

E. E. QUIMBY.

DISCHARGER FOR SCREW-MAKING MACHINES.

No. 184,903.

Patented Nov. 28, 1876.

Fig. 1.

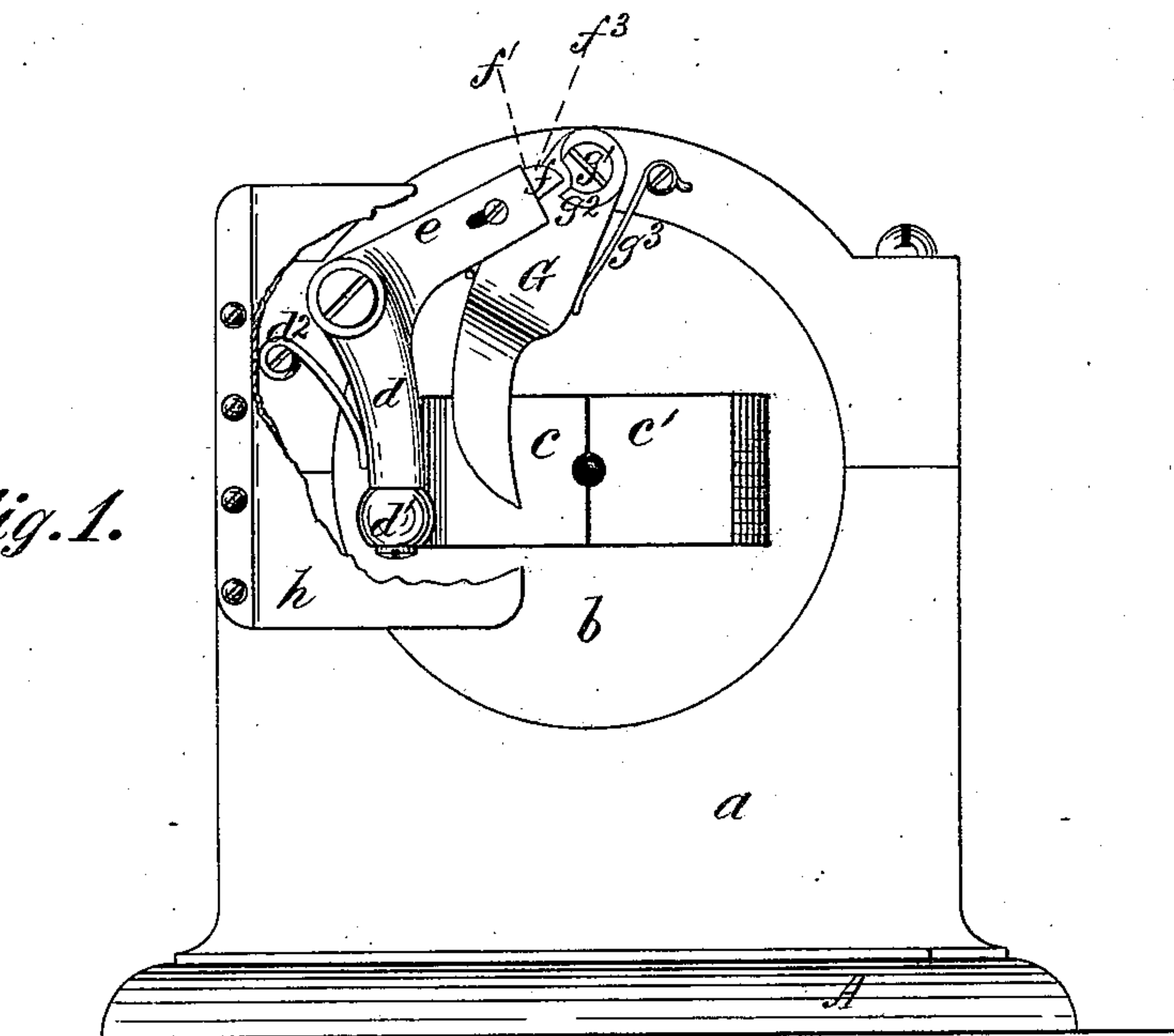
