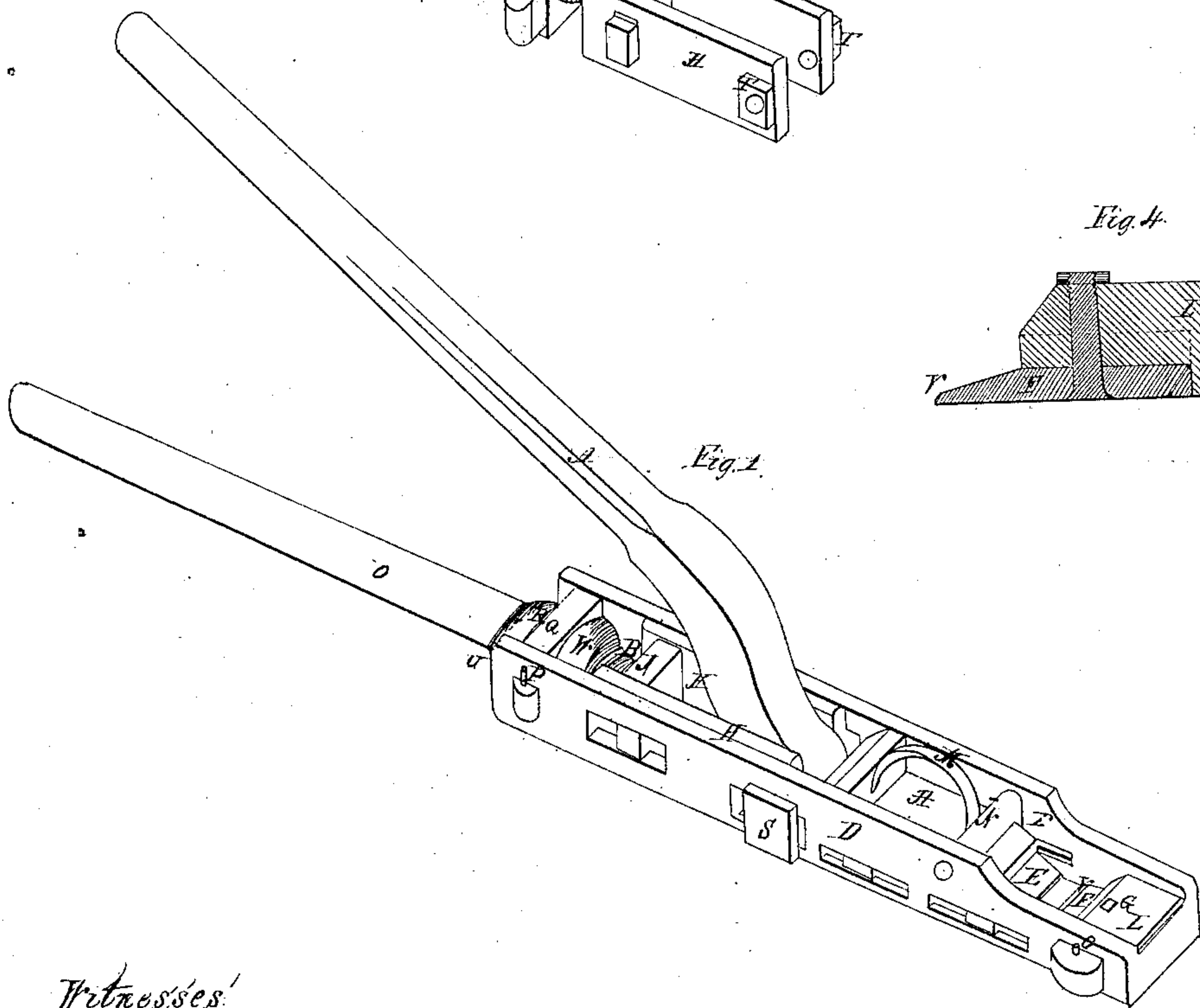
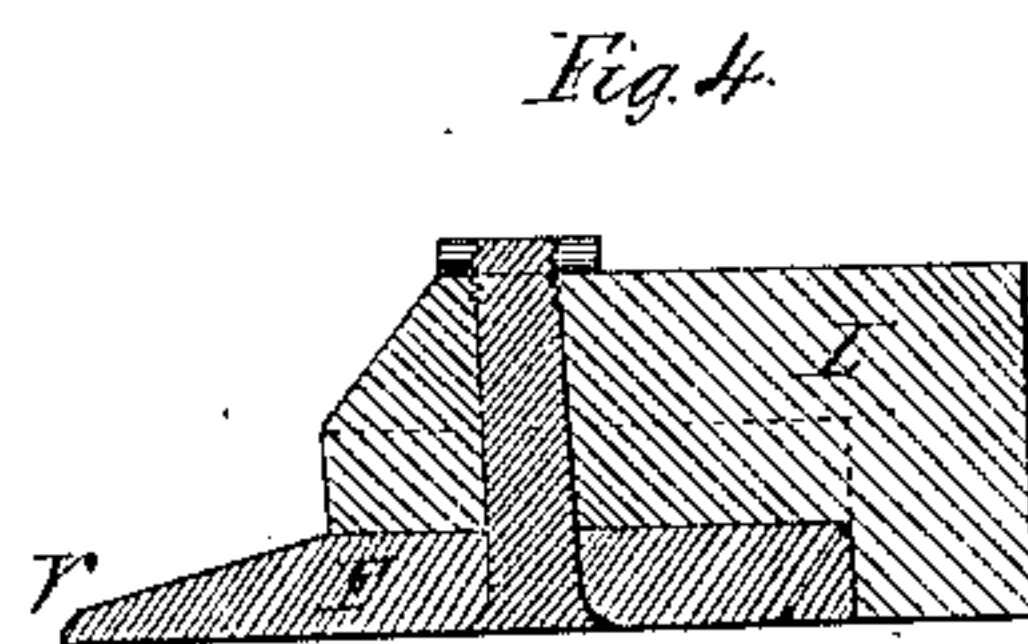
