

No. 679,113.

Patented July 23, 1901.

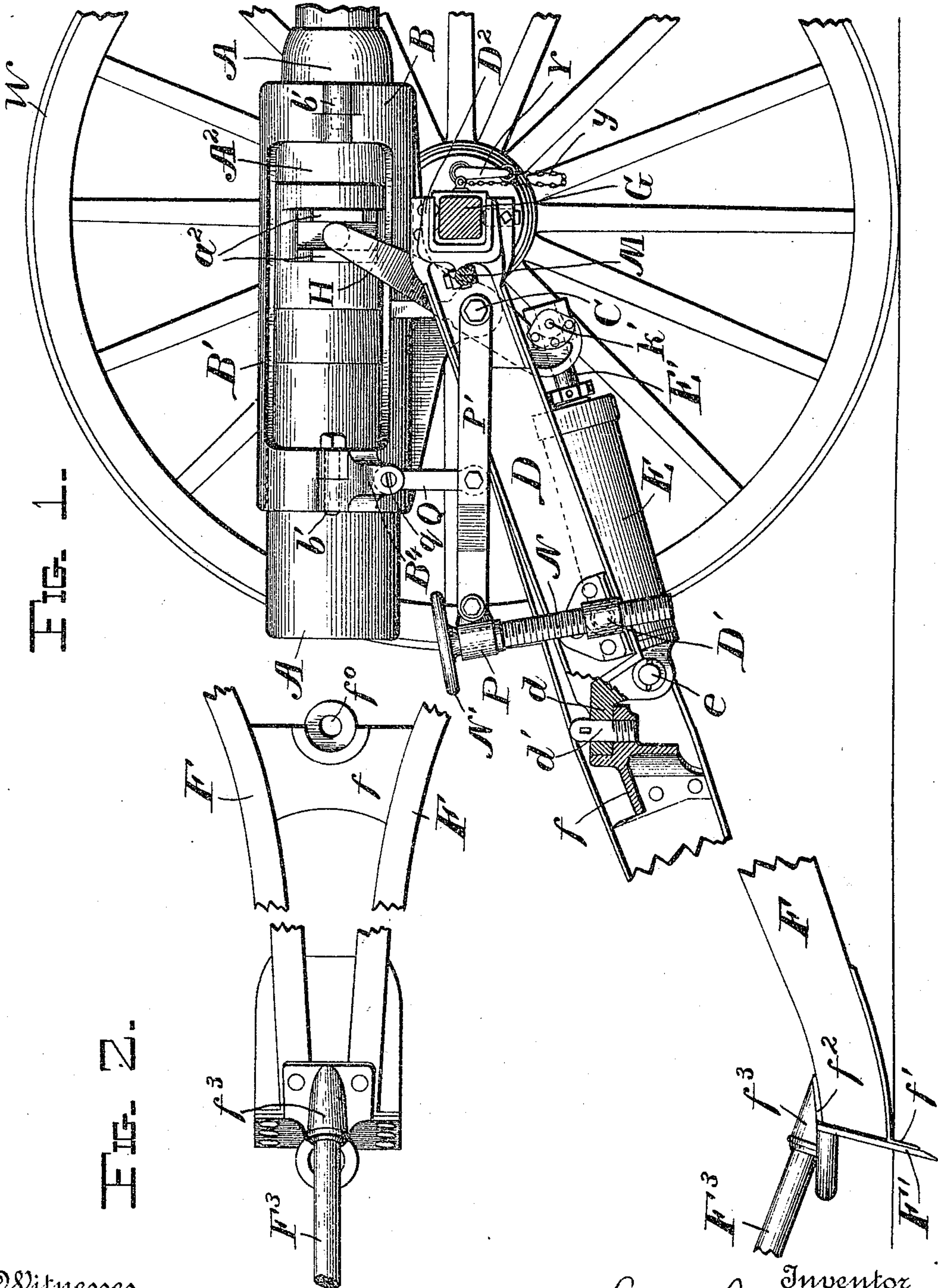
L. L. DRIGGS.

MOUNT FOR FIELD ARTILLERY.

