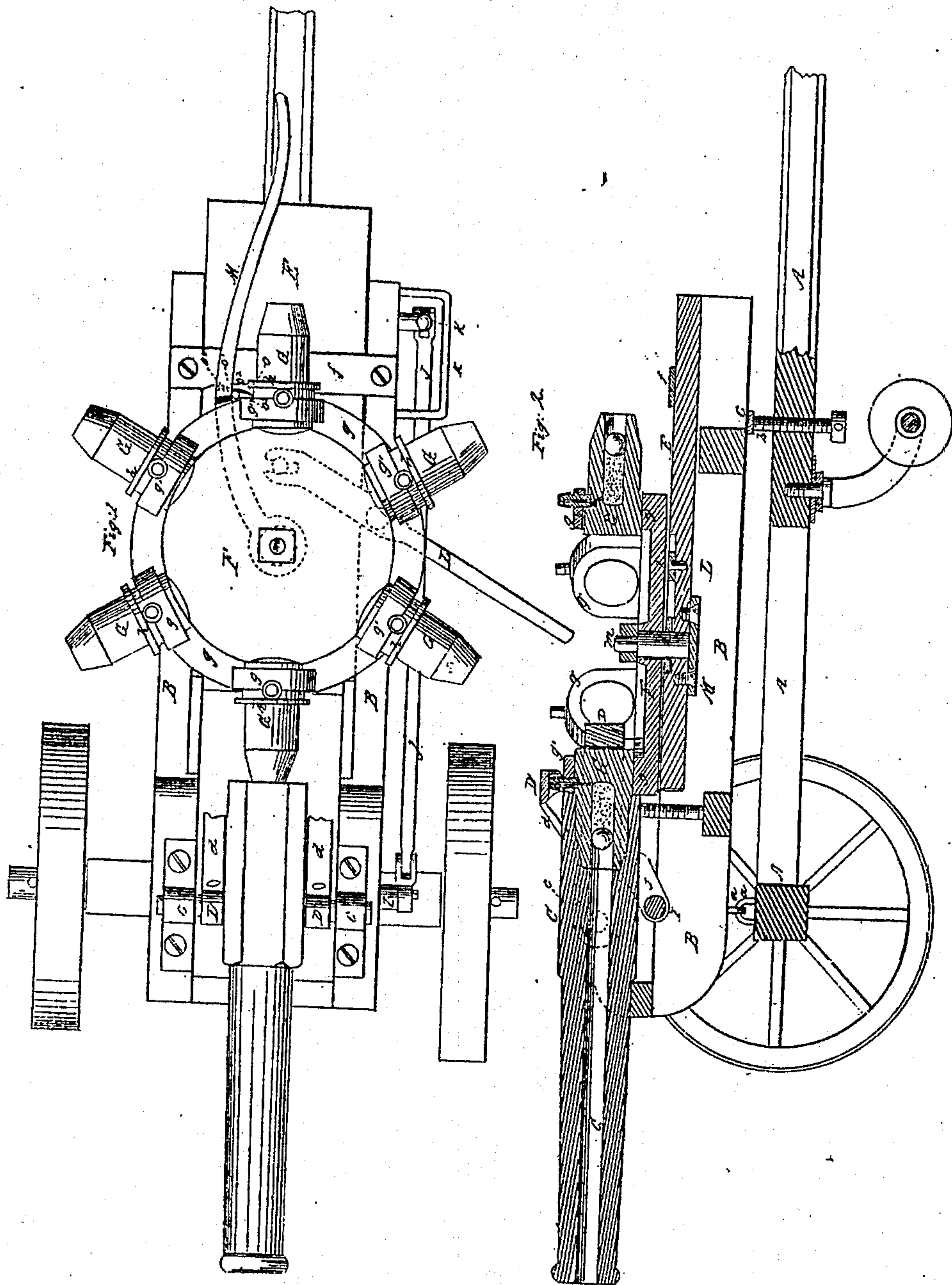


M. F. HARDY.  
Machine Gun.

3 Sheets—Sheet 1.

No. 36,148.

