

(No Model.)

2 Sheets—Sheet 1.

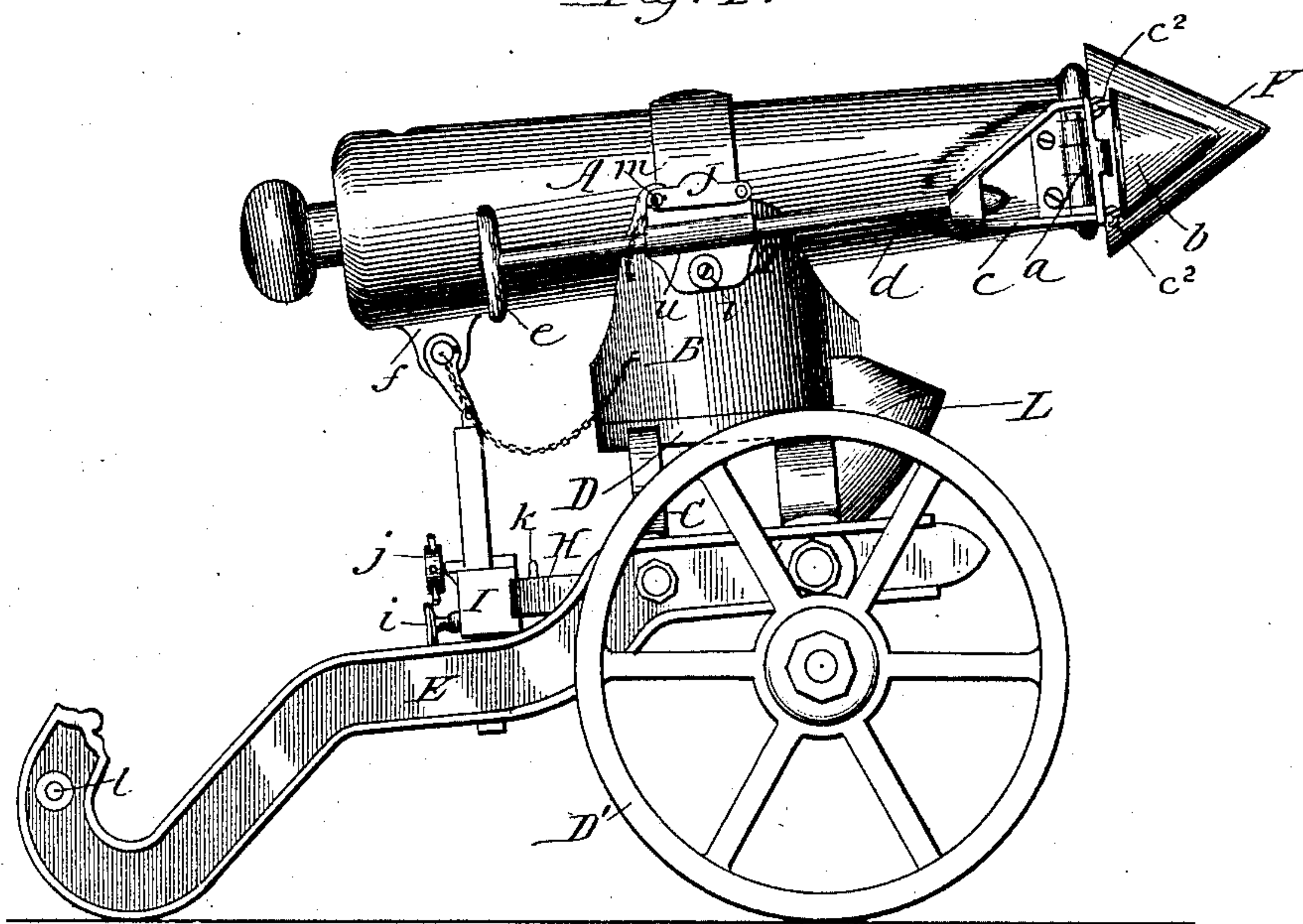
F. O. EKHOLM.

