piece  $d$  of the slide D in any convenient way, such, for instance, as is shown in Figs. 1, 2, and 5. The slide D is provided with ribs  $d'$  and lugs  $d^2$ , encircling the axle G. These ribs  $d'$  are bolted to the cheek-pieces  $H'$  of the trail H, and are preferably strengthened by cross-ribs  $d^5$ , as shown in Fig. 2. Thus it will be seen that the trail H and the slide D are rigidly connected together and are revolvably mounted on the axle G. The trail may be provided with a box  $H^2$  for supply-tools or ammunition, if desired.

The lower end of the trail is provided with a cap  $H^3$  having curved sides  $h^6$  and the usual eye  $h^4$  for the trail-rope and step  $h^5$  for the hand-spike. The spade  $h^2$  is secured to the lower rear face of this cap  $h^3$  and projects backward and downward. This spade is made integral with the plates  $h^3$  and  $h^7$ , which are rigidly attached to the cap  $H^3$ , while the spade slopes up sidewise, as at  $h^0$ . The function of these plates  $h^3$  and  $h^7$  is to prevent the spade from being forced down in the ground too far when the gun recoils.

The slide D is provided with ribs on the outside thereof, as at  $d^4$ , between which ribs is secured the head of one of the brackets K, which bracket is connected to the collar  $K'$  on the axle, near the hub of the wheel. This collar is preferably made integral with the bracket K, but it may be made separate therefrom and rigidly attached thereto, if desired. By the herein-described construction the strain on the axle is in a large measure transferred to that part of the axle near the wheel, whereby a much lighter axle may be used than if no such provision were made. The



ammunition-boxes may be mounted upon these brackets K, if desired.

The bracket K carries a rearwardly-projecting lug  $k'$ , through which passes the spring-pawl M, operated by a spring M', inclosed in the chamber  $k^0$ , as shown in Fig. 8. This pawl is provided with an eye  $m$ , by which it may be drawn to the rear, and it is held out of engagement with the teeth of the ratchet-wheel N', when desired, by means of the tongue  $m'$ , which fits in a corresponding recess in the lug  $k'$  when the pawl is in the engaged position, as shown in Fig. 8, and yet which bears against the face of said lug when the pawl is rotated through a small angle, and thus holds the said pawl out of engagement with the teeth of the said ratchet-wheel N', which wheel is mounted on or rigidly attached to the hub N<sup>2</sup> of the wheel N. By this arrangement the carriage may be moved to the front, as may be desired, but the wheels are locked against backward motion, thus securing the assistance of the wheels in taking up the recoil of the gun and checking the motion of the carriage to the rear. For the same purpose the trail H is provided with a spade  $h$ , adapted to engage in the ground and to prevent the carriage from moving backward as the gun recoils.

The apparatus for giving the gun elevation and lateral train in the saddle C, independent of the position of the trail H, will now be described.

A frame or casting P, provided with a guide-rib  $p$ , abuts against the rear face  $c^7$  of the saddle, while the said rib  $p$  slides in the groove  $c^8$ , as shown in Fig. 2. This frame is provided with two guide-sleeves  $p'$ , adapted to slide on the bar Q, spanning the webs  $c^9$  at the rear end of the saddle. This frame P is provided with an end bracket P', screw-threaded to receive a journal-pin S, while the opposite bracket P<sup>2</sup> is also perforated, as at  $p^2$ , to receive the training-screw W, which screw is revolvably mounted in said opening  $p^2$ , but is held against longitudinal motion therein by means of the groove  $w$  and the pin  $w'$ . (Shown most clearly in Figs. 4 and 8.) This training-screw engages in the nut  $c^{11}$ , fast to or integral with the saddle C.

R represents a cruciform nut or sleeve pivoted at one side on the pin S, and provided on the opposite side with a trunnion  $r$ , journaled in a socket in the end of the elevating-screw T, which screw is rotated by means of the hand-wheel T' and is held against longitudinal motion in the hollow training-screw W by means of the circular groove  $p^0$  and the screw  $w^2$ , which latter projects into said groove and is screwed into the hub of the hand-wheel W' used for training the gun in its saddle. The forward end of this shaft T carries a miter-gear T<sup>2</sup>, meshing in the miter-gear U, held between the cruciform nut or sleeve R and the extension thereof, R<sup>2</sup>, which extension is connected to the sleeve proper by the curved rib R<sup>2</sup>. This miter-gear U is

splined, as at  $u'$ , on the outer screw U', which engages in a thread cut on the interior of the sleeve R, while the interior of this outer screw U' is cut with a female thread to receive the male screw V, which is secured to the lugs  $a$  of the gun, as by means of the pin  $a^2$ . By the use of this compound screw the gun may be elevated or depressed with great rapidity, and great compactness of the parts is obtained.

