

(No Model.)

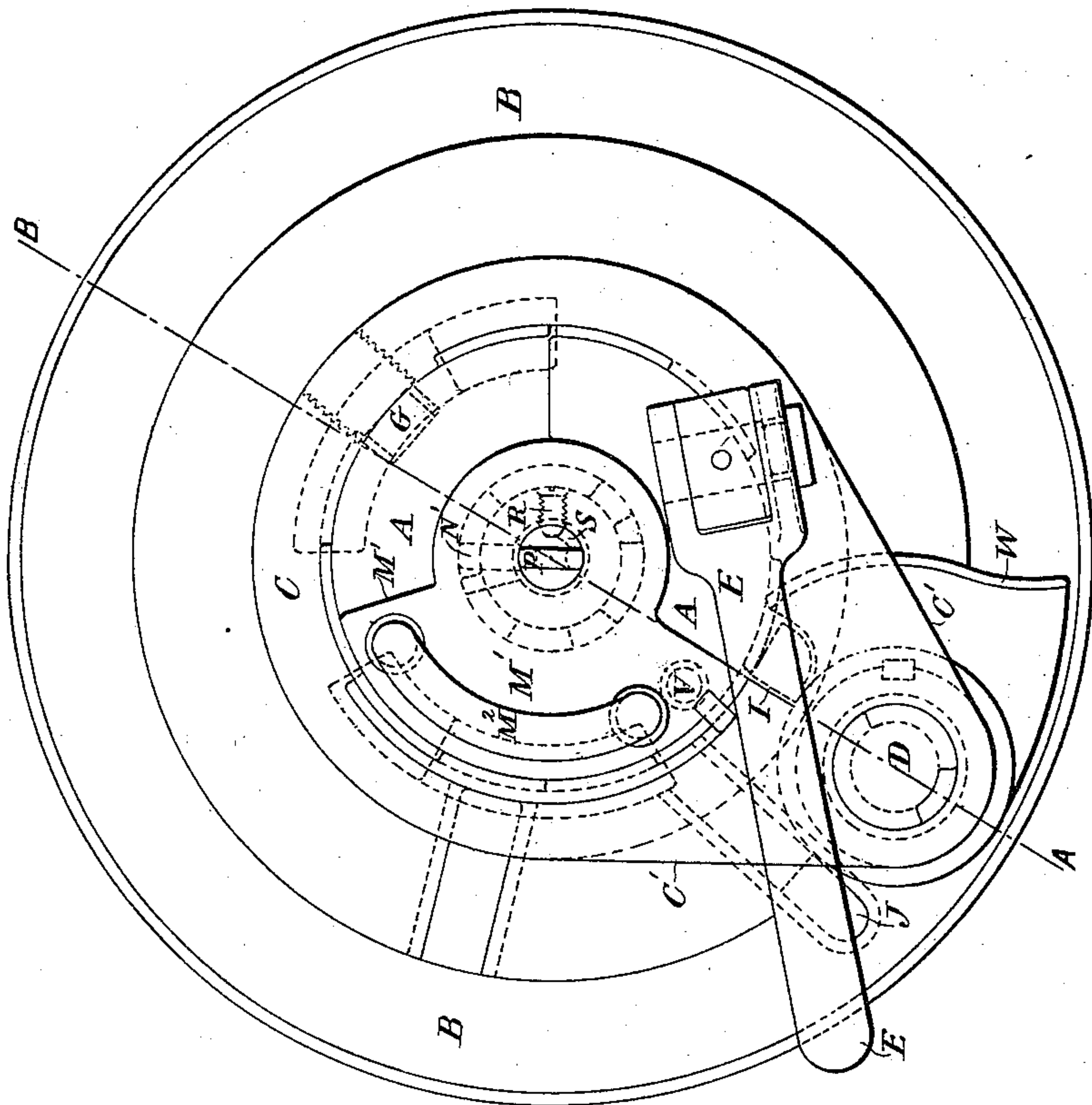
3 Sheets—Sheet 1.

T. NORDENFELT.
BREECH MECHANISM FOR GUNS.

No. 388,576.

Patented Aug. 28, 1888.

Fig. 1.



Witnesses

Baltis & Long.
C. M. Brooke.

Inventor,

Thorsten Nordenfelt.
By his Attorneys,

Baldwin Davidson & Wright.

(No Model.)