GUN CARRIAGE.

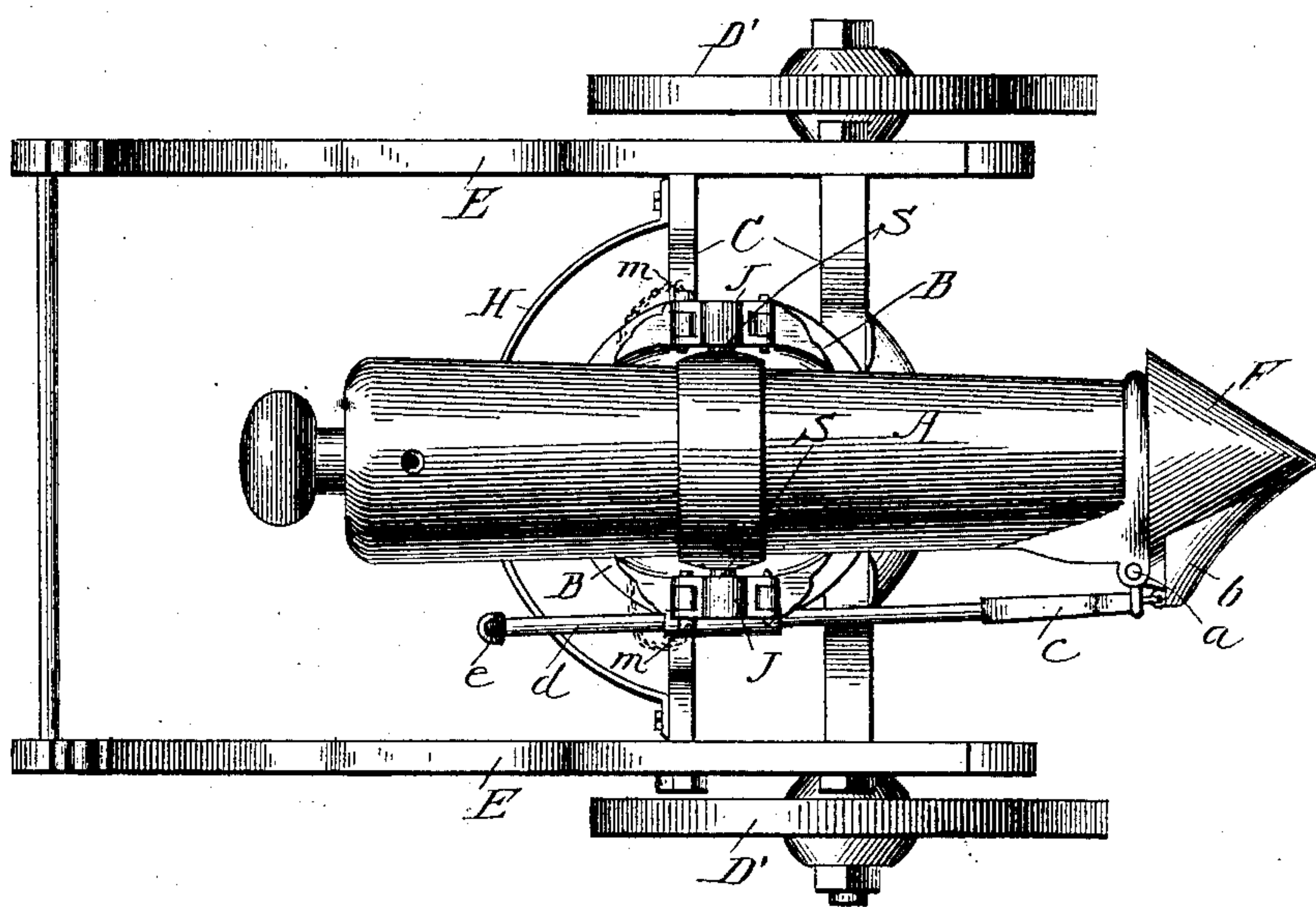
No. 318,238.