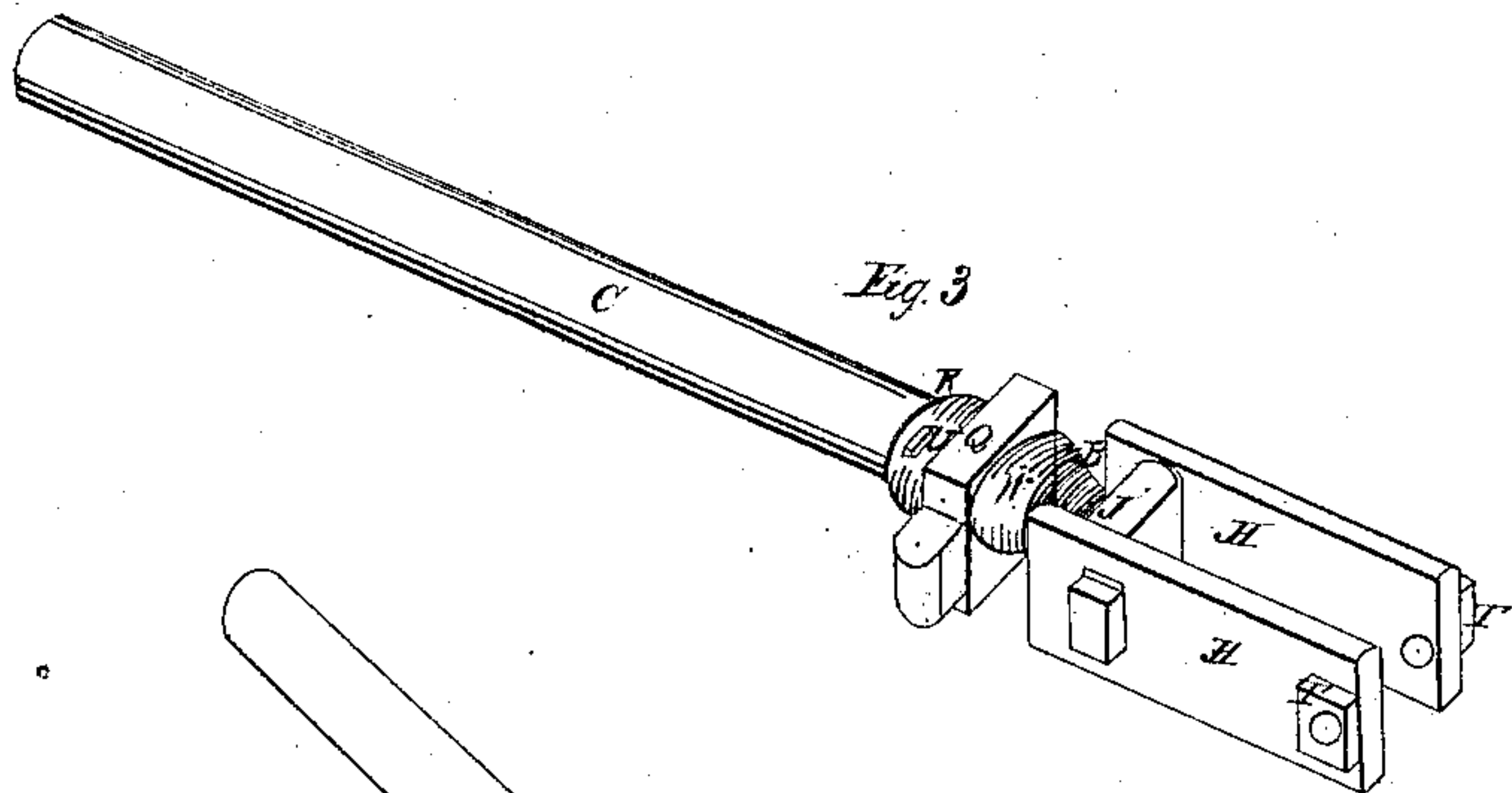
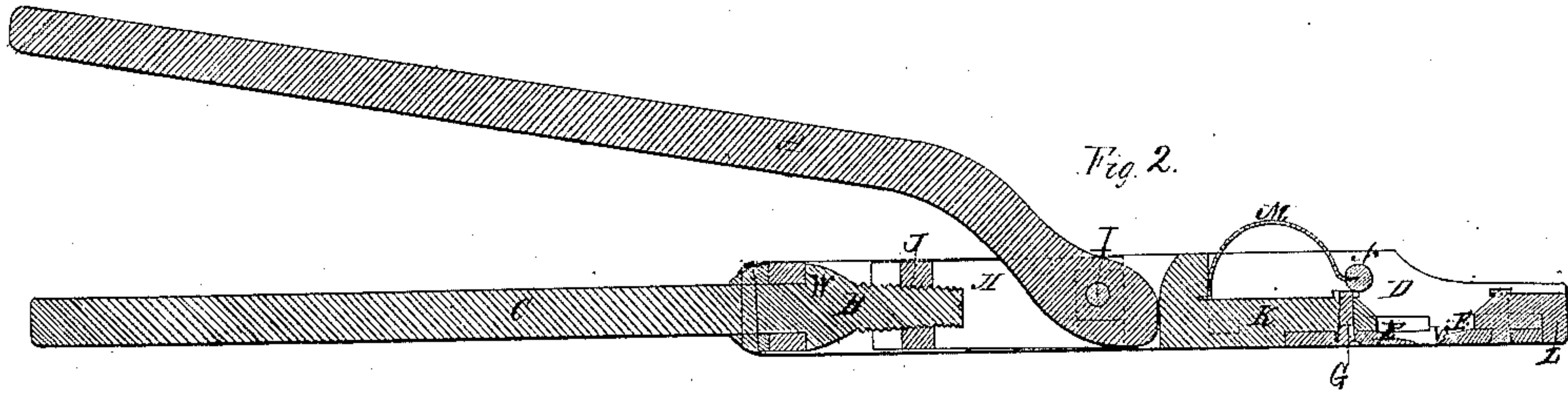