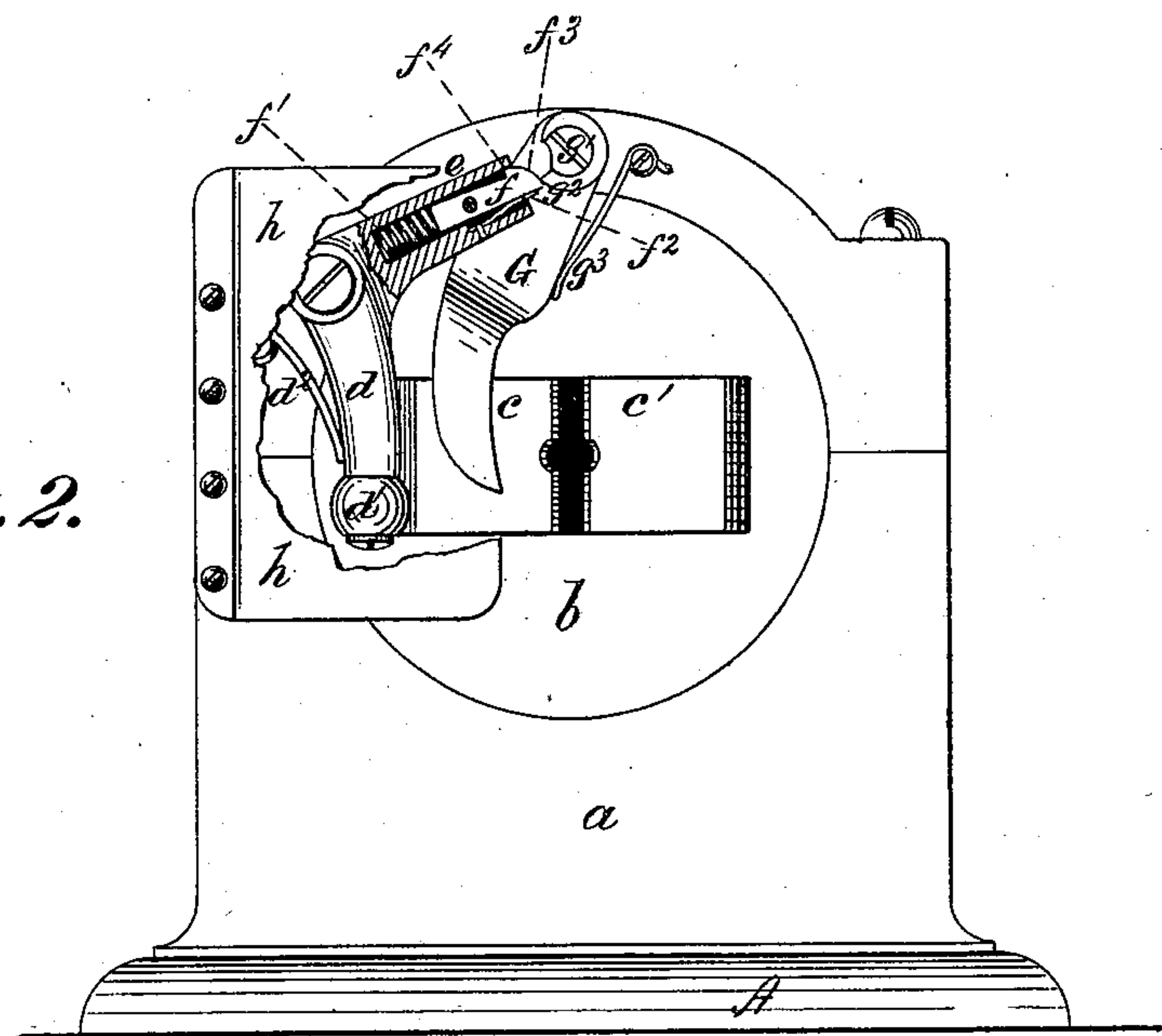


Fig. 2.



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Inventor:

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Fig. 3.