(Application filed Dec. 9, 1899. Renewed Feb. 12, 1901.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses
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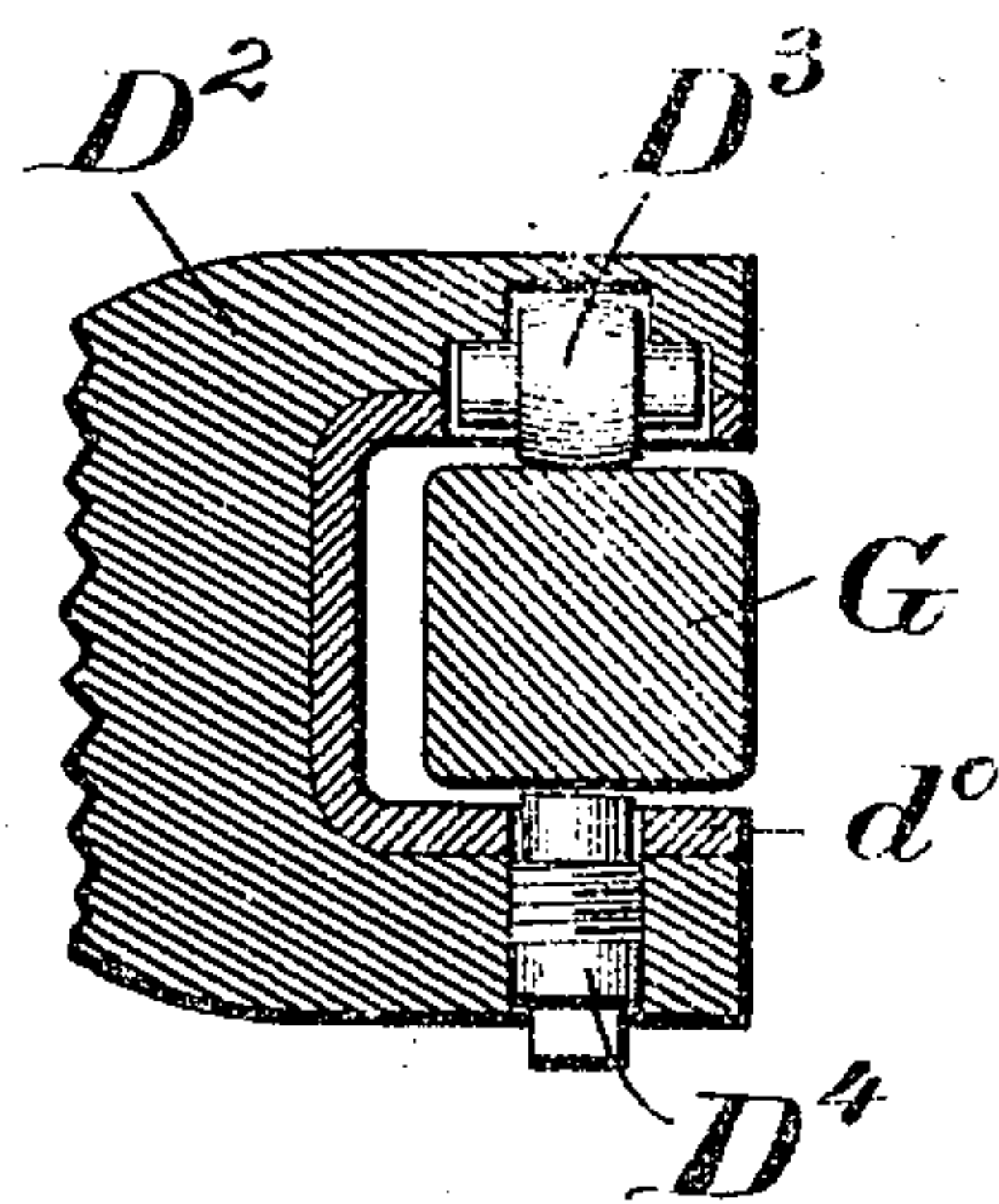
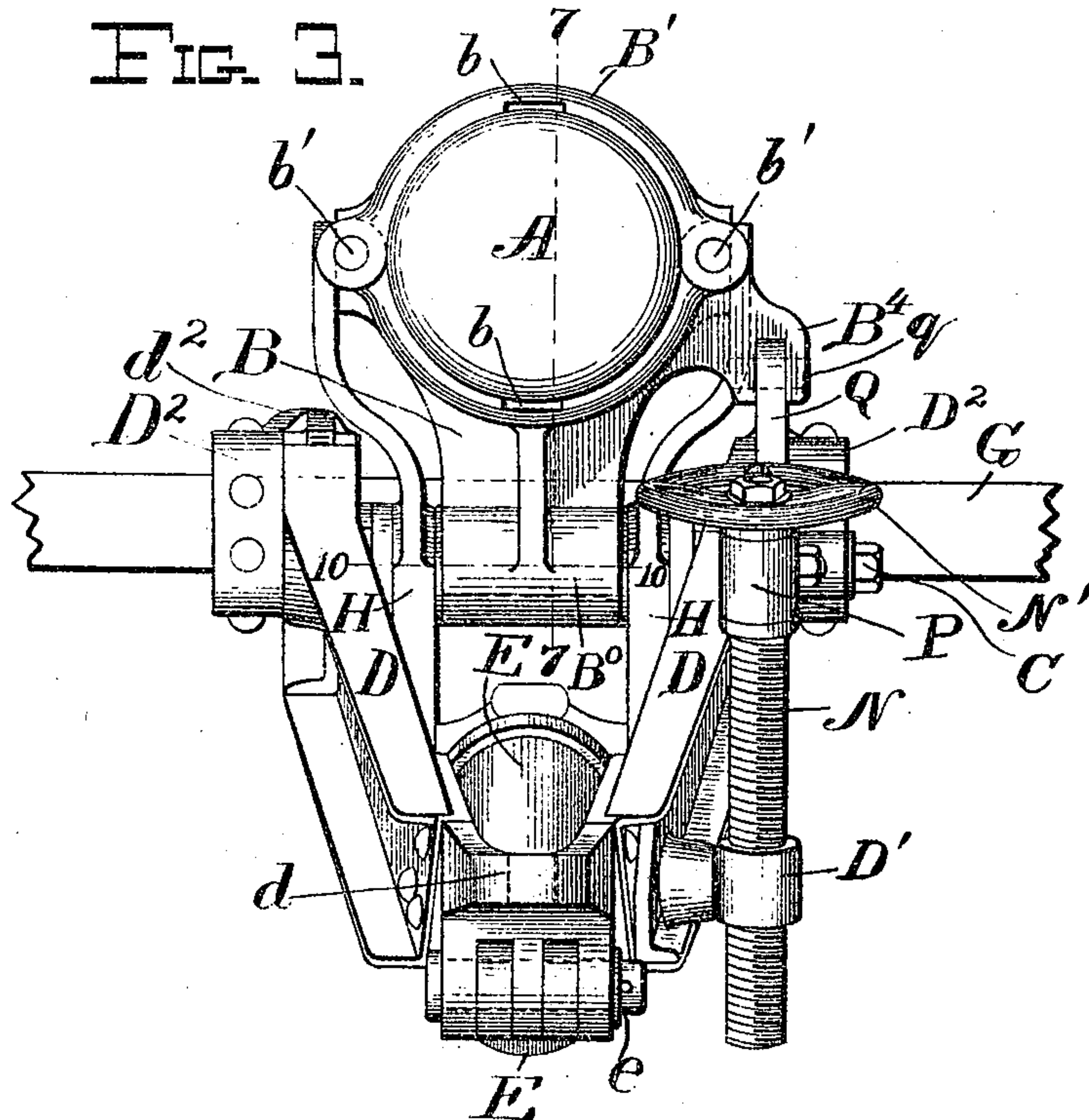


FIG. 4.