O. J. Smith, Bolt Cutter.

N^o 59,673.

Patented Nov. 13, 1866.



Witnesses:

Joshua Stark
L. W. Willam

Inventor:

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UNITED STATES PATENT OFFICE.

OTHNIEL J. SMITH, OF WAUWATOSA, WISCONSIN.

IMPROVEMENT IN BOLT-CUTTERS.

Specification forming part of Letters Patent No. 59,673, dated November 13, 1866.

To all whom it may concern:

Be it known that I, OTHNIEL J. SMITH, of the town of Wauwatosa, county of Milwaukee, State of Wisconsin, have invented a new and useful Machine called the "Improved Bolt-Cutter," for cutting bolts and rivets wherever necessary in any kind of manufacture; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings; making a part of this specification, in which—

Figure 1 is a perspective view of the entire machine; Fig. 2, a longitudinal section; Fig. 3, a perspective view of the adjustable slide with screw attached, and Fig. 4 an enlarged view of the stationary chisel and block.

The lever A, the short arm being an eccentric, is attached to the bolt I for fulcrum. By this lever being worked by hand, the movable chisel-block K and chisel E are thrown forward toward the stationary chisel-block L and chisel F, and when the lever is raised, relieving the pressure, the movable chisel-block is thrown back by the spring M. This spring is supported by the rest or cross-piece N.

The chisels E and F are held to the blocks K and L, to which they are attached, by the bolts G G. (Represented in the model by brass screws.) The chisel-block L is secured to the main side pieces, D D, by the pins O.

The distance between the chisels is graduated for the admission of bolts to be cut by an adjustable slide, to which the lever is attached. This slide consists of two interior side pieces, H H, with square shoulders T T, forming one piece with each side piece, respectively. These shoulders move in the mortises of the main side pieces, D D, and are capped by the nuts S of the fulcrum-bolt. The slide is moved by the screw B, which works in the nut J. By turning the screw the slide is moved forward, and the lever, with its fulcrum, together with the movable chisel, is thrown nearer the stationary chisel, and by reversing the screw they are drawn therefrom.

