

S. B. WILKINS & A. MARCELLUS.

Bolt-Machines.

No. 140,103.

Patented June 17, 1873.

Fig. 1

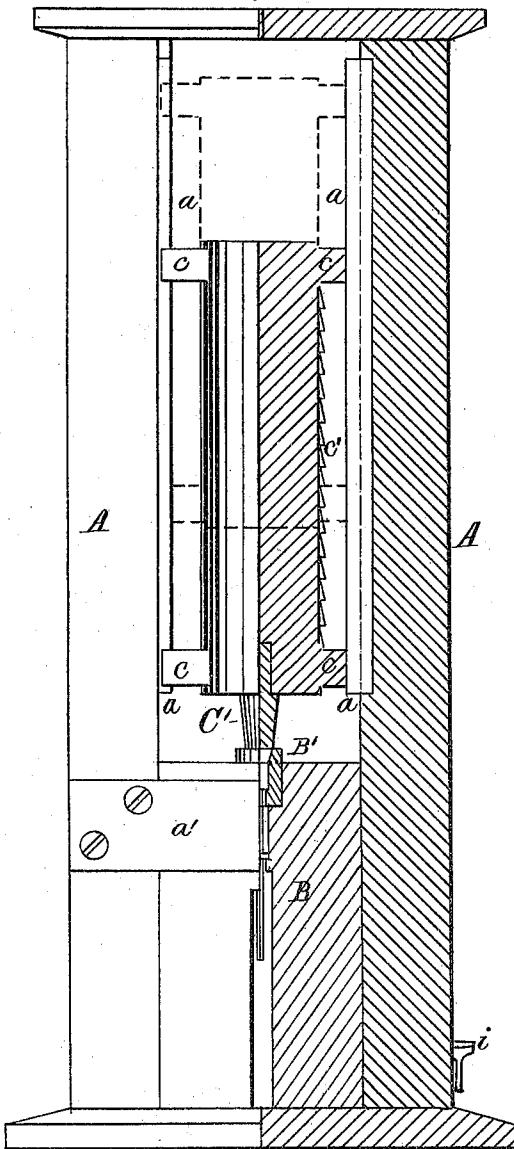
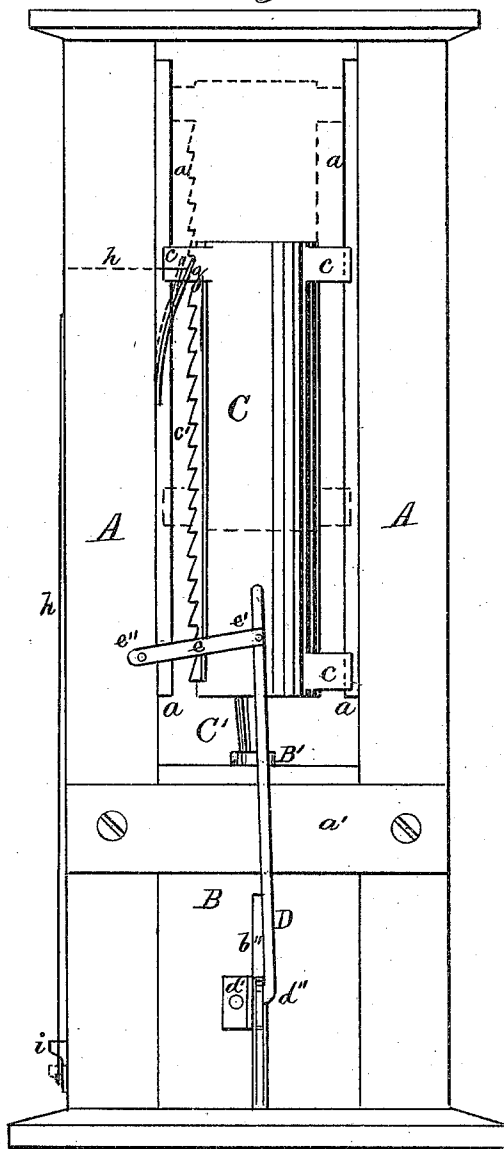


Fig. 2



Witnesses.