Patented May 19, 1885.

*Fig. 1.*



*Fig. 2.*



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Fig. 3.

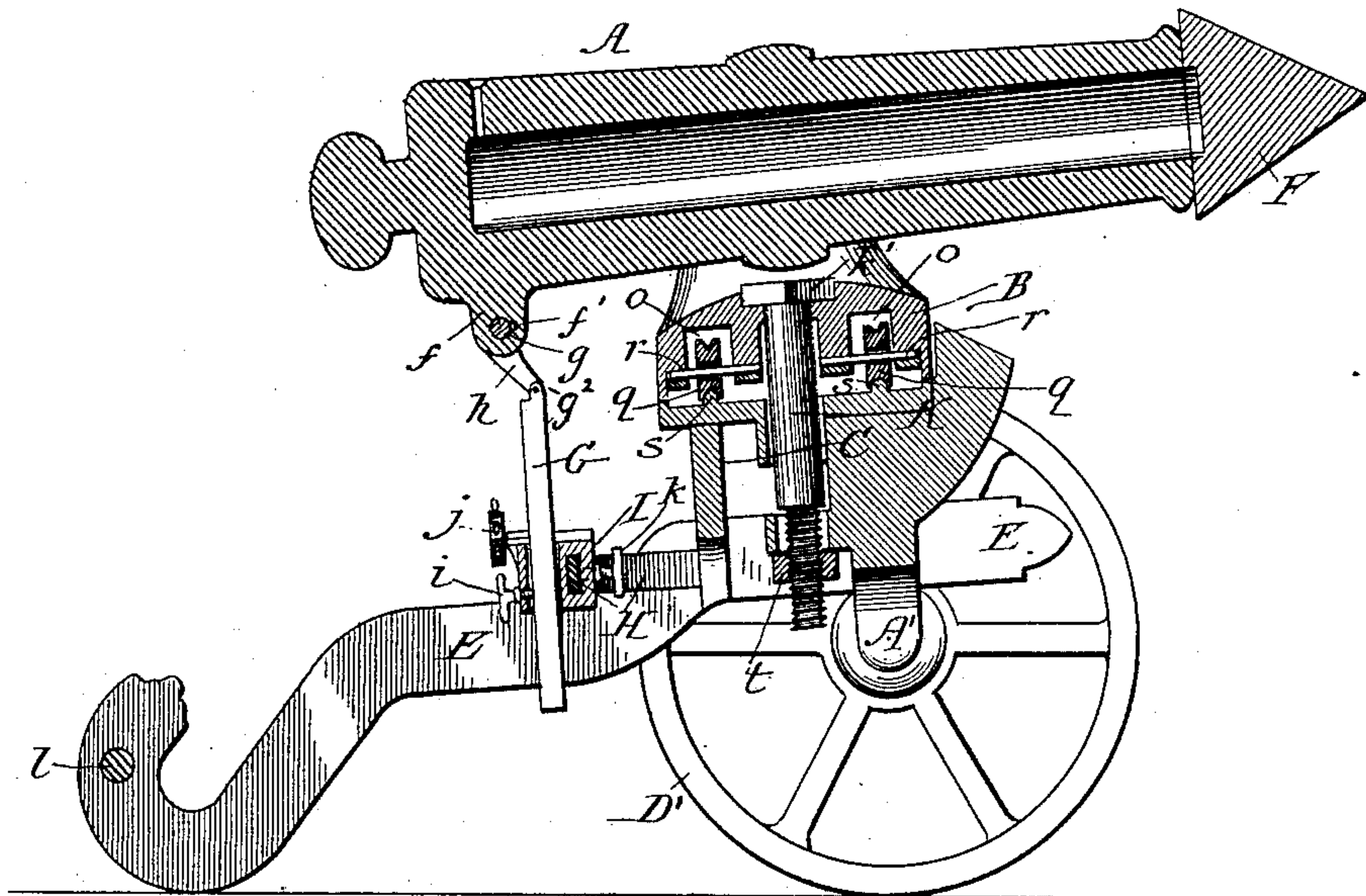
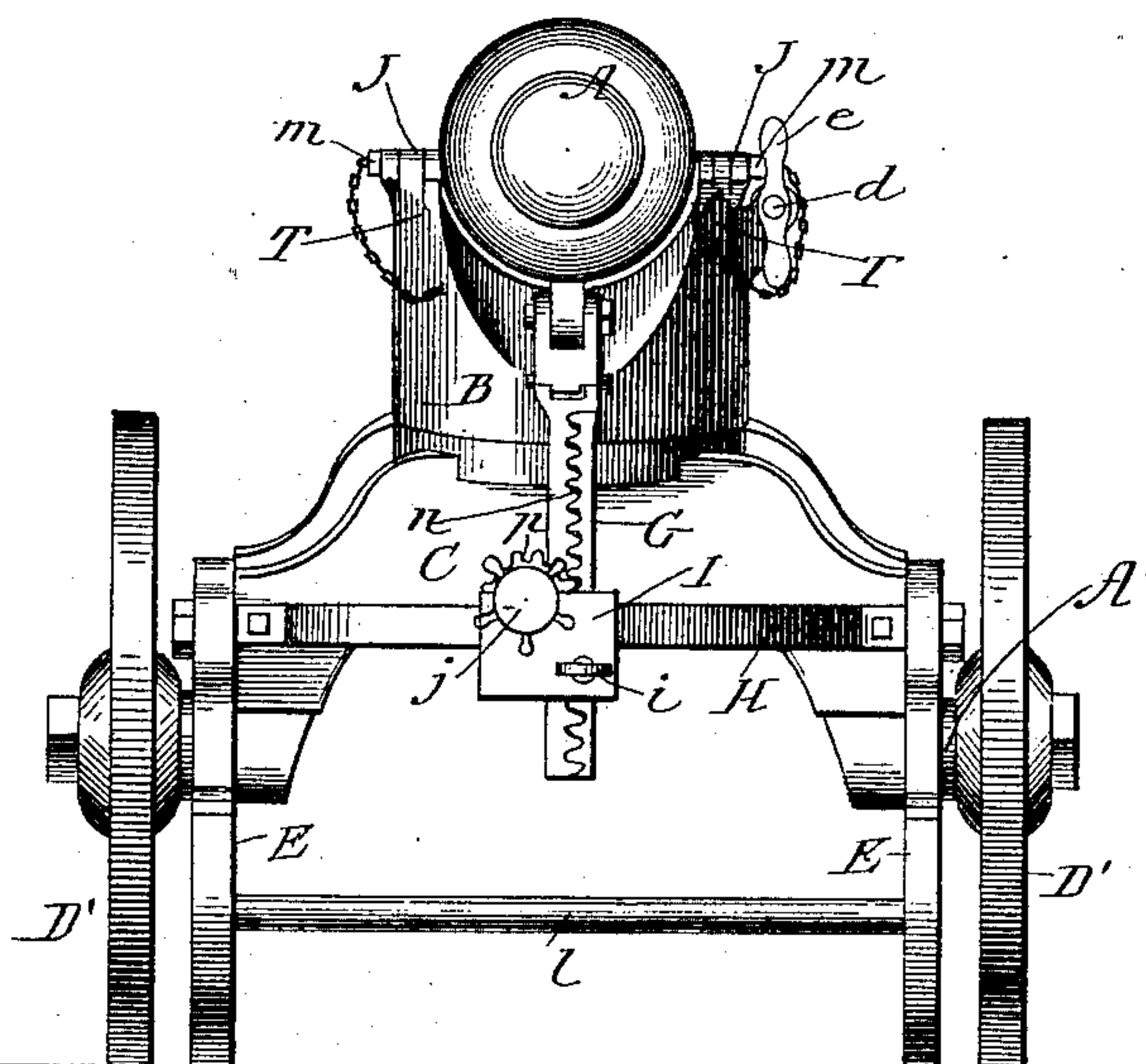


Fig. 4.