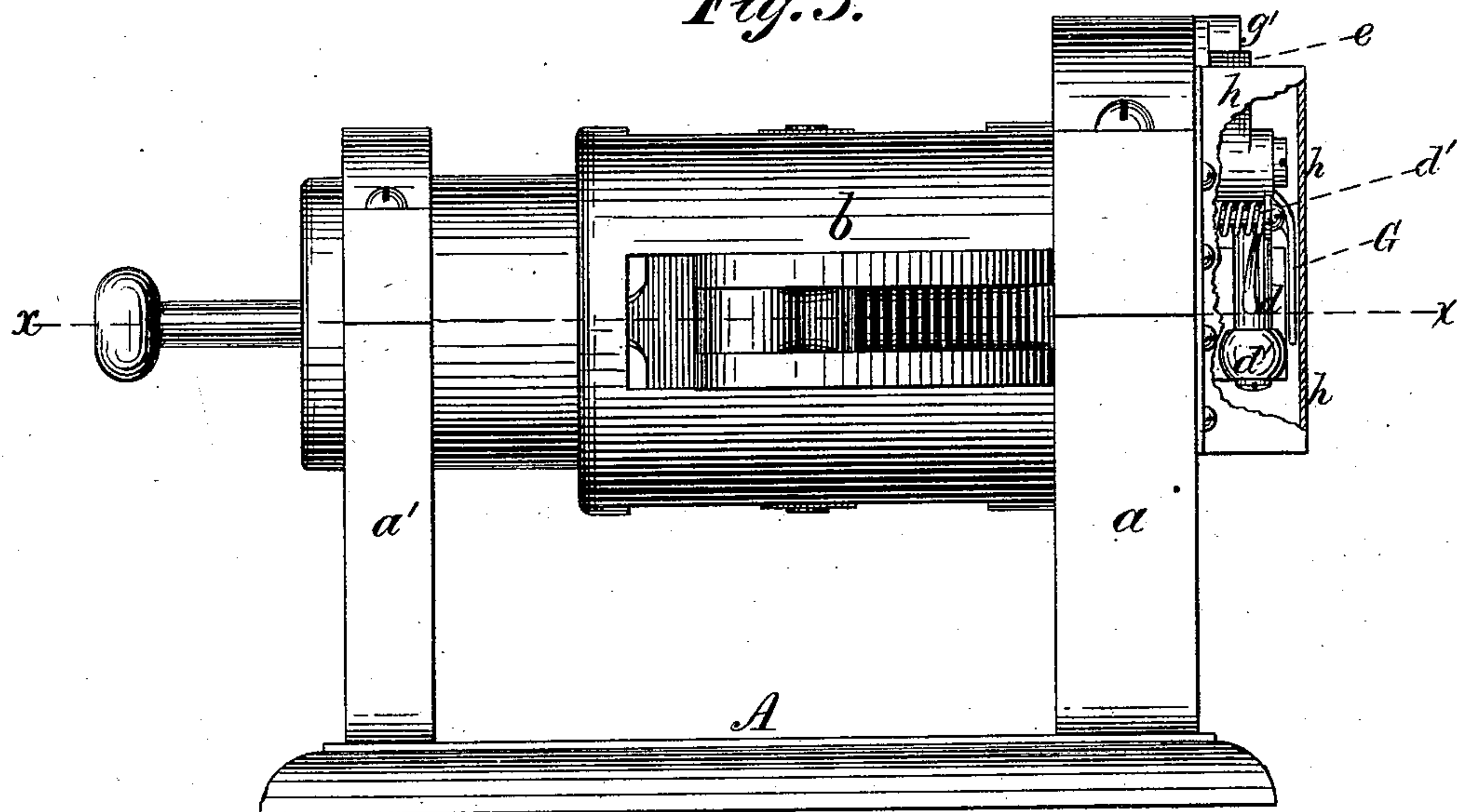