Patented Aug. 12, 1862.



Witnesses

*Frederick Dietrich*  
*Edwin S. Jacob*

Inventor.

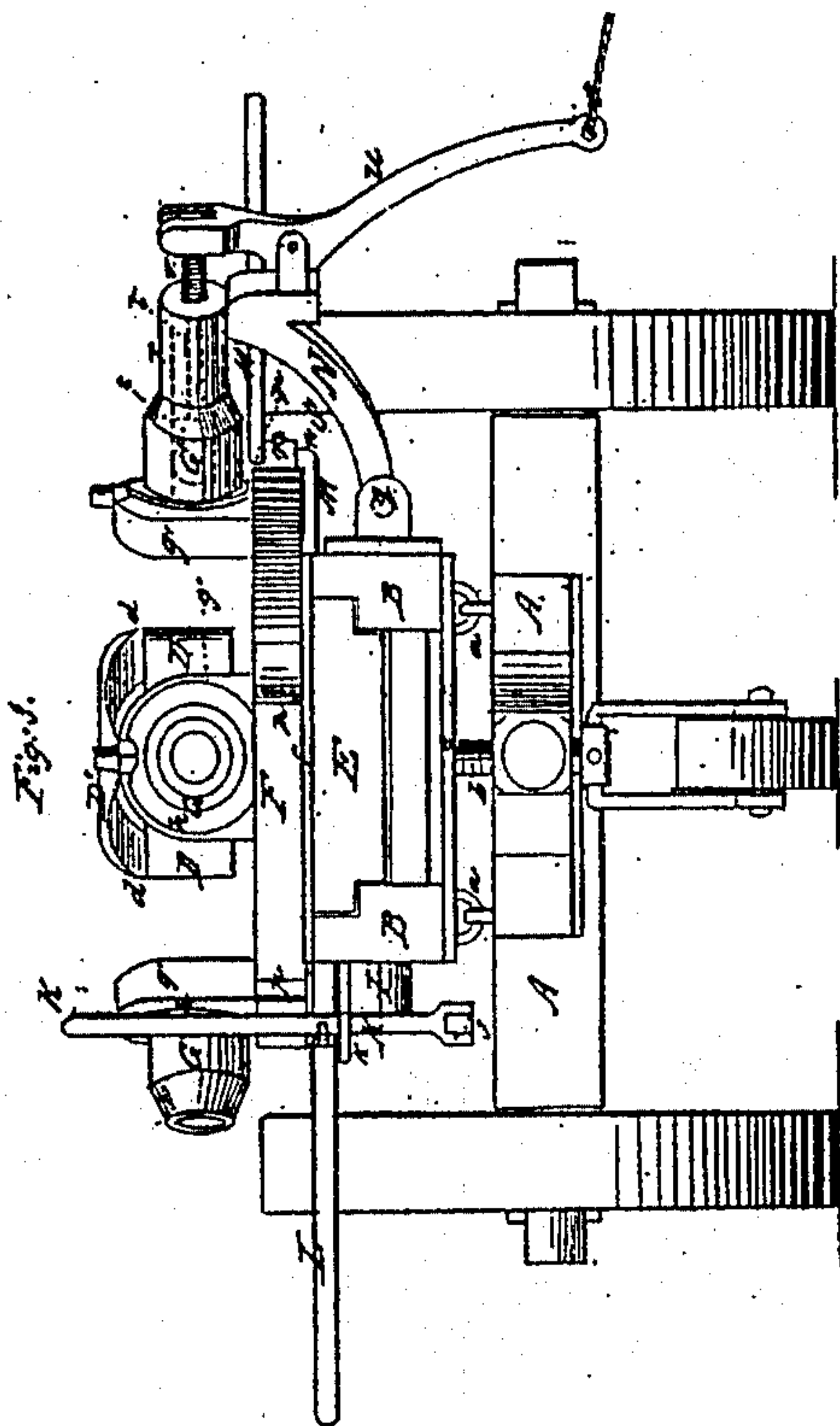
*Moses F. Hardy*  
*by Messrs. Fennell & Co.*  
*Attorneys*

3 Sheets—Sheet 2.

M. F. HARDY.  
Machine Gun.

No. 36,148.