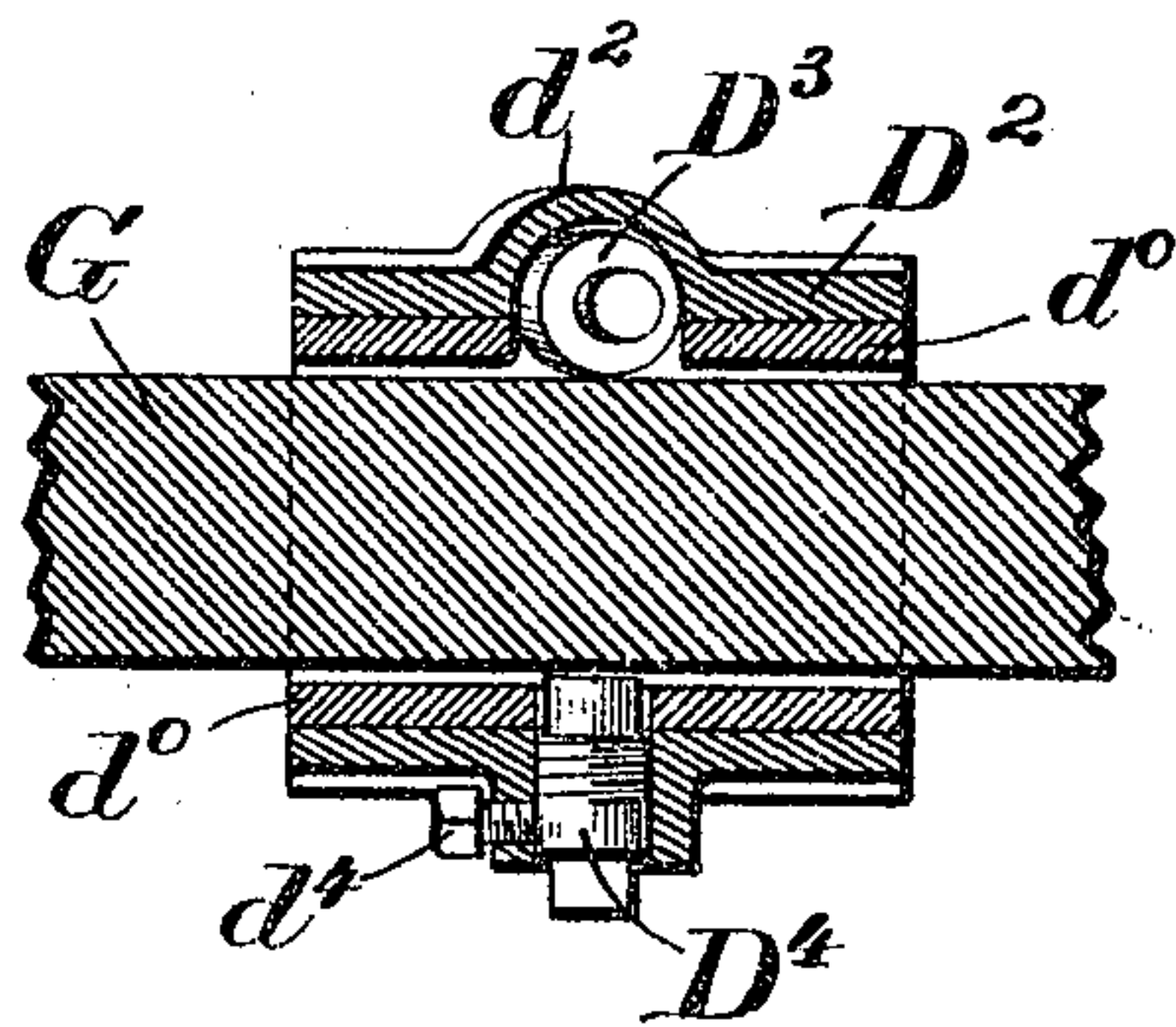


FIG. 5.

Witnesses

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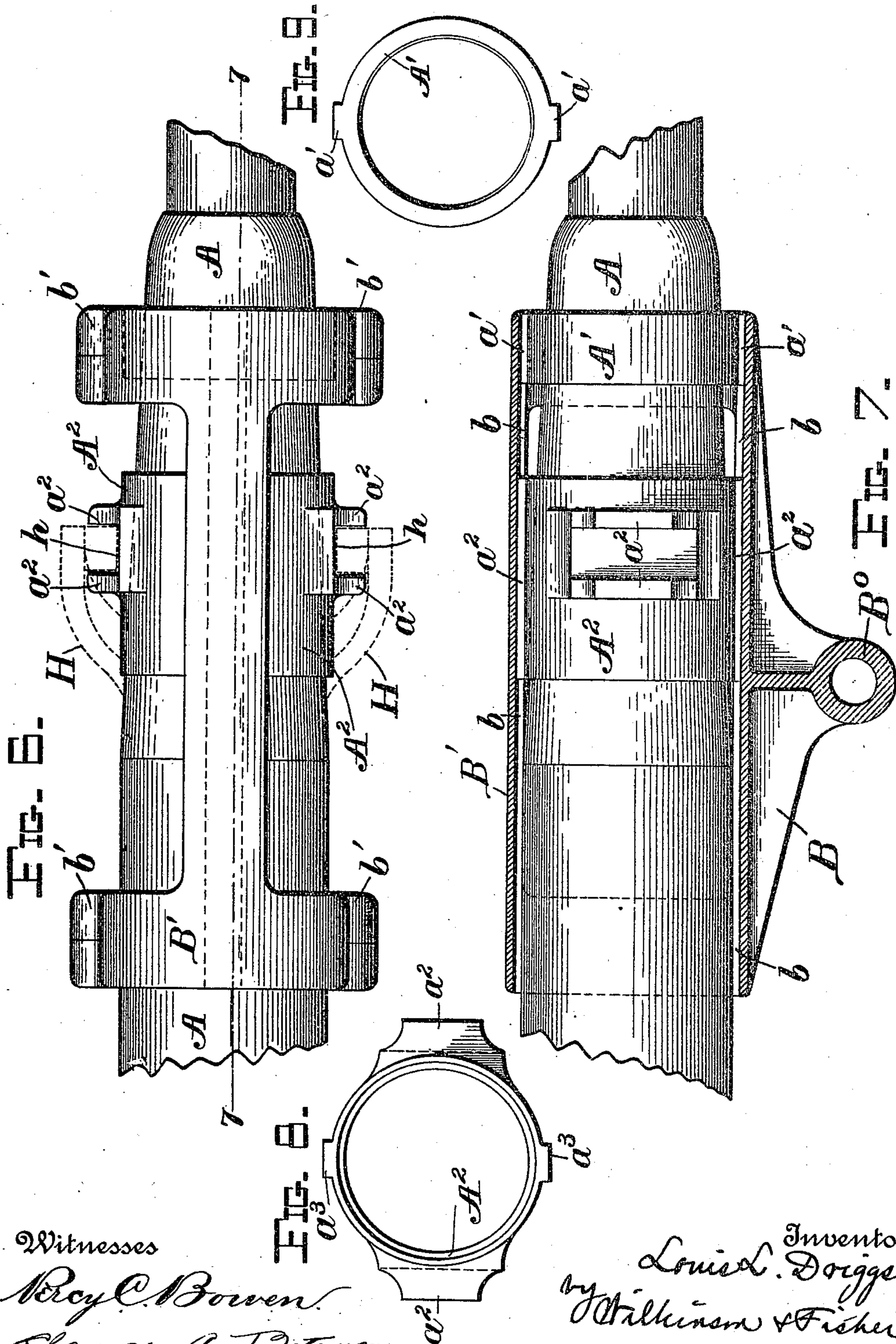
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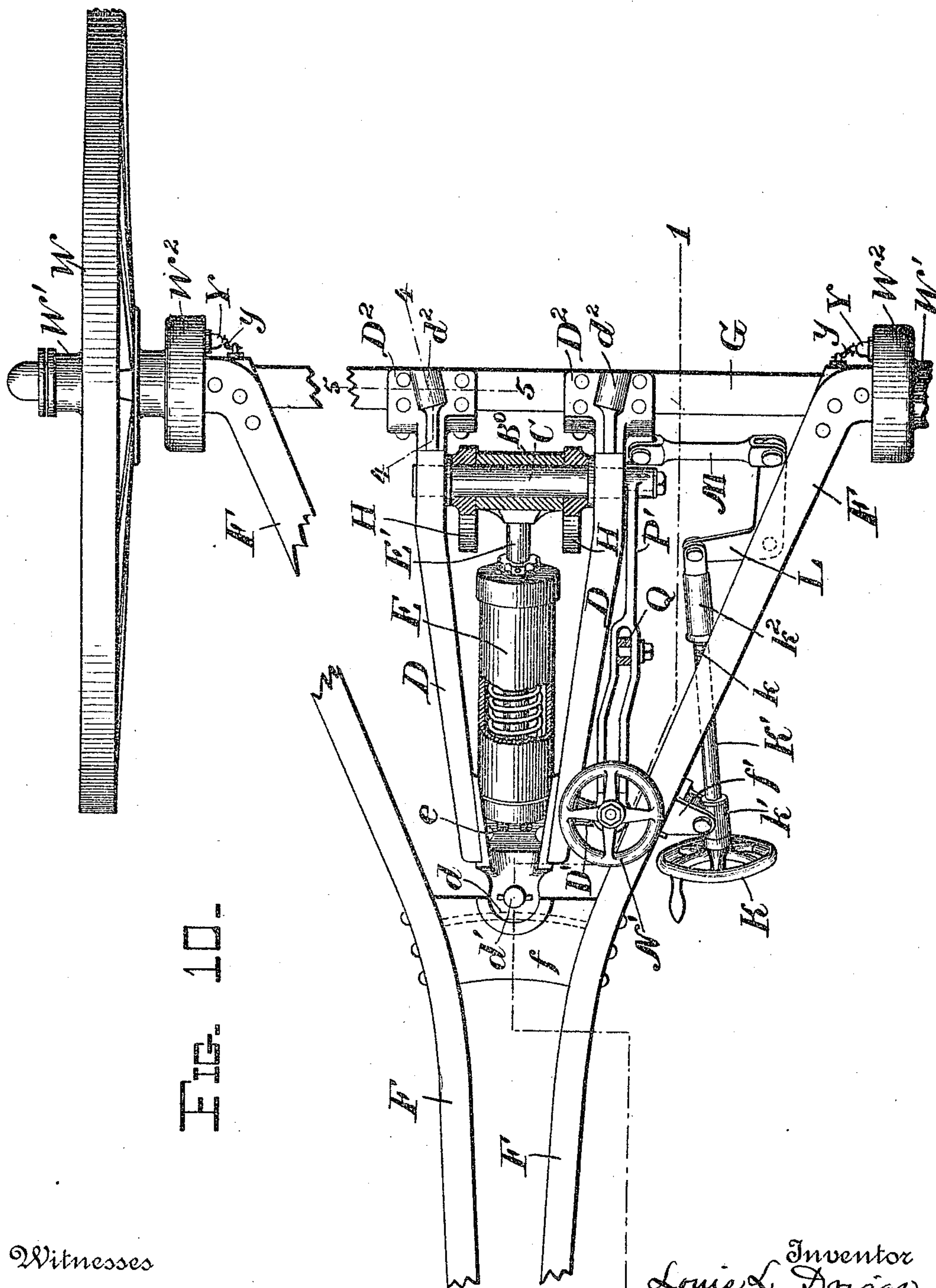
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5 Sheets—Sheet 4.