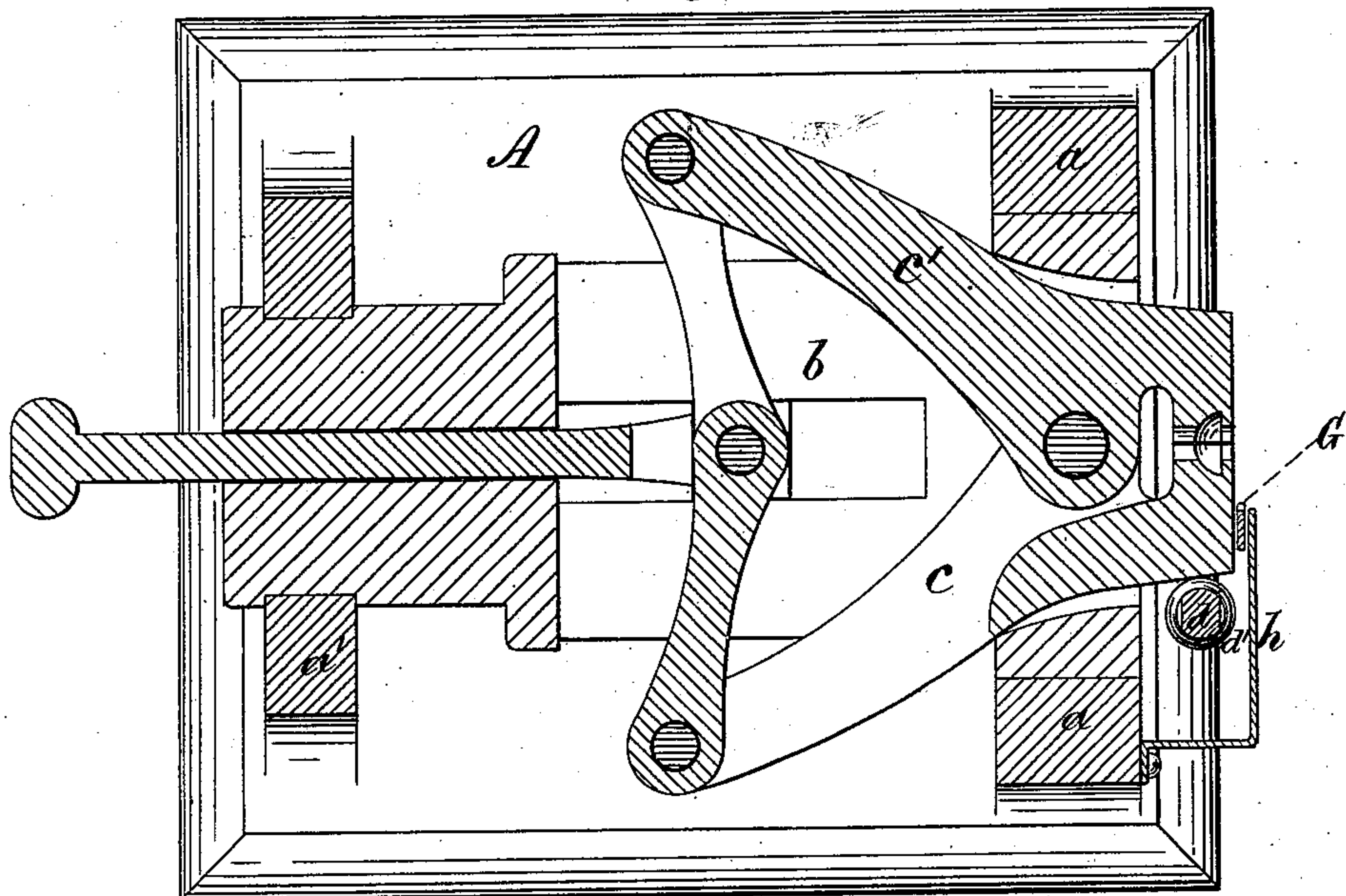


