

No. 632,634.

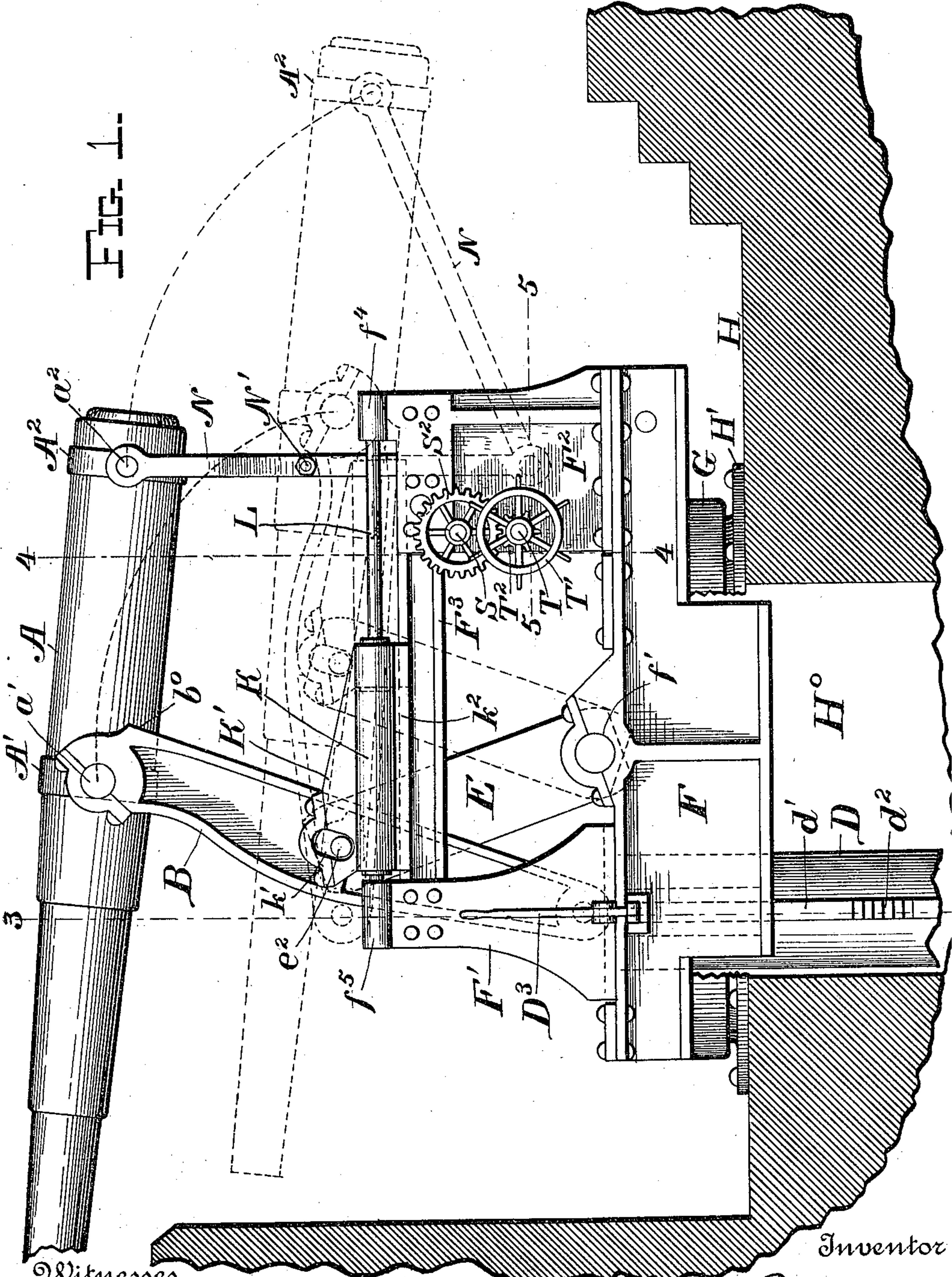
Patented Sept. 5, 1899.