Witnesses

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FIG. 11.

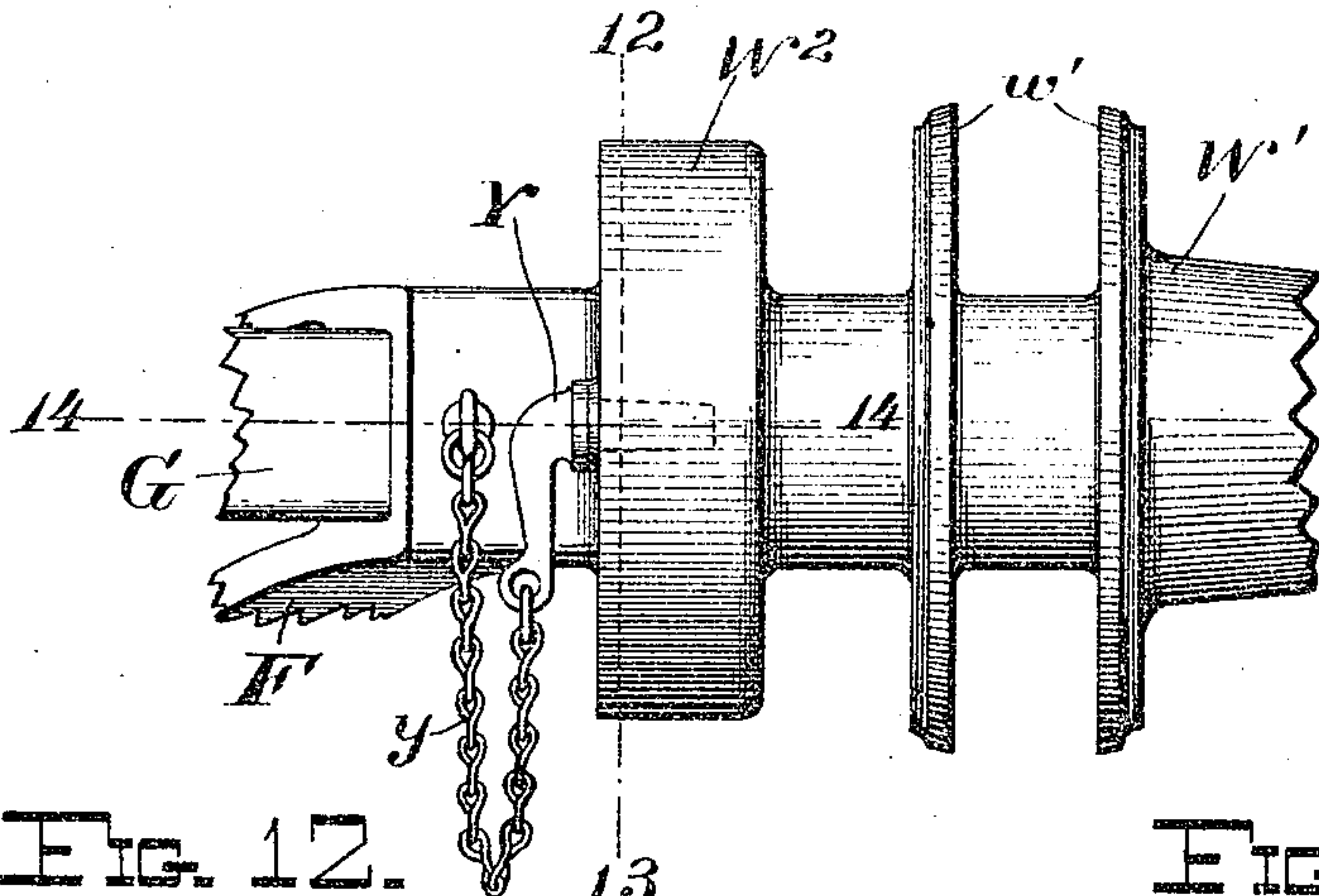


FIG. 12.