J. H. Linder
A. P. Secoy

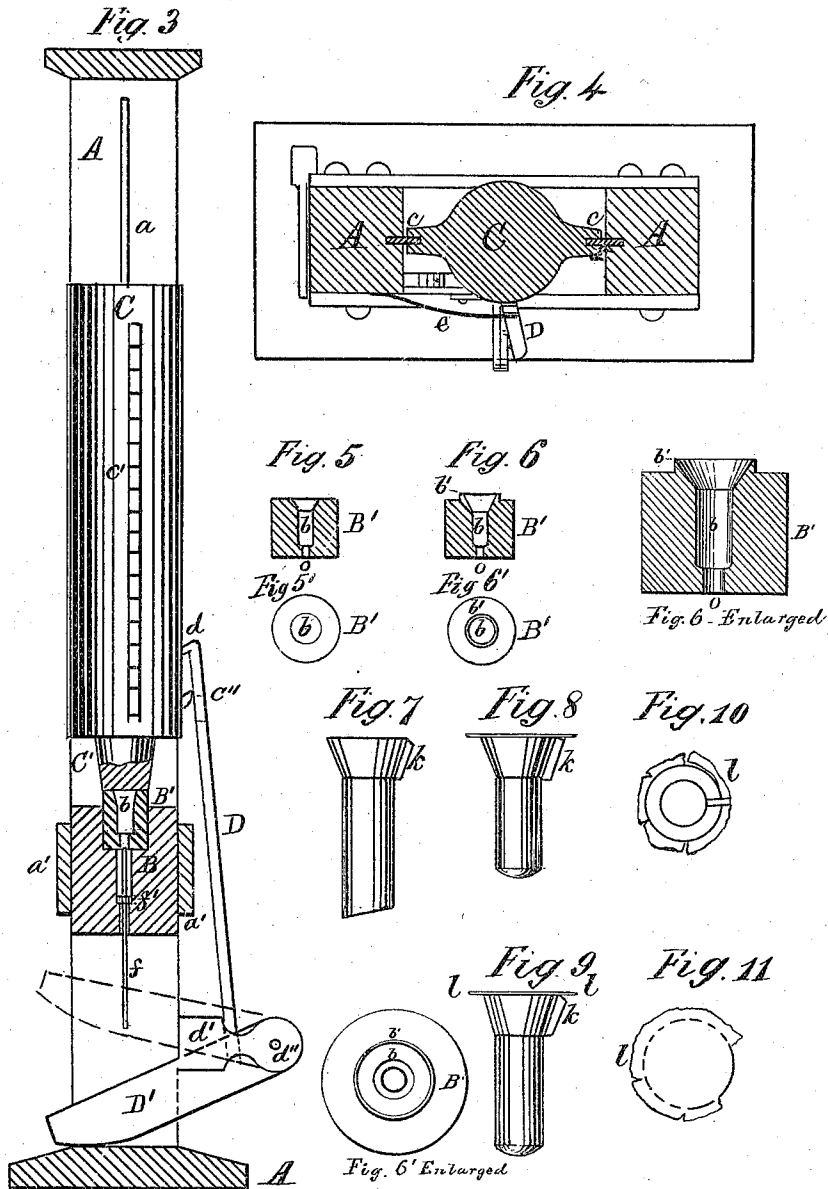
Inventors.

Sylvester S. Wilkins
Aaron Marcellus
E. H. Cramford atty.

S. B. WILKINS & A. MARCELLUS.
Bolt-Machines.

No. 140,103.

Patented June 17, 1873.



Witnesses.
J. A. Loomis
A. P. Lacey

Inventors.
Sylvester S. Wilkins,
Aaron Marcellus.
By *N. Cranford* atty.

UNITED STATES PATENT OFFICE.

SYLVESTER B. WILKINS AND AARON MARCELLUS, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN BOLT-MACHINES.

Specification forming part of Letters Patent No. **140,103**, dated June 17, 1873; application filed September 21, 1872.

To all whom it may concern:

Be it known that we, SYLVESTER B. WILKINS and AARON MARCELLUS, both of Rockford, in the county of Winnebago, in the State of Illinois, have jointly invented certain Improvements in Machines for Making Bolts, of which the following is a specification:

This invention relates to the kind of machines in which the bolt-blanks are formed to a length, pointed, and headed by a single blow of a drop-hammer, or by pressure in a die formed for the purpose; and it consists in the construction of the parts of the machine by which the object is attained; also, in the parts that throw the bolt-blank from the die after being formed; and also in the construction of the die that forms the bolt-head, that the extra metal not needed in forming the bolt-blank, or what is technically termed "the fin," that is spread out under the force of the blow of the hammer upon the face of the die, is detached from or nearly from the bolt-head, leaving but little work to make the edge of the head smooth.

In the drawings, Figure 1 is a front view of the machine, partly in section. Fig. 2 is a view of the opposite side. Fig. 3 is an edge view with a part of the frame removed. Fig. 4 is a horizontal sectional view of the same; Fig. 5, section of die; Fig. 6, section of die with cutter to remove the fin; Fig. 5', plan view of Fig. 5; Fig. 6', plan view of Fig. 6; Fig. 7, bolt with head formed thereon, but not pointed; Figs. 8 and 9, bolt headed with fin on, pointed, and to the proper length. Fig. 10 is a view of the under side of the bolt, where the fin is shown as ready to be removed after the bolt is formed; and Fig. 11 is the top view of the same bolt-head.