P. BORGER.
GUN MOUNT.

(Application filed Mar. 16, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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3 Sheets—Sheet 2.

FIG. 2.

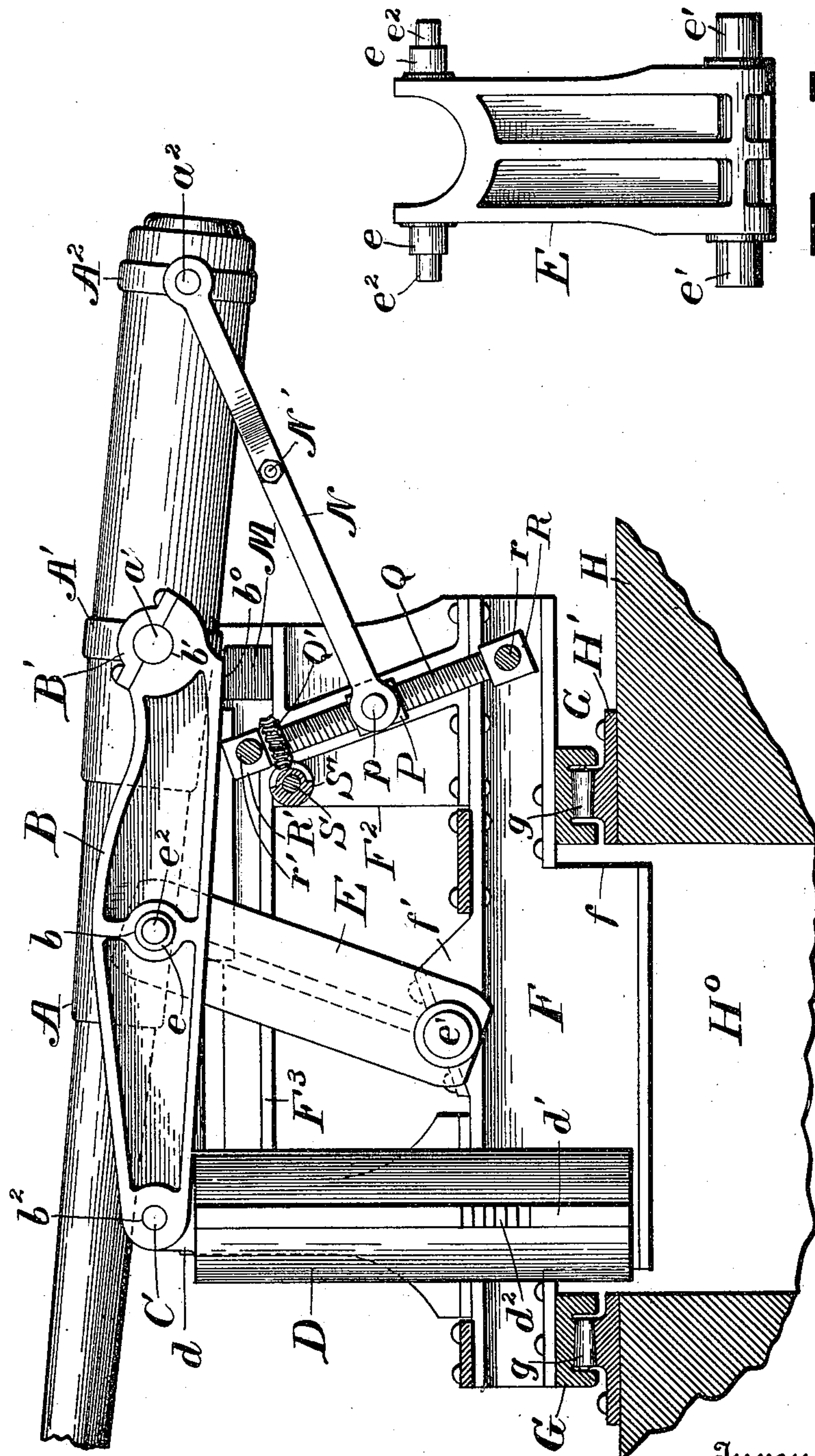


FIG. 2.