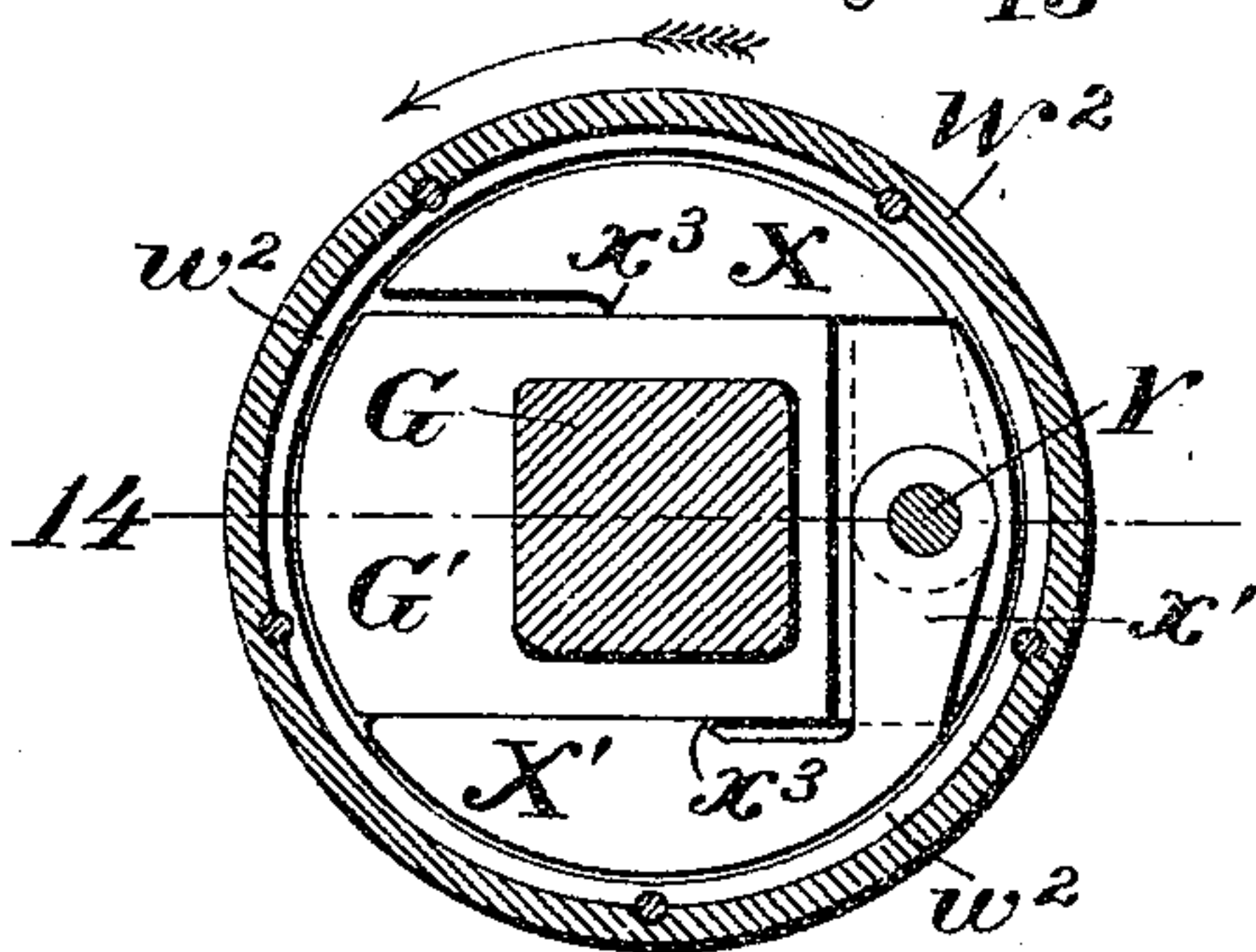


FIG. 13.

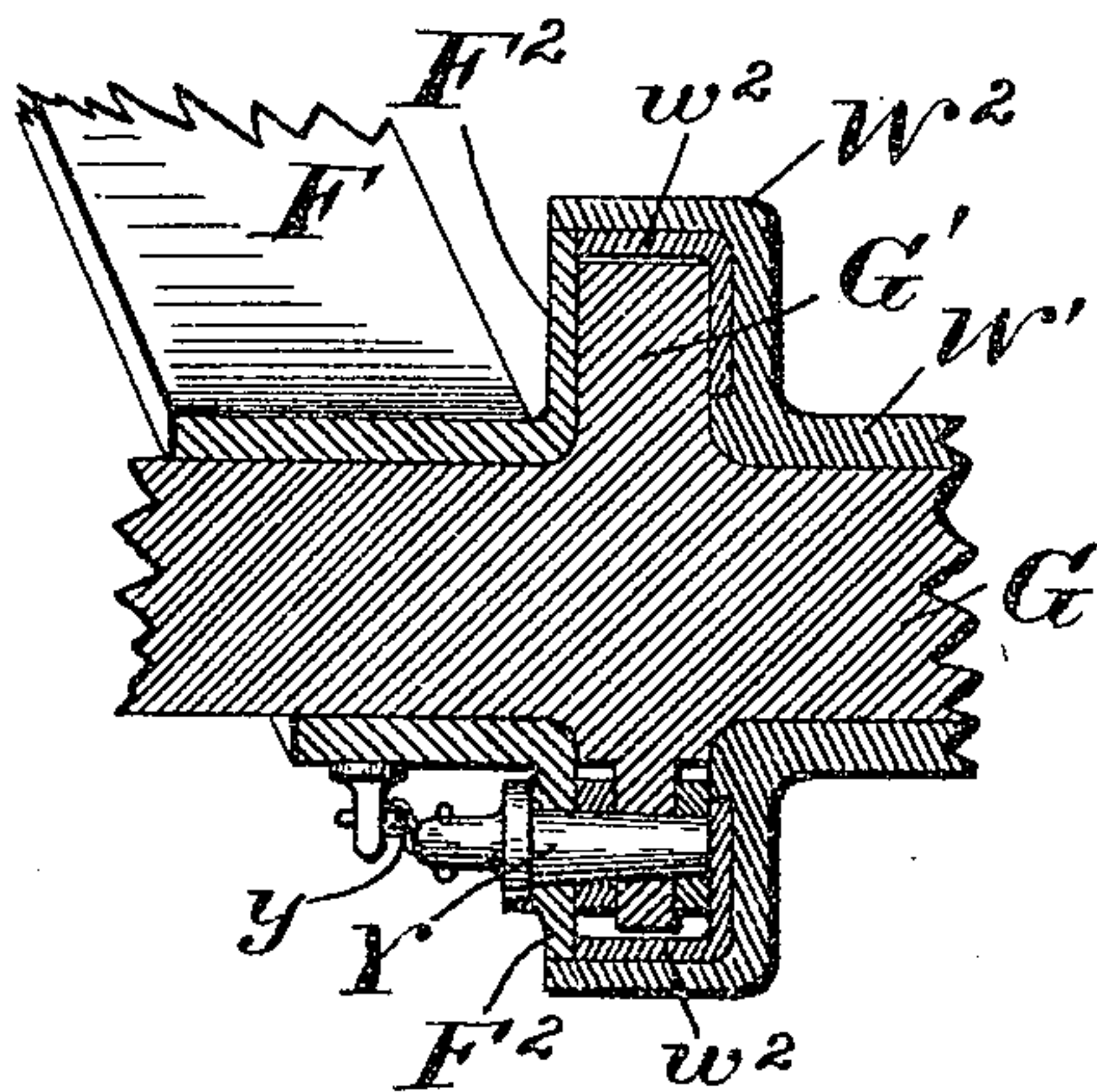
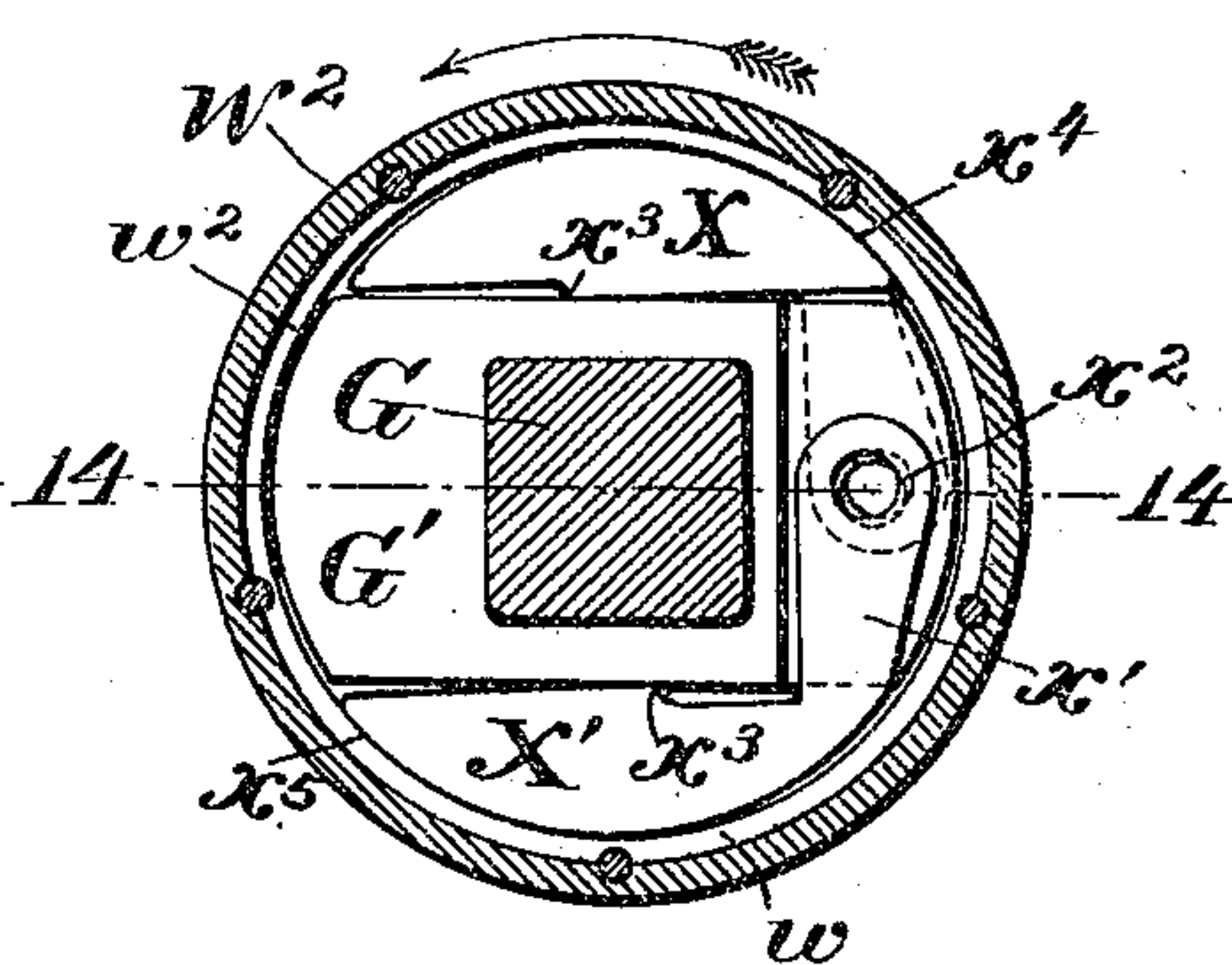


