2 Sheets—Sheet 1.

O. W. STOW.

Machine for Rounding Iron for Bolt Blanks, &c.

No. 216,469. **Patented June 10, 1879.**

Fig. 1.

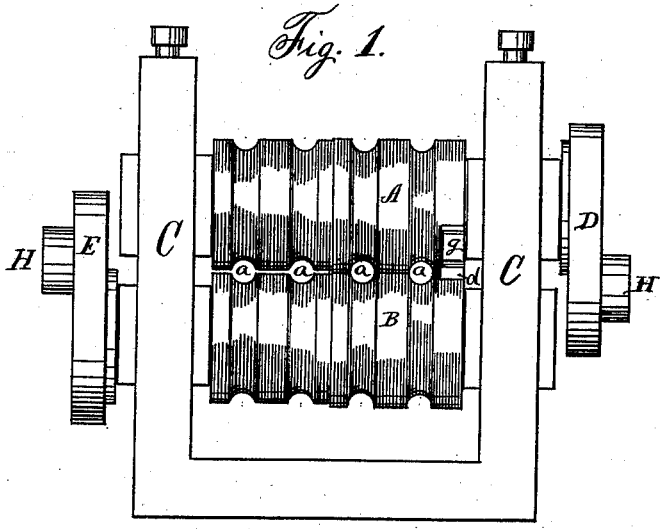
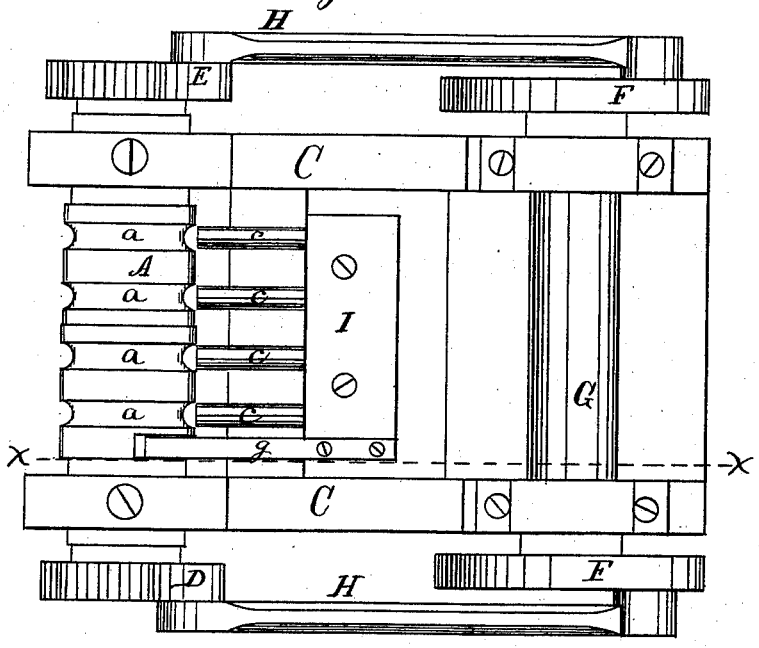


Fig. 2.



Witnesses.
Henry A. Mitchell
Wallace G. Lee

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2 Sheets—Sheet 2.

O. W. STOW.

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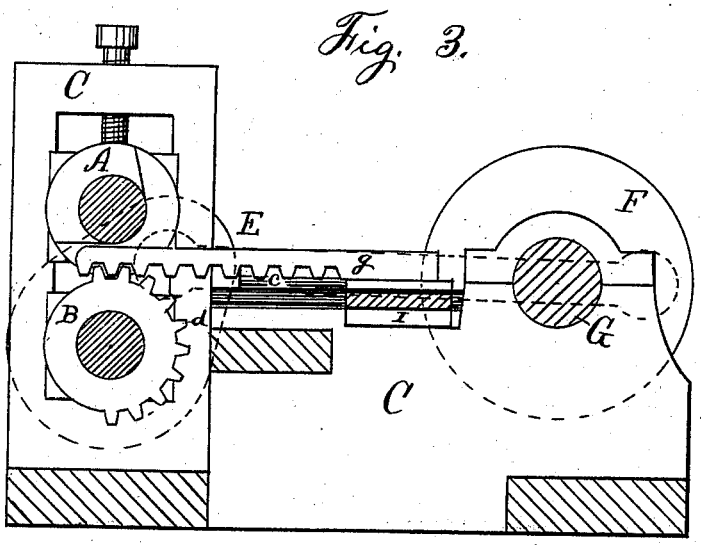
Fig. 3.



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UNITED STATES PATENT OFFICE.

ORSON W. STOW, OF PLANTSVILLE, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR ROUNDING IRON FOR BOLT-BLANKS, &c.

Specification forming part of Letters Patent No. **216,469**, dated June 10, 1879; application filed August 21, 1875.