Fig. 4.



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UNITED STATES PATENT OFFICE

EDWARD E. QUIMBY, OF ORANGE, NEW JERSEY, ASSIGNOR TO AMERICAN SCREW COMPANY, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN DISCHARGERS FOR SCREW-MAKING MACHINES.

Specification forming part of Letters Patent No. **184,903**, dated November 28, 1876; application filed October 31, 1876.

To all whom it may concern:

Be it known that I, EDWARD E. QUIMBY, of Orange, New Jersey, have invented an Improvement in Automatic Dischargers for Screw-Machines, of which the following is a specification:

My improvement is applicable to machines for manufacturing either wood-screws or fine-thread screws, but is especially useful in connection with machines for finishing fine-thread screws, in which the threads are cut by dies.

In machines of this class, which are sometimes called die-threaders, it is necessary that the jaws shall gripe the screw-blank with excessive force to prevent the turning of the blank in the jaws under the action of the dies upon its shank. It results from this excessive gripe that the finished screw sometimes sticks in one of the jaws when they are opened, and will not fall therefrom by its own gravity. It thus becomes necessary to provide positive means for dislodging the screw from the jaw. This has heretofore been accomplished by a stationary plate or plates in front of the jaws, such plates having been so arranged as to bisect the path swept by a blank adhering to either of the jaws when the jaws open. Such stationary plates, however, are necessarily placed at a considerable distance aside from the position occupied by the blank when the jaws are closed, in order to be out of the way of the dies, which, in cutting the thread, approach close to the front of the jaws.

My invention consists of a movable discharger or striker, which, at the proper time, sweeps across the front of the open jaws, and then immediately retires to its normal position behind a shield. In its forward motion my striker serves to knock out a screw which may be sticking in either of the open jaws, and then returns to a position where it is entirely out of the way of the dies.

In fine-thread machines, it is customary to lubricate the blank with oil. This is usually effected by a jet of oil directed upon the blank immediately in front of the dies. By the revolution of the dies, or of the blank, or of both, as the case may be, the oil is thrown off by centrifugal force, and carries with it chips or

cuttings. My shield prevents this oil and the chips from reaching the striker and adhering to it. Oily chips adhering to the striker while at rest would be thrown from the striker in the direction of the jaws by the shock of the sudden movement which the striker makes, and would be liable to be thrown into and adhere to the inside of the jaws, in which position they would prevent the jaws from taking a proper gripe of the next screw, or might, indeed, cause the breaking of the jaws. For the successful use of the striker, therefore, it is required that its place of rest shall be beyond the range of motion of the flying oil and chips, or that it shall be protected by a shield, which intercepts such oil and chips. My invention includes, therefore, as one of its elements, a shield organized in relation to the striker and the other parts of the machine, in the manner and for the purpose described.

The accompanying drawings are as follows: Figure 1 is a front elevation of that portion of a fine-thread machine with which my invention is immediately connected, showing the front of the jaws and the jaw-stock, the upright portion of the frame of the machine which supports the jaw-stock, showing my striker, together with the mechanism which actuates it, and the shield which protects it, a portion of the latter being broken away to more clearly exhibit the parts behind it. Fig. 2 is a similar elevation, showing the position assumed by the parts, when the jaws, after having been fully opened, have commenced to close. In this figure, the front part of the arm *e* is represented as cut away for the purpose of exhibiting the interior of the chamber in which the bolt-latch slides. Fig. 3 is a side elevation of the jaw-stock, and of the uprights in which it is supported, affording a side view of the striker and the mechanism which operates it, and also of the shield, a portion of the latter being broken away, as before, to exhibit more clearly the parts behind it. Fig. 4 is a longitudinal horizontal section through the line *x x* on Fig. 3, showing the toggle-joint for working the jaws.

The drawings illustrate my invention as applied to a fine threader, in which the jaws

not revolve, but open and close in a horizontal plane.

In this machine the screw-blank is gripped by stationary jaws, and a revolving die cuts the thread upon its shank. The die and the feeding mechanism are not shown in the drawings, as they have nothing to do with my invention, which relates solely to the discharge of the finished screw from the jaws. In this case the motion to operate my striker is borrowed from one of the jaws.