The handle C of the screw B rests between the fixed shoulder W and the separable collar R upon the cross-piece Q. This cross-piece is secured to the main side pieces by pins p.

The screw-handle C is kept from moving longitudinally by a fixed shoulder, W, formed by

increasing the diameter of the handle at that point, and of a piece with it, and fitting on the side next the screw close to the cross-piece Q. On the other side of the cross-piece is a separable collar, R, which may be slipped on over the end of the screw-handle C, and secured by bolt U. This bolt is omitted in the model.

The stationary chisel F, instead of the ordinary bevel, has a sharp shoulder, V, with shallow edge, set a short distance from the main edge. Either the stationary or movable chisel may have this sharp shoulder; but it should be upon only one of them.

The machine may be made of wrought or cast iron in all its parts, except the two chisels, which must be of best quality steel, and the spring M and the fulcrum-bolt I, which must likewise be of steel. It can also be made of any required size, and for cutting large bolts, rivets, or bar-iron, steam or other power can be applied. For ordinary use a length of, say, three feet from the end of lever-handle to the end of the stationary block, being the entire length, would be the most convenient, and a width of, say, one and a half inch, including the main side pieces.

The proportions of the various parts of the machine when constructed were not observed in the drawings or model, for the reason that if in these the width between the main side pieces were reduced in proportion to the length, the parts could not be clearly exhibited. No great exactness is required in the relative proportions of the parts.

The following dimensions for a machine of the size spoken of above—say three feet by one and a half inch—may be followed by a mechanic in constructing the machine: the main side pieces, say, twelve inches in length; the interior side pieces, two and a half inches in length; the length of the lever, two and a half feet, the eccentric allowing the chisels to open three-eighths of an inch, the screw-thread about one and a half inch. The stationary chisel may be one and one-fourth inch in length, and of sufficient width to fit in between the main side pieces, the movable chisel two and a half inches in length, and the block, as a strong supporting-shoulder to it, one and a half inch more toward the eccentric. The space for movement in the mortises in which the fulcrum bolt and nut of screw play

must, of course, be the same, and may be half an inch. The mortise of the fulcrum-bolt would, therefore, need to be a little longer to make up the difference in size of the shoulders. The movable chisel-block may move in a flange instead of a mortise, the chisels to be, say, five-sixteenths of an inch in thickness.

The advantages over other machines in use for bolt-cutting are claimed to be as follows, to wit: Compactness and simplicity of structure are gained by the employment of the main side pieces, D D, between which the adjustable slide, the chisels, the lever, screw, and spring all work. The long arm of the lever and the screw-handle serve as handles with which to carry about and operate the machine when made of ordinary size.

The adjustable slide, in connection with the movable chisel-block, the screw, and spring, together form an arrangement by means of which the distance within which the chisels can approach each other can be graduated.

In cutting patent bolts, such as are used in carriage-manufacture, it is not necessary that the chisels close upon each other to completely sever them, as their brittle quality assists the blow to break them off; but in small rivets of tenacious iron—such as, for instance, the Norway—it is necessary that the chisels come together. By this combination this distance can be fixed without loss of time, and the machine thus at once adapted to either kind of bolt, and that without changing the length of either arm of the lever. If necessary in severing a bolt to move the lever with its fulcrum nearer the stationary chisel, this is also done by simply turning the screw. Thus the largest bolts may be cut, and yet the burden end of the lever be very short, by repeating the stroke.

In machines heretofore in use the admission of a large bolt is only gained by lengthening the burden end of the lever, with, of course, consequent loss of power.

The last improvement that remains to be described is the construction of one of the chisels with a sharp shoulder near its edge. The object of this is to counteract the great strain and friction upon the chisels when both chisels have bevels. This shoulder carries that part of the bolt thrown off, while the opposing chisels cut through the bolt like the action of a pair of shears.

Having thus given a full description of this machine in all its parts, and briefly indicated its advantages, I now proceed to say that I do not claim as my invention the use and combination of a hand-lever, eccentric, and two chisels for cutting bolts and rivets, this combination being in frequent use; nor do I claim any of the parts or principles hereinbefore described, except the following, to wit:

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

The combination of the lever, the eccentric, the adjustable slide moved by a screw, the chisels, one stationary and the other movable, secured by bolts to the respective blocks, one chisel with sharp shoulder near edge, the spring, and the movable chisel-block, all constructed and arranged as described.

Wauwatosa, April 21, 1866.

OTHNIEL J. SMITH.

Witnesses:

JOHN M. HILL,
L. W. WILLOW.