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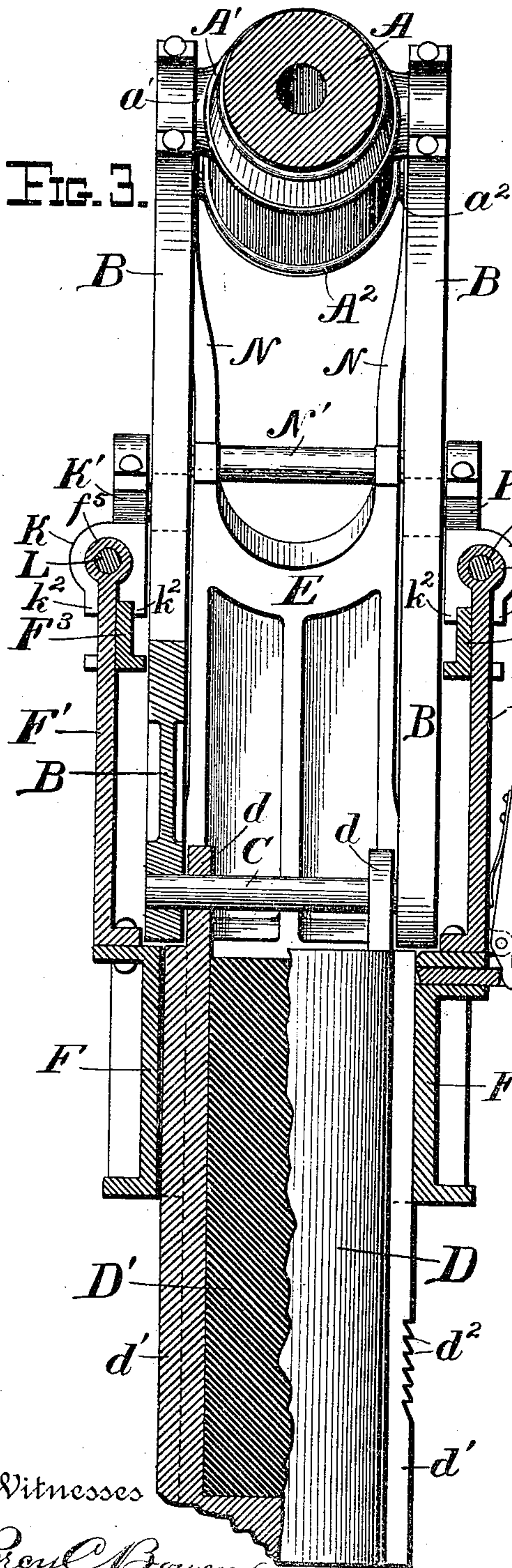
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