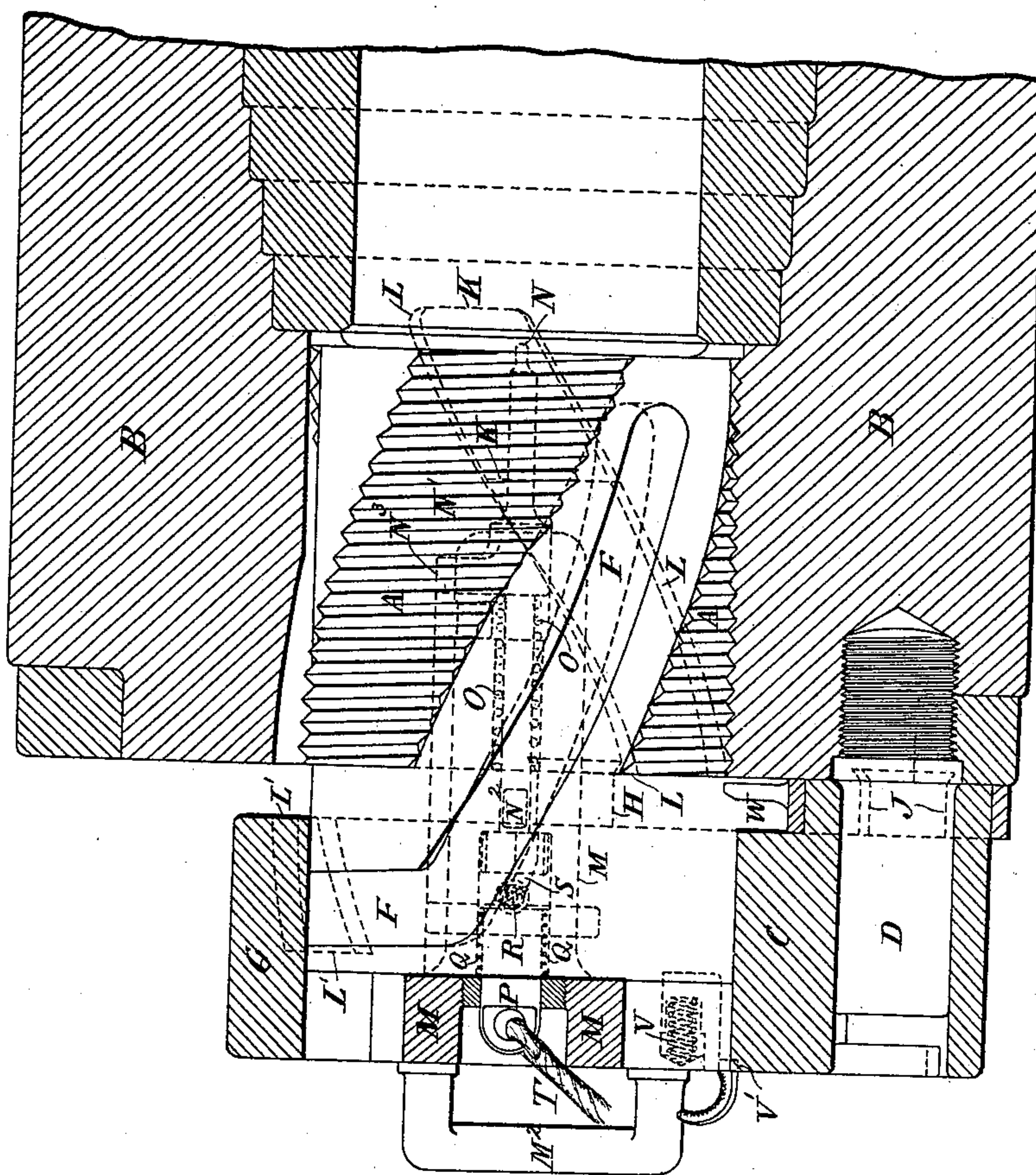
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Fig. 2.



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Baltis De Long.
C. W. Brooke.

Inventor,
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Baldwin Davidson & Wright.