Patented Aug. 12, 1862.



**Witnesses.**

Gustav Grösch  
Carmen 3. f. 1870

Inventor.

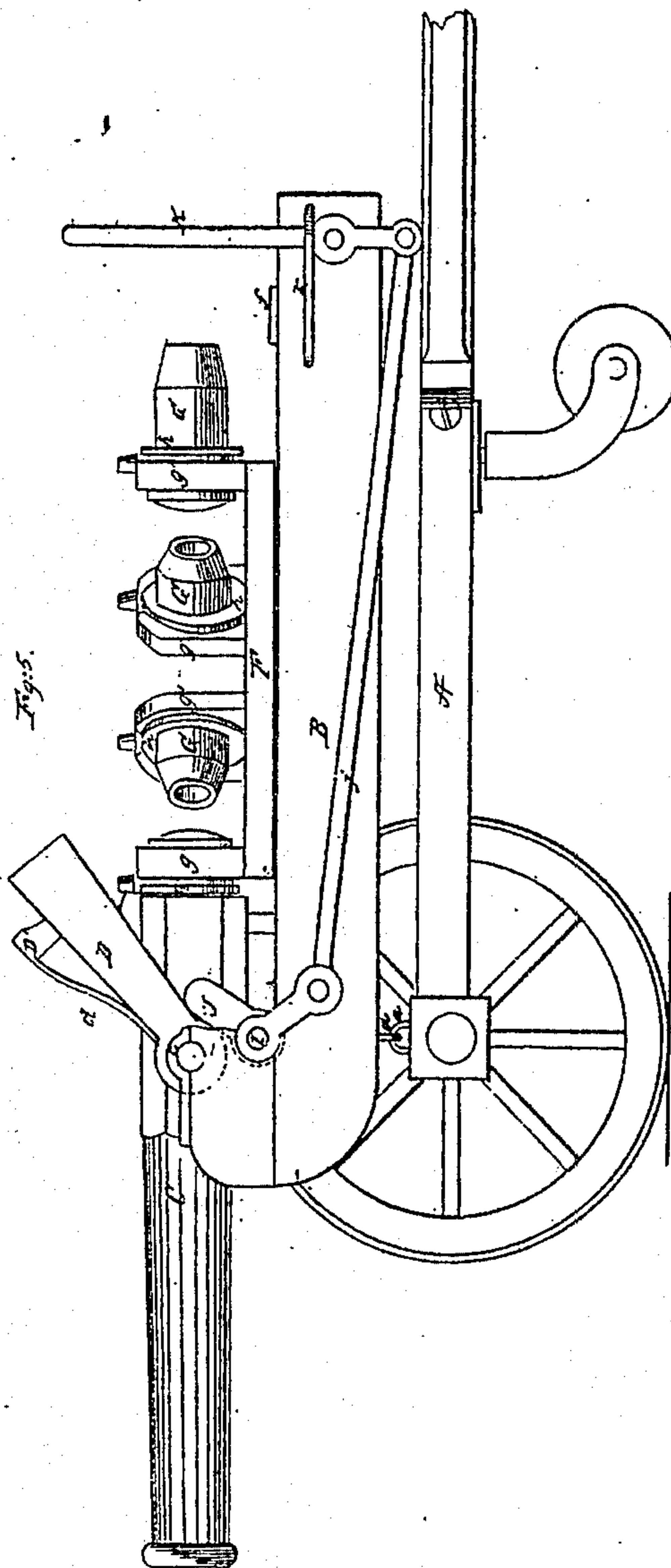
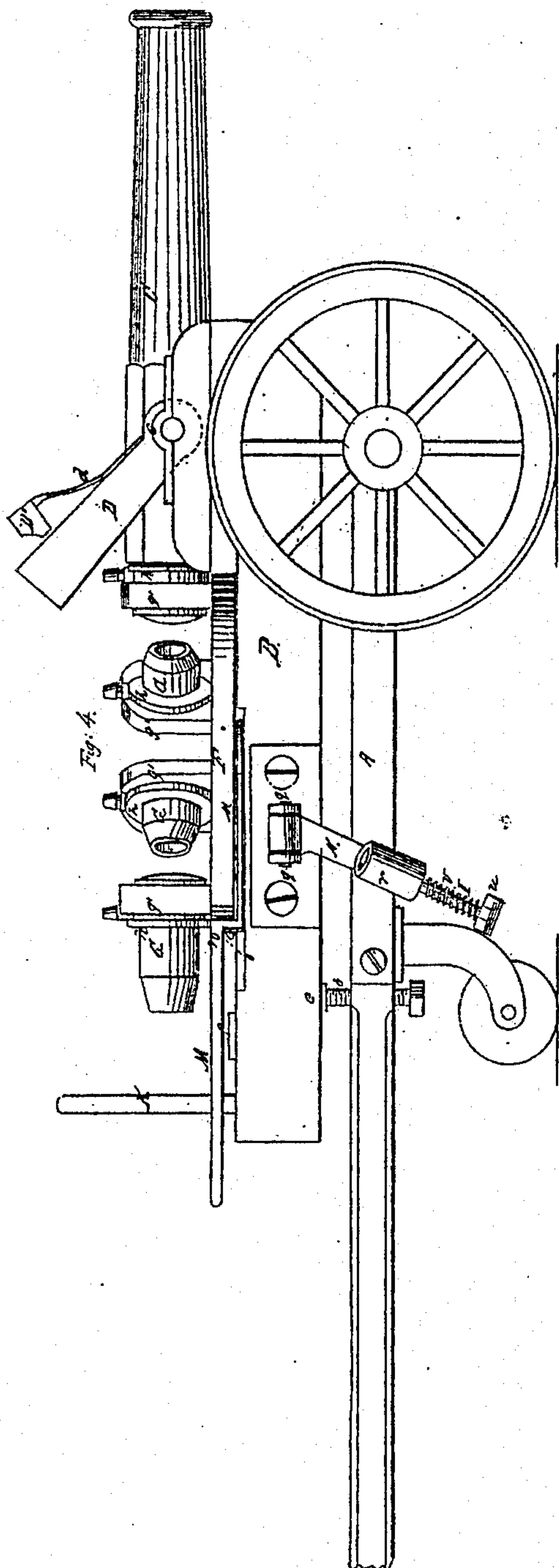
Notes to Hardy  
by Mrs. J. F. Hardy & L. W. Hardy -  
Hennings -