FIG. 14.

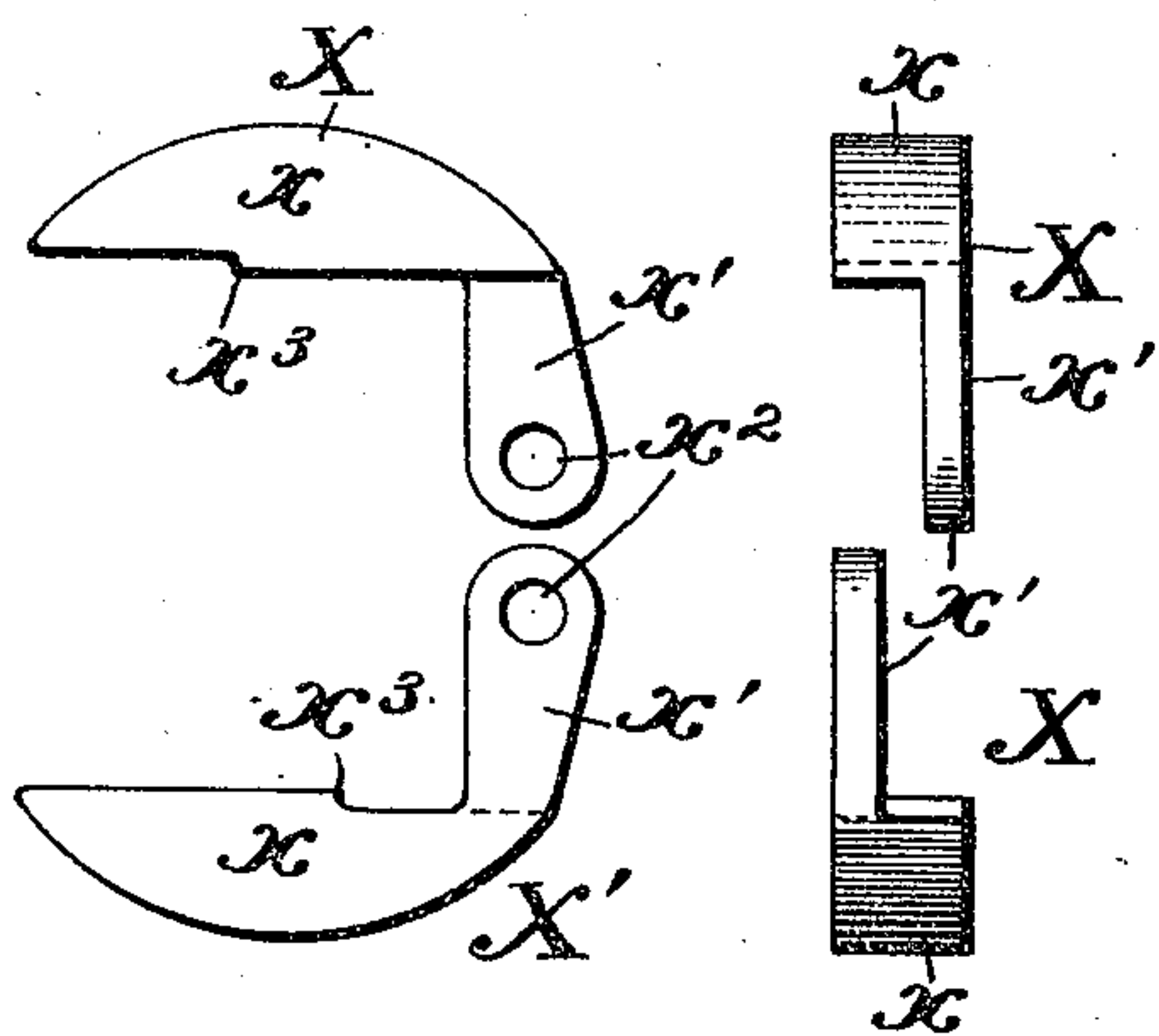


FIG. 15. FIG. 16.

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UNITED STATES PATENT OFFICE.