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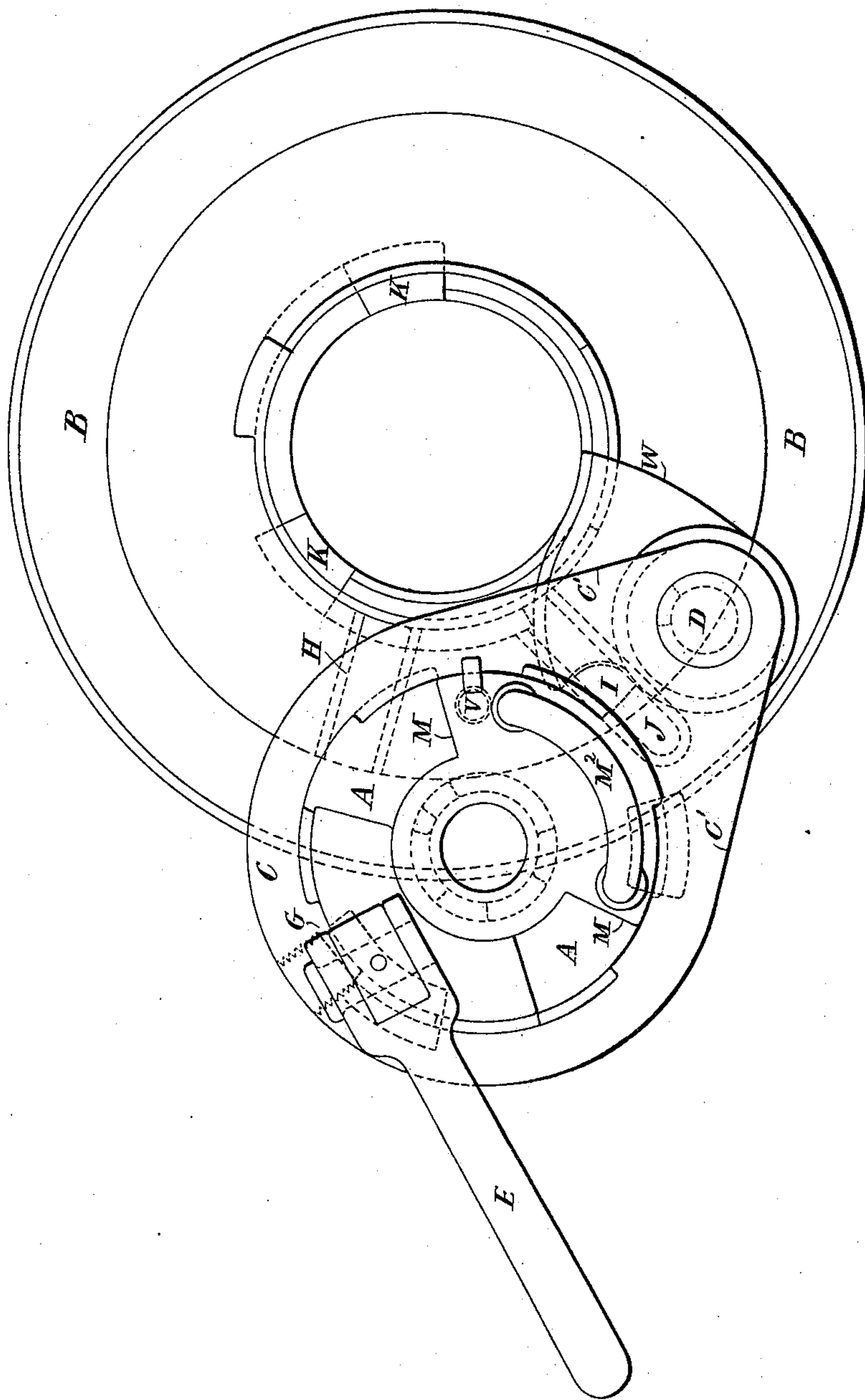
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Fig. 3.



Witnesses,

Baltis D^r Long.
C. W. Brooke.

Inventor,

Thorsten Nordenfellt;
By his Attorneys,
Baldwin Davidson & Wright.

UNITED STATES PATENT OFFICE.

THORSTEN NORDENFELT, OF WESTMINSTER, ENGLAND, ASSIGNOR TO THE
NORDENFELT GUNS AND AMMUNITION COMPANY, (LIMITED,) OF SAME
PLACE.

BREECH MECHANISM FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 388,576, dated August 28, 1888.

Application filed June 11, 1888. Serial No. 276,738. (No model.)

To all whom it may concern:

Be it known that I, THORSTEN NORDENFELT, a subject of the King of Sweden, residing at 53 Parliament Street, in the city of Westminster, England, civil engineer, have invented certain new and useful Improvements in Breech Mechanism for Guns, of which the following is a specification.