It will be seen that by turning the hand-wheel T' the gun may be elevated or depressed without altering the train, while by turning the hand-wheel W' the screw W engages in the nut  $c^{11}$  and gives the gun a small lateral train relative to the slide D.

The curved band B, resting in the saddle C, allows the gun to be elevated or depressed in the said saddle, while the pin  $c'$ , fitting in the longitudinal groove  $b^0$ , prevents the gun from rolling through any appreciable angle about its axis, while at the same time it allows free lateral play within certain limits.

In field-artillery as hitherto constructed it has ordinarily been found necessary to point the gun by using the trail for training purposes, and the elevating-gear to get the proper elevation or depression, thus requiring the services of two men, and at the same time the operation of moving the trail formed but a rough and inaccurate means of training the gun, and the act of lifting the trail prevented the gun-servant from keeping the gun continuously pointed at the proper elevation. This therefore necessitated practically separate and distinct operations for elevating and training the gun, whereas with the herein-described apparatus these two operations may be simultaneously performed by one man, who simply has to turn two contiguous wheels. Moreover, the operation of pointing the gun may be far more rapidly performed than under conditions that previously prevailed with field-guns.

The various other advantages of the herein-described construction will readily suggest themselves to any one skilled in the art.

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

1. In a mount for artillery, the combination with a gun, of a saddle supporting said gun, an elevating-screw carried by said saddle, and a training-screw also carried by said saddle, substantially as described.

2. In a mount for artillery, the combination with a gun, of a saddle supporting said gun, a compound elevating-screw carried by said saddle, and means for turning the same, and a training-screw also carried by said saddle, substantially as described.

3. In a mount for artillery, the combination with a gun provided with a spherical band thereon, of a saddle provided with a concave support for said band, an elevating-screw carried by said saddle and connected to said gun and a training-screw also carried by said



saddle with mechanism operated thereby for swinging said gun laterally in said saddle, substantially as described.

4. In a mount for artillery, the combination  
5 with a gun provided with a convex band thereon, of a saddle provided with a concave support for said band, a compound elevating-screw carried by said saddle and connected to said gun, means for turning the said screw,  
10 and a training-screw with mechanism operated thereby for swinging said gun laterally in said saddle, substantially as described.

5. In a mount for artillery, the combination  
15 with a gun provided with a convex band thereon, with a longitudinal groove cut in the surface of said band, of a saddle provided with a concave support for said band, and a pin projecting from said saddle into said groove, substantially as described.

20 6. In a mount for artillery, the combination with a gun provided with a convex band thereon, with a longitudinal groove cut in the surface of said band, of a saddle provided with a concave support for said band and also provided with a detachable cap, and a pin projecting through said cap into said groove, substantially as described.

7. In a mount for artillery, the combination  
30 with a gun provided with a convex band thereon, with a longitudinal groove cut in the surface of said band, of a saddle provided with a concave support for said band, and also provided with a detachable cap, and a pin projecting through said cap into said groove, an elevating-screw carried by said saddle and connected to said gun and a training-screw  
35 also carried by said saddle with mechanism operated thereby for training the gun, substantially as described.

40 8. In a mount for artillery, the combination with a gun provided with a convex band thereon, with a longitudinal groove cut in the surface of said band, of a saddle provided with a concave support for said band, and also provided with a detachable cap and a pin projecting through said cap into said groove, a  
45 compound elevating-screw carried by said saddle and connected to said gun, and a training-screw also carried by said saddle with mechanism connecting the same to said elevating-screw, and concentric hand-wheels  
50 with mechanism operated thereby for operating said elevating and training screws, substantially as described.

55 9. An apparatus for elevating and depressing guns, comprising a compound screw having the inner member attached to the gun, and the outer member externally screw-threaded and longitudinally slotted, a nut secured to  
60 the gun-carriage and engaging said outer screw-threads, a gear-wheel splined on said outer member but permitting the longitudinal motion of said outer member therein, a pinion meshing in said gear-wheel, and a shaft  
65 and hand-wheel for turning said pinion, substantially as described.

10. An apparatus for elevating and training

guns, comprising a compound screw having the inner member attached to the gun and the outer member externally screw-threaded  
70 and longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said outer screw-threads, a gear-wheel splined on said outer member but permitting the longitudinal motion of the said member therein, a  
75 pinion meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, and mechanism for moving said nut laterally on the gun-carriage, substantially as described.

11. An apparatus for elevating and training  
80 guns, comprising a compound screw having the inner member attached to the gun and the outer member externally screw-threaded and longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said  
85 outer screw-threads, a gear-wheel splined on said outer member, a pinion meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, a frame inclosing said pivoted nut, and a training-screw and hand-wheel  
90 for moving said frame laterally, substantially as described.