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# UNITED STATES PATENT OFFICE.

FRANS O. EKHOLM, OF CHICAGO, ILLINOIS.

## GUN-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 318,238, dated May 19, 1885.

Application filed September 19, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, FRANS O. EKHOLM, of Chicago, county of Cook, and State of Illinois, have invented certain Improvements in Gun-

5 Carriages, of which the following is a specification.

My said invention will be fully described hereinafter with reference to the accompanying drawings, in which—

10 Figure 1 represents an elevation of the rear portion of a gun-carriage and of a gun mounted thereon in connection with my improvement; Fig. 2, a plan of the same; Fig. 3, a vertical section of the same, taken centrally lengthwise

15 of the gun; and Fig. 4, a rear view of the carriage and gun.

E in the drawings indicates the cheeks or side pieces fastened to the axle; C, a cross-bar fastened to the cheeks in the rear of the axle;

20 D, a circular platform embedded in and fastened upon the axle and cross-bar C, and provided with a circular V-formed rail, *s*; B, a revolving turret, the base of which is provided with a series of friction-pulleys, *g*, having grooved peripheries adapted to roll on the

25 rails *s* on the circular platform D, the pulleys and rail having corresponding formations. The turret B is confined in its position by the headed bolt K and its nut *t* at its lower end.

30 The upper end of the turret is cut away in the center, so as to leave two standards, T, one on each side of the gun, and leave a recess between them for it. In the tops of the standards are the bearings for the trunnions of the

35 gun A.

J indicates the caps, recessed on their under sides for the trunnions and rendered bifurcated at each end, so as to fit over tenons extending up from the standards, and both ends

40 provided with holes through them and the tenons, so that they may be confined in position by pins in the holes, one of which serves as a hinge for the cap to turn upon in mounting and dismounting the gun upon or from the

45 standards, while the other pin, which has a larger diameter, is provided with a head, *m*, on the outer end and a side projection, *y*, on the inner end, and a longitudinal groove is provided in the hole in the caps for the accom-

50 modation of the projection, the object of this construction being that when this removable pin has been inserted and turned it will be

locked in position by means of the projection *y*.

F is a shield designed to protect the bore of 55 the gun against shots and shells from opposing guns when not in actual use by being charged or discharged. It may be made of any suitable material, and it is cone-formed, so as to present a mere point, so that opposing 60 shots will glance off its sloping sides harmlessly.

As a protection against such missiles as might strike and injure the axle A' and turret B, I have devised the projection L, which 65 has sloping sides also. It is firmly attached to the axle in such a manner, as shown, as not to interfere with the revolving of the turret.

In order that the cannon may be adjusted to any position desired, either vertically or 70 laterally, and then held securely, I fasten upon the bar C a segmental bar, H, and mount upon it the box I, which is provided with a suitable opening through it for the bar,

so that the box may be moved along the bar 75 and be fastened thereon at any point desired by means of the thumb-screw *k*. The box I is also provided with a vertical opening through

it for the rack-bar G, which is plain on one side and provided with teeth *n* on the other. 80 The bar G is connected with the breech of the gun by means of a hinge-joint at *g*<sup>2</sup> to link *h*,

which itself is hinged to projection *f* on the under side of the breech by means of the

headed pin *g*, which is provided with a smaller 85 pin, *f'*, near its point, extending out radially from it. The hole through the upper and bifurcated end of the link *h* is provided with a

groove for the accommodation of the smaller 90 pin *f'*, as the larger pin *g* is inserted, and after insertion the latter is locked against accidental displacement. The box I is provided with a

pinion, *p*, turning upon its axle *p'*, and having its bearing within the box, and the teeth of 95 that pinion mesh with the teeth *n* of the rack-bar G, when the latter is in position, and by turning the hand-wheel *j*, which is on the

same shaft with the pinion, the bar G will be forced either up or down and the breech ele-