My improvements relate especially to breech mechanism for guns in which a screw breech-block formed with divided segments of screw-threads has first given to it a turning movement to unlock it, is then drawn back, and is afterward carried away to one side by one turning movement of a lever-handle. I now give these movements to the screw breech-block by a lever-handle secured directly to the screw-block itself. I make the rear end of the screw-block to extend backward from the breech-end of the gun into a ring, which I call a "carrier-ring," and which at one side, near its lower part, can be turned around a pin which projects backward from the rear end of the breech of the gun. The carrier-ring I form with a pin projecting inward from it and entering a groove formed in the circumference of the breech-block. This groove, at its rear end, first passes for a distance around the block in a direction inclined to its axis to the same extent as the screw-threads which are upon it, and then passes along and partly around the block in a long open helicoidal curve. The segments of the screw-threads upon the block I also make to wind partly around the block in the same helicoidal curve. With this construction, when the screw breech-block is turned by the lever-handle, which extends from it, to open the breech, it first screws itself back until the segments of screw-threads upon it are disengaged from the segments of screw-threads upon the gun. When this takes place, the end of the quick-threaded portion of the groove in the block comes against the pin on the ring, and as the block continues to be turned by the lever-handle it is at the same time drawn backward until the end of the groove comes against the pin. The carrier-ring, carrying the screw breech-block within it, is then turned for a distance around the pin by

which it is pivoted to the breech of the gun, and is so carried away to one side, leaving the breech open.

The drawings annexed show various views of the breech-end of a gun formed as above described.

Figure 1 is a rear end view with the breech closed; Fig. 2, a longitudinal section of the same, taken on the line A B, Fig. 1; and Fig. 3 is a rear end view with the breech open.

A is the screw breech-block, with the segments of screw-threads winding partly around it; B, the rear end of the gun, with corresponding screw-segments formed in it.

C is a ring into which the rear end of the block A projects.

D is a pin projecting back from the rear end of the gun, upon which a short arm, C', projecting from the ring C, can swivel.

E is a lever-handle jointed to the rear end of the block A.

F is a groove cut partly in the portion of the block A which projects from the rear end of the gun and partly along one of the spaces between the spiral segments of screw-threads upon it.

G is a pin projecting inward from the ring C and entering the groove F. As above stated, the rear end of the groove F passes for a distance around the block in a direction inclined to its axis to the same extent as the screw-threads of the screw-segments upon it, and then passes along and partly around the block in a curve corresponding to the curve of the side edges of these segments.

H is a stop projecting backward from the rear end of the gun. When the breech-block is being turned, and consequently drawn back, the side of the forward end of the block bears against it when the forward end of the block has been drawn back clear of the breech end of the gun, and prevents this block and the ring C from being then turned around the pin G until the backward movement of the block is completed. The end of the block is then clear of the stop and the ring, carrying the block within it, can be turned into the position shown in Fig. 3. A projection, I, from the front face of the ring C then comes against a stop, J,

which projects from the rear end of the gun, and the ring is thereby prevented from turning further.

With breech mechanism constructed in the manner above described any suitable mechanism may be used for drawing back the empty cartridge-case when the breech is being opened, and for firing the cartridge when the breech is closed.

In the construction shown in the drawings the withdrawal of the empty cartridge-cases is effected by two extractor-claws, which are carried by slides K, which are capable of being drawn back along slots L, formed in the gun, and the slides have screw-threads on them for the screw-threads on the block A to engage with. When the block is turned to unlock it, the screw-threads on the block engage with the threads on the slide and slowly draw it back and slightly withdraw the cartridge-case. Then, when the block is drawn back, as the screw-threads are still engaging with one another, the extractor is drawn back with it and completes the withdrawal of the cartridge-case, the extractor-slides being then withdrawn into slots L' in the ring C.

The arrangement shown for firing the gun is as follows: A cavity is formed centrally through the breech-block A. Into this cavity is inserted a cylinder, M, which carries within it the trigger and firing-pin. The cylinder M is held in the cavity by projections upon it entering L-shaped grooves cut in the side of the cavity. When the cylinder is pushed endwise into the cavity, the projections upon it enter the parts of the grooves which are formed lengthwise of the cavity, and then when the cylinder has been fully inserted a partial turn is given to it, thereby bringing the projections into the parts of the grooves which are at right angles to the cavity and locking the cylinder to prevent its withdrawal. Within the cylinder is the rear end of the firing-pin N and the spring O, by which the firing-pin is to be thrown forward. The forward end of the firing-pin has an arm, N', projecting from it, which enters a recess, N³, formed at the side of the cavity in the breech-block. At the time when the breech-block is turned to unlock it the cylinder M is held fast and prevented from turning with it, as hereinafter explained, and an inclined side of the recess comes against the arm N', and, forcing it back, compresses the spring O. The firing-pin is itself prevented from turning within the cylinder by an arm, N², on its rear end sliding in a slot in the interior of the cylinder. As the firing-pin is forced backward, its rear end bears against the forward end of the trigger-piece P and presses it back against the action of the spring Q, which presses it forward. As the trigger is pressed backward, it has simultaneously a partial turn given to it by reason of the end of a pin, R, carried by the cylinder entering a spiral groove, S, cut in its side. When the firing-pin has been pressed back to such an extent that the arm N² on its rear end has