The drawings exhibit a portion of the bed-plate A of a fine threader, and the uprights a and a' , which support the jaw-stock b , in which the swinging jaws c and c' are pivoted. The jaw c , in its opening movement, pushes against end of the lower arm d of a rocking elbow, which is provided with a friction-roller, f^1 , and is maintained against the outer edge of the jaw c by the spring d^2 . The upper arm of the rocker is furnished with a bolt-latch, f , held outward by a spiral spring, f^1 , and pushed upward against the upper side of the chamber which contains it by the flat spring f^2 . The upper part of the beveled edge f^3 of the bolt-latch forms a shoulder, f^4 , which engages the end of the arm e . This shoulder prevents the bolt from yielding inwardly, except when a downward pressure is exerted upon the beveled edge f^3 of the bolt-latch, as is the case when the arm e moves upward after the striker has completed its motion and returned to its normal position, as will presently be described. The striker G is a thin metal plate swinging upon the pivot g^1 , and provided with a shoulder, g^2 , for engaging the end of the bolt-latch f . The spring g^3 holds the striker in its normal position, as shown in Fig. 1, but yields to allow the striker to swing across the front of the jaws, in obedience to the action of the bolt-latch f , upon the shoulder g^2 , when the rocker d is actuated by the opening of the jaw c . A thin metallic plate, h , is secured to the frame, and projects across the front of the rocker and of the striker, when the latter is in its normal position, and thus operates as a shield, and intercepts any flying oil or chips, and prevents them from adhering to the surface of the striker. In the drawings this shield is represented as partly broken away for the purpose of exhibiting the parts behind it.

The operation of my invention is as follows: When the jaws open after the dies have finished their work in cutting the thread, the jaw c pushes back the lower arm d of the rocker, and the bolt-latch f , acting upon the shoulder g^2 , causes the striker to swing across the front of the jaws, and thus knock out a blank which may be sticking in either jaw. In its downward movement the bolt-latch f ultimately slides off the edge of the shoulder g^2 , when the striker is immediately forced back to its normal position by the action of

the spring g^3 . The striker is thus brought back to its normal position while the jaws are still open. When the next blank is presented to the jaws by the feeding mechanism the jaws close upon it, and the rocker, being relieved from the thrust of the jaw c , assumes its normal position in obedience to the action of the spring d^2 . In its upward movement the beveled edge f^3 of the bolt-latch f strikes against the end or periphery of the shoulder g^2 , and is thus forced downward and backward into the hollow arm e , as shown in Fig. 2. When the lower edge of the bolt-latch has risen above the shoulder g^2 the bolt-latch darts out in obedience to the action of the spring f^2 , and is then in position to act upon the shoulder g^2 , and impart a swinging motion to the striker, when the jaws again open.

It will be seen that the direction in which the edge of the striker moves is that which is most favorable for the dislodgment of a screw sticking in either jaw—that is, that the plane in which the jaws open and close constitutes the chord of the arc swept by the edge of the striker.

In a fine threader having stationary jaws like those shown, it is convenient to borrow the motion for the striker from the jaws. As such machines work very rapidly, the discharging mechanism must perform its operation very quickly, and, by borrowing the motion from the jaws themselves, as shown, the mechanism for actuating the striker may be more readily adjusted.

I claim as my invention—

1. In a machine for manufacturing screws, provided with gripping-jaws for holding the blank, a striker, substantially such as described, having a reciprocating motion across the front of the jaws, in combination with a shield, behind which the striker rests during the time when it is not in operation.

2. In a machine for manufacturing screws, provided with stationary jaws for gripping a screw-blank, the jaw c , and an elbow rocker, having the arms d and e , the latter provided with a spring-bolt latch, f , in combination with a swinging striker, G , provided with a shoulder, G^2 , for engaging the lower edge of the bolt-latch f , as and for the purposes described.

3. The bolt-latch f in the rocking-arm e , and the swinging striker G , provided with a shoulder, g^2 , in combination with a spring, g^3 , as and for the purposes set forth.

4. The bolt-latch f contained in the hollow arm e , and provided with the shoulder f^4 , in combination with the spring f^2 , as and for the purposes set forth.

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Witnesses:

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