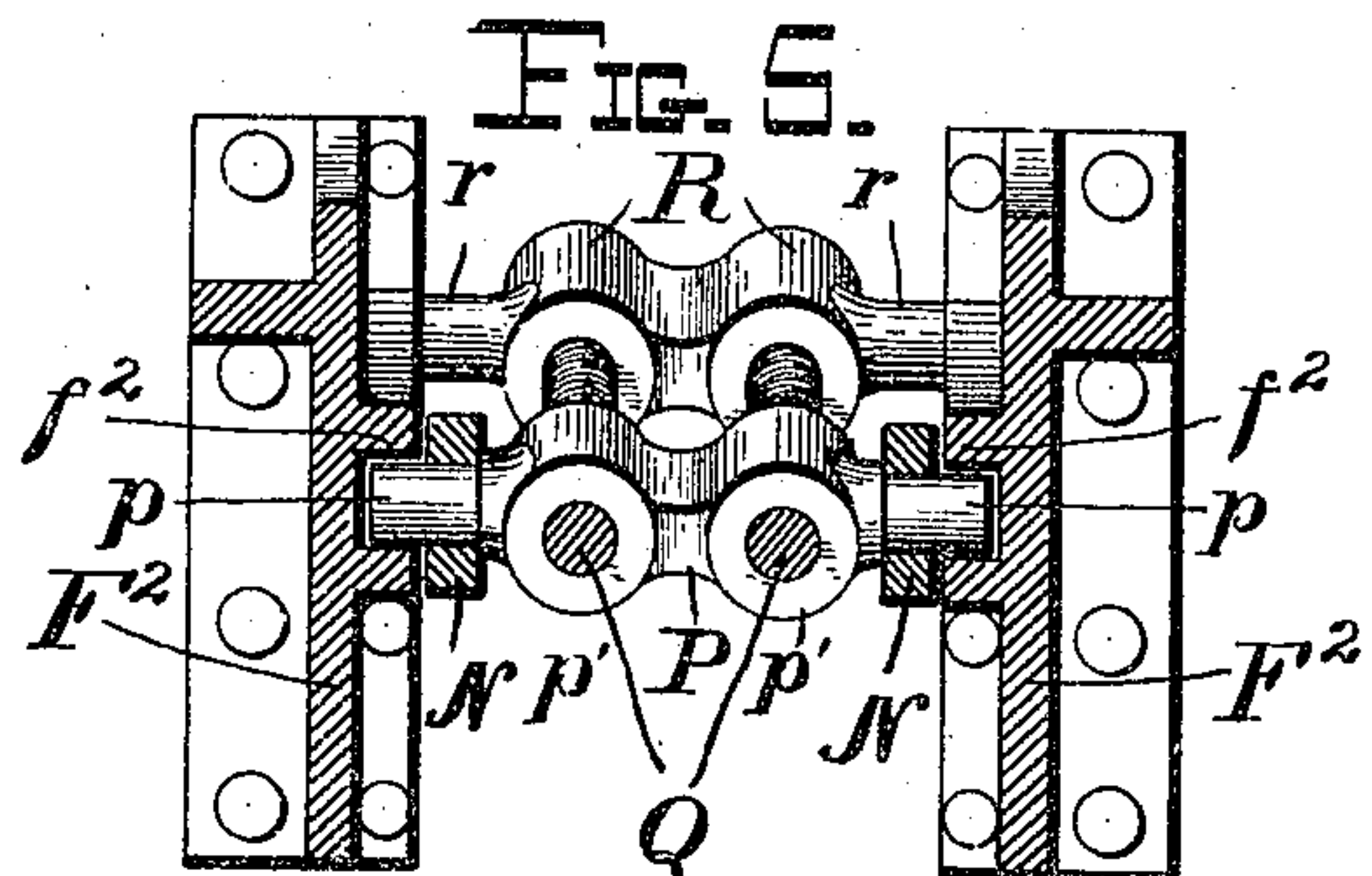
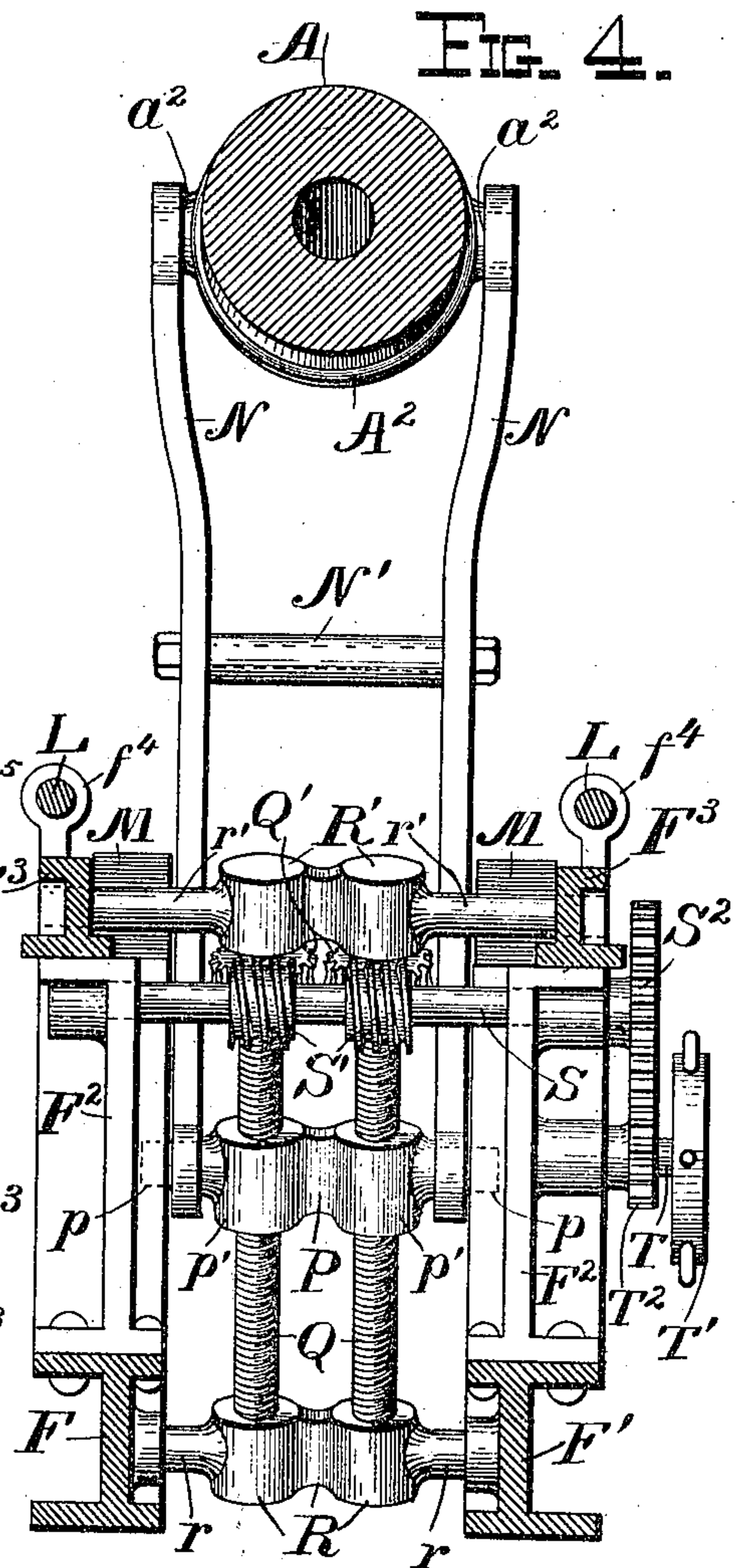
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