M. F. HARDY.

Machine Gun.

No. 36,148

Patented Aug. 12, 1862.



Witnesses

*Gustav Krieger*  
*Arthur H. Frost*

Inventor

*Moses F. Hardy*  
*by Mason Demetrius Lawrence*  
*Attorney*



# UNITED STATES PATENT OFFICE.

MOSES F. HARDY, OF SEWARD, NEW YORK.

## IMPROVEMENT IN REVOLVING ORDNANCE.

Specification forming part of Letters Patent No. 36,148, dated August 12, 1862.

*To all whom it may concern:*

Be it known that I, MOSES F. HARDY, of Seward, in the county of Scholario and State of New York, have invented a new and useful Improvement in Breech-Loading Ordnance, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view, Fig. 2 a longitudinal section, Fig. 3 a rear end view, Fig. 4 a right-side view, and Fig. 5 a left-side view, of my improved breech-loading ordnance.

Similar letters of reference in the several figures indicate corresponding parts.

My invention relates to that character of breech-loading ordnance which employs a horizontal circular turn-table with a series of breech-pieces or charge-receivers mounted around the outer upper rim thereof, so as to be successively brought in line with and forced into the open rear end of the cannon.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

A is a gun-carriage, consisting of an axle, two wheels, a caster, and a bed plate or platform, which terminates in a tongue.

B is the stock of the cannon and its auxiliaries. This stock is hinged at its front end to the axle of the carriage, as at *a a*, and at its rear end it is supported by an adjusting-screw, *b*, of the carriage.