passed out from the slot in which it was previously sliding, the firing-pin has a partial turn given to it to bring the arm behind the abutment through which the slot is cut, and the hammer is thereby locked and held back. Just before the firing-pin has this partial turn given to it a radial slot in the front end of the trigger-piece has by the turning of the trigger been brought into a line with the arm N² on the firing-pin, and when the firing-pin is turned to bring it into its locked position the trigger is thrown forward by its spring and the arm N² passes into the radial slot in its forward end. When the breech of the gun has been closed and the gun is to be fired, the trigger is drawn back by the cord T. The firing-pin is thereby turned in a direction to carry its arm N² clear of the abutment against which it was resting, and when clear the firing pin is thrown forward by the action of the spring O.

The locking of the cylinder M to prevent it turning with the breech-block at the time when the breech-block is being turned to unlock it is effected in the following manner: The rear end of the cylinder M has upon it a plate, M', which lies in a recess in the rear end of the breech-block A and carries a spring-bolt, V. When the breech of the gun is closed, a projection, V', on this bolt enters a notch in the ring C, and thereby locks the cylinder to the ring and prevents it from turning. When the breech-block A is turned to unlock it, and is thereby drawn back a short distance, the bolt being carried back with it, its projection V' is withdrawn from the notch in the ring just as the unlocking of the breech-block is completed. At the same time the turning motion of the breech-block brings a notch in its rear end opposite to the forward end of the bolt and the bolt is pressed forward by its spring into the notch, thereby locking the cylinder M to the breech-block, so that it turns with it, and when the breech is being closed is always brought back into proper position for the projection V' of the bolt to enter just as the block has completed its quick forward movement and is about to be turned to lock it in the gun.

M² is a handle fixed on the plate M'.

W is a plate carried by the boss of the arm C' of the ring C. This plate, when the drawing back of the breech-block is completed and the ring C is being turned around the pin D, comes in front of the rim of the cartridge-case which has been withdrawn from the barrel, and prevents the case from being in any way forced forward into the barrel. The plate also serves as a stop for the rim of a cartridge which is being inserted into the gun to come against and stop it in such a position that the claws of the extractors may come in front of this rim when the ring C and breech-block are turned around the pin D as the breech is being closed.

As before stated, the breech-block, with the spirally-formed screw-threaded segment upon it, cannot only be used, as above described, in

conjunction with a carrier-ring which, when the block has been withdrawn from the gun, is capable of being turned around a pin which projects backward from the gun, but can also
5 be used with other mechanism for carrying it away to one side after it has been withdrawn. For example, it may be used together with a carrier-ring, which, in place of turning on a pin which projects back from the rear end of the
10 gun, is capable of being turned aside around a pin which is at right angles to the bore of the gun.

Having now particularly described and ascertained the nature of the said invention and
15 in what manner the same is to be performed, I declare that what I claim is—

1. The combination of the gun, the breech-block closing its rear end, the segments of screw-threads winding partly around the
20 breech-block, the corresponding segments in the breech of the gun, the carrier-ring by which the breech-block when withdrawn from the gun can be conveyed away to one side, the

pin projecting inward from this ring, and the groove in the breech-block, into which the pin
25 enters, formed at one end parallel with the screw-threads and at the other parallel with the edges of the screw-segments.

2. The combination of the gun, the breech-block closing its rear end, the segments of
30 screw-threads winding partly around the breech-block, the corresponding segments in the breech of the gun, the lever-handle for turning the breech-block, the carrier-ring capable of being turned around a pin which is
35 on one side of it and projects backward from the gun, the pin projecting inward from the ring, and the groove in the breech-block, into which this pin enters, formed at one end parallel with the screw-threads and at the other
40 parallel with the edges of the screw-segments.

THORSTEN NORDENFELT.

Witnesses:

R. OESTROM,
F. A. NOEL.