100 vated or depressed, and by means of turning the binding-screw *i* the bar G, and the gun

itself, may be fastened at any vertical adjustment required. This hinged connection be-

tween the breech of the gun and the bar G is



rendered necessary by the fact that the breech in moving up or down describes the arc of a circle, while the bar must move in a right line. The bolt K serves as a pivot upon which the turret B revolves, and by its head and nut it prevents vertical motion of the turret, and the grooves in the pulleys *g*, adapted to the circular V-formed rail *s*, permit the turret to revolve, sustain its weight, and confine its base to accurate revolving upon the circular platform, the rail *s* being part of the platform, or, if in a separate piece, securely fastened down upon the same.

In order that the shield F, before mentioned, may be easily and quickly placed over and removed from the muzzle of the gun at will, the side of the shield is provided with an enlargement, *b*, having the form of the section of a cone, and provided also with eyes, by means of which a frame, *c*, having hooks *c*<sup>2</sup> to catch into the eyes of the shield, is connected therewith, the frame being provided with a rod, *d*, which is adapted to move freely in a tubular bearing, *u*, attached to one of the standards by pivot-bolt *v*. The frame is attached to the side of the muzzle of the gun by means of a hinge, as shown, one part, *a*, of which is furnished by the frame, while the other part is furnished by the gun itself, it having an enlargement next to the hinge for that purpose.

It is apparent that by pulling or pushing the rod *d* the shield may be operated and used for the purpose before specified.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The shield F, having the conical form, and hinged to the muzzle of the gun A, substantially as and for the purpose described.

2. The turret B, provided with the two standards T, affording bearings for the trunnions of the gun, and held down upon the carriage by the bolt K, and provided under its base with friction-rollers *g*, corresponding with the rail *s* on the platform D, substantially as and for the purpose described.

3. The combination of the axle, the cross-bar C, and the circular platform D, the latter being provided with a circular V-formed rail,

*s*, corresponding in form and proportions with the pulleys *g* in the revolving turret, substantially as and for the purpose described.

4. The combination of the devices for operating the shield F, consisting of the gun, the frame *c*, having the hooks *c*<sup>2</sup> for the eyes of the shield, and hinged to the muzzle of the gun, and the rod *d*, with its tubular bearing, substantially as described.

5. In combination with a gun and its supporting-turret mounted on a carriage, the shield or conical projection secured to the axle of the carriage, presenting its point in the same general direction with the muzzle of the gun, when mounted, and so fastened upon the carriage as not to interfere with the revolving motion of the turret, substantially as and for the purpose described.

6. In combination with a gun, its supporting-turret, and a carriage supporting the same, a box, I, supported on the carriage and carrying a vertically-reciprocating rack-bar, and a link hinged to the upper end of the bar and pivoted to the breech of the gun, whereby the breech may be moved in an arc, while the bar moves in a right line, substantially as and for the purpose described.

7. In combination with a gun and its supporting-turret mounted on a carriage, the segment-bar H, borne by the carriage, the box I, traveling upon the same, and carrying a vertically-reciprocating rack-bar, together with a link-connection between the rack and the breech of the gun, substantially as set forth.

8. In combination with a gun supported upon a carriage, and traversable with respect thereto, a segment-bar borne by the carriage, a box, I, traveling on the bar and pierced horizontally therefor, and having a vertical opening for a rack-bar, which has a link-connection with the breech of the gun, together with mechanism for operating the rack-bar to elevate or depress the gun, substantially as described.

FRANS O. EKHOLM.

Witnesses:

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