O is the cannon, bored through from front to rear with a conical breech-seat at its breech end. The trunnions of this cannon are fitted in boxes *c c* of cheek-pieces of the stock B, and between these cheek-pieces and the sides of the cannon a yoke-piece, D, is hinged by its ends to the trunnions. This yoke-piece has three square or flat inner sides, and it is made of sufficient length to pass down behind the breech-piece of the cannon when said breech-piece is forced into the cannon.

To the top of the yoke-piece a percussive-acting spring hammer or exploder, D', is firmly attached. The spring-extensions *d d* of this hammer serve as the means whereby to hold the hammer elevated above the yoke and top of the cannon, and also serve to relieve the

hammer and yoke from the effect of the percussive action produced in exploding a cap. Were not the extension made yielding the yoke would be lifted out of its locking position when the hammer falls upon the cap, because the hammer and yoke are united and descend together as one and the same piece.

E is a T-slide fitted between and upon ways of the stock B, so as to slide back and forward in a horizontal plane. This slide is steadied and kept in place by means of straps *e f*, one of which, *f*, having an incline plane, *o*<sup>2</sup>, on its front edge, for a purpose presently described.

On top of the slide E a turn-table, F, with raised rim, *g*, is pivoted, as indicated at *m*, and confined loosely by a clamp-nut, which screws on the end of said pivot. The turn-table F has six or any other suitable number of ring-supports, *g'*, extended up from its raised rim, *g*, at points equidistant from one another, as represented. These supports are formed to admit through them and hold in position strong tubular breech-pieces G G, each of which has a cap-nipple near its rear extremity, and is of conic form at its front extremity, corresponding with the conical breech-seat of the cannon. In diameter the breech-pieces G are, for a portion of their length, equal only to the enlarged bore of the cannon, but are provided with a collar or shoulder, *h*, near their rear termini, of a diameter equal to the outer diameter of the cannon. The breech-pieces thus constructed enter the breech-seat of the cannon and abut with their shoulders against the rear end of the cannon in a manner to cover the longitudinal joint formed between the cannon and the breech-pieces.

To operate the combined yoke locking-piece and hammer D D', a crank-shaft, I, with cams J J attached to it, is arranged below and in front of the fulcrum of the yoke, so that the cams J J stand under the side portions of the yoke-piece. The shaft I has its support in the cheek-pieces of the stock B, and its crank end extends outside of one of said cheek-pieces, and has a connecting-rod, *j*, pivoted to it, said connecting-rod extending alongside the stock B and attaching to a hand-lever, K, which has its support on the stock, and is controlled in its movements by a loop-bracket, *k*, as shown.



To slide the turn-table F back or forward, a forked lever, L, is pivoted to the top of the stock B near one side, and its forked end incloses a pin, l, projecting from the top of the slide. The lever is horizontally placed, and its outer detachable end is long enough from the fulcrum to give a good purchase. By moving this lever backward the slide is forced forward, and vice versa, if the lever is moved in a converse direction.

To turn the turn-table after the combined yoke and hammer D D' has been raised and the breech-piece cleared from the cannon, a horizontal lever, M, is fitted between the turn-table and the slide E, being attached to the pivot m of the turn-table in such manner as to turn on said pivot. This lever has a stop-shoulder, o', which strikes a pin, o<sup>3</sup>. It also has an angular bend, n, formed in it at a point just outside the circumference of the turn-table F, and to this bend a pawl, o, is fastened so as to take into bevel-notches p of the circumference of the turn-table F. There are six of these notches—one for each breech-piece G—and the pawl, by being moved back into these notches successively and then brought forward imparts a circular motion to the turn-table.

The extent of movement produced at each stroke of the lever on which the pawl is fastened is just equal to the distance between the breech-pieces, the shoulder o', by striking the stop-pin o<sup>3</sup> of the slide, controlling the movements of the lever M. Each movement of the lever causes the last-fired breech-piece to move out of line with the bore of the cannon and another charged or unfired breech-piece to come in line with the same, and as this change occurs a projection, o<sup>4</sup>, on the back of the pawl o strikes the incline o<sup>2</sup> of the strap f and causes the turn-table F and slide E to move forward a short distance, sufficiently to force the conic end of the breech-pieces slightly into the breech-seat of the cannon.