PAUL BORGER, OF BALTIMORE, MARYLAND.

GUN-MOUNT.

SPECIFICATION forming part of Letters Patent No. 632,634, dated September 5, 1899.

Application filed March 16, 1899. Serial No. 709,331. (No model.)

To all whom it may concern:

Be it known that I, PAUL BORGER, a citizen of the United States, residing at Baltimore, in the State of Maryland, 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 invention relates to improvements in gun-mounts of the disappearing system; and it consists of certain novel features and of certain novel constructions, combinations, and arrangements of parts, which will be 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 is a side elevation of the gun-mount and the gun in the firing position, parts being broken away and the gun-platform being shown in section. Fig. 2 is a similar view showing the gun after it has been fired and in the lowered position, in which position the gun is loaded and sighted. Fig. 3 is a sectional elevation, partly in section, along the line 3 3 and looking from the muzzle of the gun. Fig. 4 represents a transverse vertical section along the line 4 4 of Fig. 1, looking to the right. Fig. 5 represents a section along the line 5 5 of Fig. 1 and looking down, and Fig. 6 represents an elevation of the saddle detached from the mount.

A represents the gun, which is provided with the trunnion-band A' , having the trunnions a' , and with the rear band A^2 , with lugs a^2 for the elevating-gear. These trunnions a' are mounted in suitable bearings b' in the upper end of the gun-levers B and are held in place by cap-squares B' . These gun-levers B are perforated, as at b , to receive the upper trunnions e of the saddle E , which saddle is also provided with the lower trunnions e' , mounted in the bearing-blocks f' above the side brackets F of the gun-mount. Thus it will be seen that the gun-levers are pivoted on the upper end of the saddle E , while the saddle is pivoted on the two side brackets of the gun-carriage. The lower or forward end

of the gun-levers is perforated, as at b^2 , to receive the bar C , supporting the ears d , by which the counterpoise-weight D is suspended. This counterpoise-weight is preferably made in the form of a hollow cylindrical casting filled with lead D' .