LOUIS L. DRIGGS, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO WILLIAM H. DRIGGS, OF WASHINGTON, DISTRICT OF COLUMBIA.

MOUNT FOR FIELD ARTILLERY.

SPECIFICATION forming part of Letters Patent No. 679,113, dated July 23, 1901.

Application filed December 9, 1899. Renewed February 12, 1901. Serial No. 47,048. (No model.)

To all whom it may concern:

Be it known that I, LOUIS L. DRIGGS, a citizen of the United States, residing at New York, in the borough of Manhattan and State of New York, 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 recoil-mounts for field artillery; and it consists in the certain improved means by which the shock of the recoil is taken up without substantial motion rearward of the carriage, in which the gun may be accurately trained through a small angle without disturbing the trail, and an improved means for braking the wheels of the carriage, and in certain other novel features and details of construction that 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 is a side elevation of the gun and mount, the axle being shown in section inside of the right wheel and other parts being shown in section along the broken line 1 1 of Fig. 10. Fig. 2 is a detail view showing the rear end of the trail. Fig. 3 is a view of the gun and the parts of the mount immediately adjacent thereto as seen from the rear. Fig. 4 represents a section through the axle and the front end of one of the cheek-pieces of the trail, the said section being along the line 4 4 of Fig. 10. Fig. 5 represents a view of the same parts, but along the line 5 5 of Fig. 10. Fig. 6 is a plan view of the gun and slide therefor as removed from the mount. Fig. 7 represents a vertical section along the line 7 7 of Fig. 6, the gun being shown in elevation. Fig. 8 is an end view of a band to be secured on the gun, whose function will be hereinafter described. Fig. 9 is an end view of the front band of the gun, which is provided with lugs to engage in the guideway at the top and bottom of the slide. Fig. 10 is a plan view of the lower portion of the mount, the gun and slide being removed above the

line 10 10 of Fig. 3. Fig. 11 is a detail view showing one of the hubs for the wheels with the brake attached thereto. Fig. 12 represents a section along the line 12 13 in Fig. 11 and shows the brake in the inoperative position; and Fig. 13 represents a like section of the brake, showing the pin removed and the brake in operation. Fig. 14 represents a section along the line 14 14 of Figs. 12 and 13. Fig. 15 represents the two brake-shoes detached from the brake in elevation, and Fig. 16 represents end views of the same.

A represents the gun-body, which is provided with the front band A^1 and the rear band A^2 . These bands have guide-lugs a^1 and a^2 , respectively, which travel in the guideways b in the top and bottom of the guide-frame. This guide-frame consists of two parts B and B^1 , hinged together, as at b^1 , so as to inclose the gun-body, and the latter recoils in this frame. This lower member B of the guide-frame is provided with a perforated lug B^0 , in which the bolt C is mounted. This bolt passes through the two side brackets D of the upper carriage, on which the gun is supported. These brackets D are joined together in the shoe-piece d , which is pivoted at d^1 on the transom f , spanning the cheek-pieces F of the trail proper. The front end of these side brackets D of the upper carriage terminates in a yoke D^2 , projecting above and below the axle G , as shown in Figs. 5 and 6. The axle is preferably flattened top and bottom, and each yoke D^2 is preferably provided with one or more antifriction-rollers, which travel on top of the axle G . The yoke may be lined with a wear-plate d^0 , if desired.

In order to prevent lost motion, I preferably provide an adjusting-screw D^4 , which may be locked in place by a lock-screw d^4 , (see Fig. 5,) if desired. These screws D^4 should be screwed up enough to be just clear of the bottom of the axle, but without binding thereon. The upper carriage, with the gun-mount thereon, is given lateral train through a small angle by means of the hand-wheel K , journaled in the collar k^1 , which is pivoted to the lug f^1 at one side of the trail and which rotates a screw K^1 , which has its screw-threaded portion k project into the elongated nut k^2 ,

pivoted to the bell-crank lever L, which bell-crank lever is pivoted to one of the cheek-pieces of the trail and is connected at its forward end by means of the link M to one of the side brackets of the lower carriage. By turning this hand-wheel K in one direction or the other it will be seen that the upper carriage may be swung through a small angle to the right or left about its pivot d ; and thus the gun may be trained through a small angle without disturbing the trail of the mount. Moreover, this gives not only a lateral train of the gun on the axle, but also enables nice adjustment to be quickly had, which is very difficult, where, as is now commonly the case, it is necessary to pick up the spade out of the earth and train the gun by moving the trail.

The shock of the recoil of the gun on the mount is taken up as follows: H represents two recoil-levers pivoted on the bolt C and together forming a yoke which projects up on either side of the gun. These two levers terminate in trunnion-lugs h , which project into the vertical guideway between the lugs a^2 on the ring A^2 , made fast to the gun. (See Figs. 1, 6, and 7.) The lower end of each of these two levers is pivoted to a cross-head on the piston-rod E' of the recoil-cylinder E. This recoil-cylinder is preferably provided with a spring strong enough to return the parts to the initial position shown in Fig. 1 after the gun has been fired. This recoil-cylinder E is pivoted, as at e , to the shoe-piece d of the upper carriage, and the cylinder has a limited rotation in the vertical plane about its pivot. Pivoted on the bolt C is the elevating-bar P' , connected, by means of the link Q and pin q , to the lugs B^4 at one side of the lower member of the guide-frame B. To the rear end of this bar P' the collar P is pivoted, through which passes the screw N, which screw engages the nut D' , pivoted to one of the side brackets of the upper carriage. This screw is turned by means of the hand-wheel N' . Thus the gun is elevated or depressed by screwing up or down on this screw N. When the gun is fired, it recoils to the rear in the guide-frame, the trunnion-lugs h passing up in the guideway between the lugs a^2 , which thus allows for the vertical play of the said lugs, while at the same time the upper ends of the levers H are drawn rearward, dragging out the piston-rod E' against the action of the spring in the cylinder E and checking the recoil of the gun. After the gun has recoiled the spring in the recoil-cylinder restores the gun to the initial position. The rear end of the trail is provided with a spade F' , braced by the supporting-plates f' and f^2 , (see Fig. 1,) and the shoe of the trail is provided with the usual socket f^3 for the trail hand-spike F^3 . To brake the wheels W of the mount when the gun recoils, I provide the mechanism shown in Figs. 10 to 16, where each wheel W is provided with a hub W' , having flanges w' for the spokes of the wheel. The spokes are omitted in Fig. 11, and to this hub is rig-

idly secured a hollow cylindrical cup W^2 , which is preferably lined on its interior with the wear-plate w^2 . Inside of this cup the axle G is provided with a boss G' , having parallel sides, as shown in Figs. 12 and 13; and above and below these parallel sides are the engaging arms of the brake-shoes X and X' , which brake-shoes have the curved members x shouldered, as at x^3 , on the inside and terminating in oppositely-disposed arms x' , each provided with a hole x^2 for the tapered pin Y, which pin is preferably held by means of the chain y to the axle. These brake-shoes are assembled as shown in Figs. 12 to 14. When the pin Y is inserted in the place, as shown in Fig. 14, which would be the normal position except "when in battery," the brake-shoes do not engage the wear-plate w^2 , and consequently there is no tendency of the wheels to brake. If, however, the pin be removed and the piece be dragged either by the recoil or by hand, causing the hub to turn in the direction of the arrow in Fig. 13, each brake-shoe will pivot about the shoulder x^3 . The brake-shoe X will bind at x^4 against the wear-plate w^2 , and the tendency will be to bind more and more, while the brake-shoe X' will bind about the points x^5 , and the tendency will be for each to bind more and more as the motion of the wheel continues in the same direction. Moreover, it will be obvious that if the brakes are a snug fit the least motion of the wheel rearward will throw the brakes into engagement. Thus it will be seen that the brakes operate automatically and with great holding power.