To place a heavy ball into the breech-pieces after they are charged with powder or blank cartridges, a hinged bracket, N, is arranged on the side of the stock B. This bracket swings up and down on a horizontal pivot, q, but it is below said pivot set with an obliquity, so as to be adapted to a turn-table with six breech-pieces and allow of a long lever being attached to it and still be capable of moving in a small compass.

At the lower upturned loose end of the bracket N a cylindric socket, r, is formed, the bottom of said socket consisting of a plunger, s, with a stem, t, around which a spiral spring, v, is coiled. The stem t hinges to a long lever, u, which has its fulcrum on the under side of the bracket N. In the socket r the cannon-ball is set, and when the breech-piece which was last charged with powder by the gunner comes round to a proper position the gunner draws upon the end of the lever u through a cord, and thereby causes the bracket, with ball

upon it, to swing round and up to a position in line with the bore of the breech-piece, and then by laying hold of the end of the lever u with the hands forces the plunger against the ball and rams the ball into the breech-piece and down against the powder-charge.

The spring v returns the plunger to its original position while the gravity of the bracket insures its own descent to a position ready for the elevation of another ball.

The general operation of my invention is as follows: The turn-table F is moved with the slide E by the lever L back out of contact with the breech end of the cannon, and the breech-pieces capped and charged with blank cartridges or powder, and as fast as thus charged the table F is turned by the lever-pawl M o, so as to bring the breech-pieces in position to receive cannon-balls from the socket of the swinging bracket N. The turn-table resting with one of the charged breech-pieces in line with the bore of the cannon and the conic end extending slightly into said bore, the further entrance of the breech-piece into the conical breech-seat is effected by moving the slide and turn-table up toward the breech end of the cannon by the lever L, so that the shoulder of the breech-piece abuts against the said end of the cannon. Now, the combined hinged locking-yoke and hammer is released by moving the lever K, so as to withdraw the cams J J from under the yoke. The yoke descends behind the breech-piece and support thereof, and thus locks it tight in the cannon, and simultaneously with this the hammer strikes the cap and explodes the charge in the cannon. This done, the turn-table is moved back so as to clear the breech-piece from the cannon, and turned far enough to bring another breech-piece in line with the bore of the cannon. The table is again moved toward the breech end of the cannon and the same adjustment of the parts, as just described, again made. Thus the gunner continues to shoot and load in the most rapid manner. The device N, for charging the breech-pieces, may be made without the obliquity in its lower portion if four or eight breech-pieces are arranged on the turn-table, as the breech-pieces would then rest in a proper position to allow the bracket to ascend in a vertical plane.

In transporting the cannon the lever L can be shortened by unscrewing and taking off its outer end.

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

1. The locking-yoke and spring-hammer, combined substantially as and for the purpose set forth.

2. The combination of the turn-table F, slide E, series of breech-pieces G G, cannon C, and combined yoke and hammer D D', substantially in the manner and for the purposes described.

3. The combination of the hinged yoke D, crank-shaft I, cams J J, connecting-rod j, and



hand-lever K with the cannon C and turn-table F, substantially in the manner and for the purposes described.

4. The lever M, with pawl  $o$  and projection  $o^4$ , in combination with the bevel-notches  $p$  of the turn-table and the incline  $o^2$  of the strap  $f$  and the stop  $o^3$  of the slide, substantially in the manner and for the purposes described.

5. The combination of the forked lever L, stock B, slide E, and turn-table F, substantially in the manner and for the purpose described.

6. Charging the breech-pieces with balls, substantially as described.

7. The construction of the ball-charging device, substantially as described.

Witness my hand and seal, in the matter of my application for a patent for improvement in breech-loading ordnance, this 18th day of April, A. D. 1862.

M. F. HARDY.

Witnesses:

EDWIN S. JACOB,  
GUSTAVUS DIETERICH.