On one or both sides of the weight I provide guide-ribs d' , traveling in suitable guide-ways in the gun-mount, and one or both of these ribs is provided with ratchet-teeth d^2 to engage the pawl d^3 when the weight is in the raised and the gun in the lowered position. This pawl d^3 is normally pressed inward toward the weight by means of the spring-operated lever D^3 , and the pawl may be withdrawn by simply pressing inward on the said lever against the action of the said spring.

The weight of the counterpoise-weight D should be somewhat in excess of that required to bring the gun back to the raised position.

The gun-carriage is preferably supported by a ring G , resting on cone-rollers g , which in turn are supported by the circular track H' on the gun-platform H . This platform is provided with a circular well H^0 to allow the weight D to descend into said well as the gun is raised, irrespective of the angle of train. Moreover, the side brackets F preferably project down into said well, and thus enable a deeper beam to be used without at the same time correspondingly increasing the height of the gun above the gun-platform.

The saddle E has projecting from the upper trunnion e the lugs e^2 , which engage in the elongated slots k' in the ribs K' , which project upward from the recoil-cylinder K . The said recoil-cylinder has a pair of downward-projecting ribs k^2 , which engage on either side of the rail F^3 , which rail is secured to the front and rear brackets F' and F^2 , respectively. Above this rail F^3 and secured to the sockets $f^4 f^5$ is the piston-rod L of the recoil-cylinder, which piston-rod is thus made rigid with the gun-carriage. The said piston-rod, it will be noted, extends through the recoil-cylinder, and the weight of the latter is taken by the rail F^3 . The recoil-cylinders K , with their pistons, stuffing-boxes, &c., are preferably constructed in the ordinary way and will not be further described.

M M are two buffers on which the part b^0 of the gun-levers B strike when the gun recoils, as will be seen by Fig. 2.

The elevating-arms N are pivoted at their upper ends to the trunnions a^2 and at their lower ends are journaled on the arms p of the cross-piece P, which has the two nuts p' made integral therewith. The arms p travel in vertical guideways f^2 in the carriage, as shown in Fig. 5. The elevating-arms N are spaced apart and strengthened by the tie-rod and sleeve N'. The double screws Q are journaled at their lower ends in the socket-plate R, journaled on the trunnion r in the brackets F, and their upper ends are journaled in the socket-plate R', which is trunnioned, as at r' , in the rail-pieces F³, and thus these two screws Q are free to rotate between the said socket-plates R R'. These screws Q engage the nuts p' and are rotated by the hand-operated mechanism, as will now be described. The socket-plates R R' are shown as trunnioned in the rail-pieces for convenience of manufacture; but these plates may be rigidly attached to the rail-pieces or secured therein in any convenient way. Each screw Q carries near its head a worm-wheel Q', engaging a worm S' on the shaft S, journaled transversely of the carriage, which shaft carries a gear-wheel S², meshing in the pinion T², carried by the shaft T, which is driven by the hand-wheel T'. It will be evident from inspecting Fig. 4 that a motion of the hand-wheel in one direction will cause the screws Q to revolve, so as to elevate the muzzle of the gun, while a motion in the reverse direction will depress the muzzle of the gun.

While I prefer double screws Q, with corresponding parts for operating the same, it will be evident that a single screw may be substituted for the double screws, if desired, in which case only one worm-wheel and one worm would be required. The double construction, as shown in Fig. 4, insures, however, greater strength and rigidity and would ordinarily be preferable.

The operation of the device is as follows: The gun, being in the position shown in Fig. 1, is fired. The recoil causes the gun to swing downward to the position shown in dotted lines in Fig. 1 or in full lines in Fig. 2. At the same time the gun-levers draw up the weight D, and the spring-pawl d^3 catches in the teeth d^2 , supporting the weight D and allowing the weight of the gun to keep the parts in the position shown in dotted lines in Fig. 1. While in this position the gun is loaded and sighted, and when it is desired to return the gun to the firing position the pawl d^3 is withdrawn, and the weight D, pulling down on the lower end of the gun-levers, returns the gun to the initial position, (shown in Fig. 1,) when the cycle of operations may be repeated, and so on.