From the foregoing it will be seen that I provide a field-carriage which consists, essentially, of two parts, an upper carriage, in which the gun is mounted and which may be trained laterally without disturbing the trail of the lower carriage, the lower carriage supporting this upper carriage and performing the ordinary functions of a field-carriage, mechanism for controlling the recoil of the gun and for restoring the gun to the initial position, readily accessible mechanism for elevating and training the gun with great exactitude, and mechanism for promptly and efficiently braking the wheels.

It will be obvious that one brake-shoe only—as, for instance, the brake-shoe X—may be used, if desired.

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

It will be obvious that various modifications might be made in the herein-described construction and in the various details thereof, 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 field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage sup-

porting the gun, pivoted at its rear end to said trail and having its forward end traveling laterally on said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, and means for swinging said bell-crank lever about its pivot, substantially as described.

2. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage supporting the gun, pivoted at its rear end to said trail and having its forward end traveling laterally in said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, a nut pivoted to said bell-crank lever, and a screw removably connected to said trail and engaging said nut, substantially as described.

3. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage supporting the gun and pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, with means for moving said upper carriage through a small angle to the right or left about its pivot, substantially as described.

4. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage supporting the gun and pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, a bell-crank lever pivoted to the trail, a link connecting said bell-crank lever with said upper carriage, and means for moving said bell-crank lever about its pivot, substantially as described.

5. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage supporting the gun and pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, a bell-crank lever pivoted to the trail, a link connecting said bell-crank lever with said upper carriage, a nut pivoted to said bell-crank lever, and a screw revolvably connected to the trail and engaging said nut, substantially as described.

6. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage pivoted at its rear end to said trail and having its forward end traveling laterally on said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, and means for swinging said bell-crank lever about its pivot, and a gun

mounted on said upper carriage, substantially as described.

7. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage pivoted at its rear end to said trail and having its forward end traveling laterally on said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, a nut pivoted to said bell-crank lever, and a screw removably connected to said trail and engaging said nut, a guide-frame pivoted on said upper carriage, and a gun mounted in said guide-frame, substantially as described.

8. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, with means for moving said upper carriage through a small angle to the right or left about its pivot, a guide-frame pivoted on said upper carriage, and a gun mounted in said guide-frame, substantially as described.

9. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, a bell-crank lever pivoted to the trail, a link connecting said bell-crank lever with said upper carriage, and means for moving said bell-crank lever about its pivot, a guide-frame pivoted on said upper carriage, and a gun mounted in said guide-frame, substantially as described.

10. In a mount for field artillery, the combination with a trail and axle, said axle being flattened on top, of an upper carriage for the gun pivoted at its rear end to said trail and provided at its forward end with antifriction-rollers traveling on said axle, and a jaw projecting beneath said axle and provided with an adjusting-screw to prevent lost motion, a bell-crank lever pivoted to the trail, a link connecting said bell-crank lever with said upper carriage, a nut pivoted to said bell-crank lever, and a screw revolvably connected to the trail and engaging said nut, substantially as described.

11. A mount for field artillery, comprising a trail and an axle, an upper carriage pivoted at its rear end to said trail and having its front end traveling laterally on said axle, a guide-frame pivoted on said upper carriage and supporting the gun, brake-levers pivoted to said upper carriage and engaging projections on the gun, and recoil-check operated by said brake-levers when the gun is fired, substantially as described.

12. A mount for field artillery, comprising a trail and an axle, an upper carriage pivoted at its rear end to said trail and having its front end traveling laterally on said axle, brake-levers pivoted on said upper carriage and engaging projections on the gun, and a recoil-check comprising a recoil cylinder and piston connected to said brake-levers, substantially as described.

13. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, a guide-frame supporting the gun pivoted on said upper carriage, and recoil apparatus mounted on said upper carriage and connected to the gun, substantially as described.

14. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun, pivoted on said upper carriage, with a recoil-check engaging both said gun and said upper carriage, substantially as described.

15. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun pivoted to said upper carriage, with a recoil-cylinder and its piston interposed between said gun and said upper carriage, substantially as described.

16. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun, pivoted on said upper carriage, a link pivoted to said guide-frame, and elevating-gear connected to said link, substantially as described.

17. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun pivoted on said upper carriage, a link pivoted to the guide-frame, a bar pivoted to the upper carriage and to said link, and an elevating-screw connecting said bar and said upper carriage, substantially as described.

18. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle supported thereby, and a guide-frame supporting the gun pivoted on said upper carriage, with a recoil-check interposed between the gun and said upper carriage, a link pivoted to the guide-frame, and elevating-gear connected to said link, substantially as described.

19. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun pivoted on said upper carriage, with a recoil-check interposed between the gun and said upper carriage, a link piv-

oted to the guide-frame, a bar pivoted to the upper carriage and to said link, and elevating-screw connecting said bar and said upper carriage, substantially as described.

20. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun pivoted to said upper carriage, with a recoil-cylinder and its piston interposed between the gun and said upper carriage, a link pivoted to the guide-frame, and elevating-gear connected to said link, substantially as described.

21. In a field-mount for artillery, the combination with a trail and axle, of an upper carriage mounted over said trail and axle and supported thereby, and a guide-frame supporting the gun pivoted to said upper carriage, with a recoil-cylinder and its piston interposed between the gun and said upper carriage, a link pivoted to the guide-frame, a bar pivoted to the upper carriage and to said link, and an elevating-screw connecting said bar and said upper carriage, substantially as described.

22. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage pivoted at its rear to said trail and having its forward end traveling laterally on said axle, with means connected to the trail for training said upper carriage, a guide-frame pivoted on said upper frame, a gun mounted in said slide, and an elevating-gear connecting said guide-frame and said upper carriage, substantially as described.

23. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage pivoted at its rear end to said trail and having its forward end traveling laterally on said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, and means for swinging said bell-crank lever about its pivot, a gun mounted on said upper carriage, and elevating-gear for said gun, substantially as described.

24. In a field-mount for artillery, the combination with a trail and axle, the latter being flattened on top, of an upper carriage pivoted at its rear end to said trail; and having its forward end traveling laterally on said axle, a bell-crank lever pivoted to said trail, a link connecting said bell-crank lever and said upper carriage, a nut pivoted to said bell-crank lever, and a screw removably connected to said trail and engaging said nut, a gun mounted on said upper carriage, and an elevating-gear for said gun, substantially as described.

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

LOUIS L. DRIGGS.

Witnesses:

ALBERT W. HOWE,
L. J. ELIOT.