12. In an apparatus for elevating and training guns, the combination with a compound  
95 screw having the inner member attached to the gun and the outer member externally screw-threaded and longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said outer screw-threads, a gear-wheel splined on said outer member, a pinion  
100 meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, a frame inclosing said pivoted nut, and a training-screw and hand-wheel concentric with the shaft and hand-wheel for operating the elevating-screw, whereby the said frame may be  
105 moved laterally, substantially as described.

13. In a mount for field-artillery, the combination with a trail, a slide secured thereto  
110 and a saddle supporting the gun and adapted to move longitudinally in said slide, of an axle supporting said slide and trail, and bracket-plates rigidly secured to said slide and projecting outward and downward and provided with sleeves fitting snugly over said axle near  
115 the hubs of the wheels, substantially as described.

14. In a mount for field-artillery, the combination with a slide, of a saddle supporting the gun and adapted to move longitudinally  
120 in said slide, recoil-cylinders in said saddle with piston-rods secured to said slide, an axle supporting said slide and the parts carried thereby, and bracket-plates rigidly secured to said slide and projecting outward and downward and provided with sleeves fitting snugly  
125 over said axle near the hubs of the wheels, substantially as described.

15. An apparatus for elevating and depressing guns comprising an elevating-screw  
130 longitudinally slotted, a nut secured to the gun-carriage and engaging said screw, a gear-wheel splined on said screw but permitting the longitudinal motion of said screw therein,



a pinion meshing in said gear-wheel, and a shaft and hand-wheel for turning said pinion, substantially as described.

16. An apparatus for elevating and training guns, comprising an elevating-screw longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said screw, a gear-wheel splined on said screw, a pinion meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, and mechanism for moving said nut laterally on the gun-carriage, substantially as described.

17. An apparatus for elevating and training guns, comprising an elevating-screw, longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said screw, a gear-wheel splined on said screw, a pinion meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, a frame inclosing said pivoted nut and a training-screw and hand-wheel for moving said frame laterally, substantially as described.

18. An apparatus for elevating and training guns, comprising an elevating-screw, longitudinally slotted, a nut pivotally secured to the gun-carriage and engaging said screw, a gear-wheel splined on said screw, a pinion meshing in said gear-wheel, a shaft and hand-wheel for turning said pinion, a frame inclosing said pivoted nut and a training-screw and hand-wheel concentric with the shaft and hand-wheel for operating the elevating-screw whereby the said frame may be moved laterally, substantially as described.

19. In a mount for field-artillery, the combination with a gun provided with a convex band thereon, with a longitudinal groove cut in the surface of said band, of a saddle provided with a concave support for said band, and also provided with a detachable cap and a solid body held partly in said cap and partly in said groove, and adapted to prevent said gun from rotating on its axis, substantially as described.

20. In a mount for field-artillery, the combination with a trail, a slide secured thereto, and a saddle supporting the gun and adapted to move longitudinally in said slide, of an axle supporting said slide and trail, bracket-plates rigidly secured to the said slide and project-

ing outward and downward, and provided with sleeves fitting snugly over said axle near the hubs of the wheels, and brake mechanism carried by said sleeves for locking the wheels against backward motion when desired, substantially as described.

21. In a mount for field-artillery, the combination with a trail, a slide secured thereto, and a saddle supporting the gun and adapted to move longitudinally in said slide, of an axle supporting said slide and trail, bracket-plates secured to said slide and projecting outward and downward and provided with sleeves fitting snugly over said axle near the hubs of the wheels, a spring-operated pawl carried by each of said sleeves, and a ratchet-wheel rigidly attached to the hub of the wheel and engaging said spring-operated pawl and locking the wheel against backward rotation when desired, substantially as described.

22. In a mount for field-artillery the combination with a trail, means for supporting the gun connected to said trail, of an axle connected to said trail, bracket-plates extending from the gun-support outward and downward and provided with sleeves fitting snugly over the axle near the hubs of the wheels, substantially as described.

23. In a mount for field-artillery, the means for preventing the wheels from rotating backward when desired, which comprise a ratchet-wheel attached rigidly to the hub of each wheel, a spring-operated pawl *M* mounted in the framework of the carriage and adapted to engage said ratchet-wheel, a spring *M'* normally pressing said pawl forward, a retracting-eye *m* for drawing said pawl backward and a pin *m'* adapted to fit in the corresponding ratchet when the pawl is in engagement and to bear against the face of the frame when the pawl is drawn out of engagement with the ratchet-wheel, substantially as described.

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

LOUIS LABADIE DRIGGS.

Witnesses:

JOS. H. BLACKWOOD,

F. C. YEATES.