It will be noted that nearly the entire weight of the gun and of the gun-levers and also of

the counterpoise D is thrown upon the saddle, and this is supported upon the heavy side brackets F, near the base of the carriage, and hence the center of the system is brought low down near the gun-platform. Moreover, it will be noted that little or no downward pressure is brought upon the upper part of the carriage, and hence great lightness and comparatively small cost are secured in building the upper parts of the carriage. It will be seen that there is little or no vertical pressure upon the recoil-cylinders or their connected parts, the said cylinders being supported by and sliding along the horizontal rails F³.

It will be obvious that various modifications might be made in the herein-described apparatus and in the several parts thereof which could be used without departing from the spirit or 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 disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, with means for supporting the breech of the gun, substantially as described.

2. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, recoil-cylinders engaging said saddle near the pivots of said gun-levers, and adjustable supports for the breech of the gun, substantially as described.

3. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured to said carriage, recoil-cylinders mounted over said piston-rods and engaging said saddle near the pivots of the gun-levers, and adjustable supports for the breech of the gun, substantially as described.

4. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, a ratchet-and-pawl detent for holding said weight in the raised position and for releasing the same when desired, and means for supporting the breech of the gun, substantially as described.

5. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other

end of said gun-levers, a ratchet-and-pawl detent for holding said weight in the raised position and for releasing the same when desired, recoil-cylinders engaging said saddle near the pivots of said gun-levers, and adjustable supports for the breech of the gun, substantially as described.

6. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured on said carriage, a ratchet-and-pawl detent for holding said weight in the raised position and for releasing the same when desired, recoil-cylinders mounted over said piston-rods and supported by the gun-carriage and engaging said saddle near the pivots of the gun-levers, and adjustable supports for the breech of the gun, substantially as described.

7. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight suspended from the other end of said gun-levers, with elevating-arms for supporting the breech of the gun, and elevating-gear for raising and lowering said arms, substantially as described.

8. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, recoil-cylinders engaging said saddle near the pivots of said gun-levers, elevating-arms pivoted to and supporting the breech of the gun, and elevating-gear for raising and lowering said arms, substantially as described.

9. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured to said carriage, recoil-cylinders mounted over said piston-rods and supported by the gun-carriage and engaging said saddle near the pivots of the gun-levers, elevating-arms pivoted to and supporting the breech of the gun, and elevating-gear for raising and lowering said arms, substantially as described.

10. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, elevating-arms for supporting the breech of the gun, and hand-operated mechanism for elevating said arms, substantially as described.

11. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage,

gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, recoil-cylinders engaging said saddle near the pivots of said gun-levers, elevating-arms pivoted to the breech of the gun, and worm-gearing for elevating said arms, substantially as described.

12. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured to said carriage, recoil-cylinders mounted over said piston-rods and engaging said saddle near the pivots of the gun-levers, elevating-arms pivoted to the breech of the gun, and hand-operated mechanism for elevating said arms, substantially as described.

13. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, elevating-arms for supporting the breech of the gun, a cross-piece with nuts secured to said arms, screws journaled in the gun-carriage and engaging said nuts, and means for turning said screws, substantially as described.

14. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, recoil-cylinders engaging said saddle near the pivots of said gun-levers, elevating-arms for supporting the breech of the gun, a cross-piece with nuts secured to said arms, screws journaled in the gun-carriage and engaging said nuts, and means for turning said screws, substantially as described.

15. In a disappearing-gun mount the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured to said carriage, recoil-cylinders mounted over said piston-rods and engaging said saddle near the pivots of the gun-levers, elevating-arms for supporting the breech of the gun, a cross-piece with nuts secured to said arms, screws journaled in the gun-carriage and engaging said nuts, and means for turning said screws, substantially as described.

16. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, elevating-arms pivoted to the breech of the gun, a cross-piece with

nuts secured to the lower end of said arms, screws journaled in the gun-carriage and engaging said nuts, and hand-operated worm-gearing for simultaneously turning said screws, substantially as described.

17. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, recoil-cylinders engaging said saddle near the pivots of said gun-levers, elevating-arms pivoted to the breech of the gun, a cross-piece with nuts secured to the lower end of said arms, screws journaled in the gun-carriage and engaging said nuts, and hand-operated worm-gearing for simultaneously turning said screws, substantially as described.

18. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, piston-rods for the recoil-cylinders secured to said carriage, recoil-cylinders mounted over said piston-rods and engaging said saddle near the pivots of the gun-levers, elevating-arms pivoted to the breech of the gun, a cross-piece with nuts secured to the lower end of said arms, screws journaled in the gun-carriage and engaging said nuts, and hand-operated worm-gearing for simultaneously turning said screws, substantially as described.

19. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, recoil-cylinders engaging said saddle near pivots of gun-levers, and adjustable supports for the breech of the gun, substantially as described.

20. In a disappearing-gun mount, the combination with a saddle pivoted on the carriage, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers, a counterpoise-weight pivoted near the other end of said gun-levers and comprising a hollow cylindrical casting containing a weight, with vertical guide-ribs on said hollow cylindrical casting, recoil-cylinders engaging said saddle near the pivots of said gun-levers, and adjustable supports for the breech of the gun, substantially as described.

21. In a disappearing-gun mount, the combination with side brackets, a saddle pivoted on said side brackets, gun-levers pivoted on said saddle, a gun pivoted near one end of said levers, a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, with vertical guide-ribs on said

hollow cylindrical casting engaging in vertical guideway-grooves near the front ends of the side brackets, recoil-cylinders engaging said saddle near the pivots of said gun-levers, and adjustable supports for the breech of the gun, substantially as described.

22. In a disappearing-gun mount, the combination with side brackets, a saddle pivoted on said side brackets, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, and vertical guide-ribs on said hollow cylindrical casting engaging in vertical guideway-grooves near the front ends of the side brackets, recoil-cylinders engaging said saddle near the pivots of said gun-levers, elevating-arms pivoted to and supporting the breech of the gun, and elevating-gear for raising and lowering said arms, substantially as described.

23. In a disappearing-gun mount, the combination with side brackets, a saddle pivoted on said side brackets, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, vertical guide-ribs on said hollow cylindrical casting engaging in vertical guideway-grooves near front ends of said side brackets, recoil-cylinders engaging said saddle near the pivots of the gun-levers, elevating-arms pivoted to the breech of the gun, and hand-operated mechanism for elevating said arms, substantially as described.

24. In a disappearing-gun mount the combination with side brackets, a saddle pivoted on said side brackets, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, vertical guide-ribs on said hollow cylindrical casting engaging in vertical guideway-grooves near front ends of said side brackets, recoil-cylinders engaging said saddle near the pivots of gun-levers, elevating-arms for supporting the breech of the gun, a cross-piece with nuts secured to said arms, screws journaled in the gun-carriage and engaging said nuts, and means for turning said screws, substantially as described.

25. In a disappearing-gun mount, the combination with side brackets, a saddle pivoted on said side brackets, gun-levers pivoted on said saddle, a gun pivoted near one end of said gun-levers and a counterpoise-weight pivoted near the other end of said gun-levers, comprising a hollow cylindrical casting containing a weight, vertical guide-ribs on said hollow cylindrical casting engaging in vertical guideway-grooves near front ends of said side brackets, recoil-cylinders engaging said

saddle near the pivots of the levers, elevating-
arms pivoted to the breech of the gun, a cross-
piece with nuts secured to the lower end of
said arms, screws journaled in the gun-car-
riage and engaging said nuts, and a hand-op-
erated worm-gearing for simultaneously turn-
ing said screws, substantially as described.

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

PAUL BORGER.

Witnesses:

FREDERICK LAW,
E. H. ROBERTSON.