A represents the framing of the machine, and *a* a guide-ways fast in the uprights of the frame, to guide the drop-hammer in its reciprocations. B is the anvil, firmly held in the framing A by clamp pieces *a' a'*, and has transverse slot *b''* therein. B' is the bolt-forming die, with the upright cavity to give the proper form to the bolt-blank as to length, to point or round the end, and forms the head, as seen in Figs. 5 and 5', and with a small hole going entirely through the die. B', as seen in Figs. 6 and 6', has a raised annular blunt cutting-edge, *b'*, above the face of the forming-die, by

which the fin or extra metal is severed or nearly severed from the head of the bolt, and is firmly held in a cavity in anvil B by any secure means. *b* is the cavity in the forming-die, which gives the shape to the bolt, as well as the pointing, heading, and the exact length. C is the body of a drop-hammer, of any proper form and weight adapted to the work to be done by it, and has wings *c c* that are grooved to slide upon the guides *a* in the frame A. C' is the hammer that projects from the lower end of the body C, and, as it falls, strikes upon the end of the metal blank and forces it to fill the cavity in the die B'. *c'* is a toothed rack upon the body of the drop-hammer C, projecting as far from the body as the length of the teeth. D is an upright pivoted hook-rod on the back side of the machine, and is pivoted to a lever, D', that is pivoted at *d''* to bracket *d'*, which is fast to anvil B, and has a hook, *d*, at its upper end. D' is a pivoted lever, working in a perpendicular slot or mortise, *b''*, in anvil B. *c''* is a tooth or catch projecting from the back side of the body of the drop-hammer. *e* is a horizontal arm, pivoted at *e''* to frame A, and at *e'* to the hook-rod D. *f* is a rod for forcing the bolt, after being formed, out of the die, and is placed in a perpendicular hole in the anvil B, and directly under the hole *o* in the bottom of the die B. The hole or bore in the anvil for rod *f* is larger in diameter in the upper part of its length than the lower, so as to admit of the free reciprocation of the rod *f* and its collar *f'*, which bears upon the shoulder formed by the upper part of the hole in the anvil by its being larger than the lower part, which not only sustains the rod *f* so that its top end will come to the bottom of the cavity in the die in which the bolt is to be formed, but acts as a kind of support to the lower end of the bolt while being formed, and prevents any of the metal from being driven into the hole *o* at the bottom of the cavity in the die. *g* is a spring catch or pawl, attached to the frame A at its lower end, while its top end curves inward toward the body of the drop-hammer and the toothed rack *c'*, and so as to engage in the teeth or notches of the rack *c'* and hold the drop-hammer from falling. Near the top of spring-pawl *g* is attached a cord, going horizontally to the framing A, and

then conducted down to a treadle, *i*, that is fast to the frame at a proper or convenient height to apply the foot, so that the spring-pawl can be drawn out of the notches in the rack *c'*, and allow the hammer to drop; and when the foot is taken from the treadle the spring-pawl will be free to again engage with the rack as the drop-hammer is raised after making its fall upon the bolt-blank in the die. *l* is the fin formed outside of the head of the bolt from the little extra metal in the blank over what is wanted in filling the die so as to make a complete bolt, and is to be removed from the bolt-head.

To remove this fin *l* from the bolt-head under the process of breaking, filing, or cutting, as has been the practice, takes time and costs heavily; but by this raised annular cutter *b'* around the orifice of the die the fin will be removed entirely, or so nearly that it can be broken off by a slight blow, wrench, or even broken off by tumbling in a tumbling-box.

k is a flange or feather projecting from one side of the tapering head of the bolt, and will fit into a groove when in use to prevent the bolt from turning around in screwing on the nut.

Any other form, such as square or many-sided bolts, may be formed in a die by only a change in the cavity of the die to give the desired shape to the body and head of the bolt.

The drop-hammer may be raised by any proper power and by any practical means best adapted to the circumstances.

A machine thus constructed and operated will produce all the blank-bolts formed therein alike as to length, size, and shape, will point or prepare the ends for having a screw cut thereon, and automatically throw the bolt out of the die after being so formed.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of the drop-hammer C, having tooth *c'*, with the hook-lever D, lever D', rod *f* having collar *f'*, die B', and slotted anvil B, substantially as described.

2. The annular raised cutting-edge *b'* on the face of the forming-die B', Figs. 6 and 6', in the manner and for the purpose described.

3. The forming-die B', Figs. 5 and 5', having the bottom of the cavity formed to point the bolt-blank, and hole *o* below such cavity and through the bottom of said forming-die, substantially as described.

SYLVESTER B. WILKINS.

AARON MARCELLUS.

Witnesses:

HOMER P. HOLLAND,

EMILY CLARK.