To all whom it may concern:

Be it known that I, ORSON W. STOW, of Plantsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Rounding Iron for Bolt-Blanks, &c., of which the following is a specification.

My invention consists, first, of a pair of reciprocating swaging-rollers having semicircular concentric grooves in their peripheries, in combination with gage-rods of a size which will readily pass between the rollers at the grooves and mechanism for reciprocating said gage-rods out of and into said grooves, as hereinafter described, and, second, in the devices for operating and speeding said gage-rods, all substantially as hereinafter described.

In the accompanying drawings, Figure 1 is a front elevation of a machine for rounding iron which embodies my invention. Fig. 2 is a top view of the same, and Fig. 3 is a vertical section of the same on line *x x* of Fig. 2.

My machine is chiefly designed for rounding iron for bolt-blanks, but of course is applicable to rounding iron for various uses. Bolt-blanks have heretofore been made of round iron by squaring a portion and of square iron by rounding a portion. It is the object of my invention to produce bolt-blanks of the latter class.

While the threaded portion of bolts is or should be round, it is sometimes desirable to make the body of other forms besides square. Whatever form is adopted I select bars of iron of the form designed for the body of the bolt.

A B designate rollers hung in a suitable frame, C, having adjustable bearings for the upper roller, A, whereby they may be set with their peripheries just meeting each other in the ordinary manner of adjusting rollers within a frame. In the peripheries of said rollers I form semicircular grooves *a*, those in the upper roller, A, being directly opposite those in the lower roller, B, and the faces of which grooves are concentric with said rollers. The number of grooves may vary from one in each roll upward to any desired number. At one end of the upper roller, A, I attach a crank, D, and to the lower roller, B, I attach a crank, E, and connect said cranks to cranks F F on the driving-shaft G by means of pitmen H H, whereby the revolution of the driving-shaft G imparts a reciprocating motion—that is, a partial rotation to the rollers and return—and if the cranks of each roller are of the same length the rollers will move together.

Several pin-holes for attaching the pitmen may be made in the cranks D E, or other suitable adjustment of the pitmen, whereby the motion of the rollers A B may be increased or diminished for reducing a longer or shorter portion of a bar, as may be desired.

The driving mechanism is not, however, essential to my invention. I prefer that above described as the best adapted to my machine, but any other ordinary mechanism may be employed to impart simultaneously to said rollers a reciprocating motion.

At the rear of the rollers A B there is a reciprocating gage-rod carriage, I, moving in any suitable ways in or attached to the frame C. Said reciprocating carriage I is provided with as many gage-rods *c* (moving both forward and backward in the same plane) as there are grooves in the rollers, the lateral position of said gage-rods corresponding with that of said grooves, and the size of said rods *c* being such as will readily pass between the rollers at the grooves. The carriage I and rollers A B are connected together by means of a gear, *d*, and rack *g*, (most clearly shown in Fig. 3,) the diameter of the gear being larger than the diameter of the rollers for the purpose of moving the gage-rods *c* faster than the periphery of the rollers. The gage-rods *c* are adjustable within their carriage I, and should be set so that when they have been forced forward and stop for return with the return movement of the rollers, their forward ends will be forward of a plane passing through the axes of both rollers. When in this position the portion of the iron or irons to be reduced (being first brought to a proper heat) is placed, either by hand or machinery, with one end against said gage-rods. Upon the further movement of the machine the gage-rods recede, and the backward—that is, inward—movement of the rollers draws the iron in between the grooves *a* and imparts to the iron a round form.

During the operation of rolling or drawing out, the iron is necessarily elongated somewhat, which is provided for by gearing the rack

which moves the gage-rods, as before described, so that they move back faster than the periphery of the rollers, and thereby they keep out of the way of the reduced and elongated iron. The return movement of the rollers will smooth and finish the rounded portion of the irons and bring them all to a uniform size; and if the gage-rods *c* were set to project far enough beyond a plane passing through the axes of both rollers, so that the iron cannot enter the grooves in the rollers until they have moved inward a distance fully equal to the elongation of the iron which takes place in the act of reducing it, the rollers will move far enough upon their return to throw the iron from the rollers; but if the gage-rods were set with their ends nearly even with the plane above named, then the return movement of the rollers alone will not quite throw the elongated iron out of the grooves, and the differential movement of the gage-rods is again brought into requisition, they coming forward faster than the irons would come by the action of the rollers alone, push the irons forward through the grooves, so that when the rollers reach their stopping-point the irons are discharged therefrom, leaving said rollers ready for the reception of other irons.

It should be noticed that the rollers in use have no movement to and from each other, (except that caused by the "give" of the machine,) so that there is no let up or release-ment of the rod after it is once griped by the rollers until they have returned back to their starting-point. The bulk of the work is done when the rollers are moving inward, and consequently the rollers are then under the greatest strain. On the return movement this strain is removed, so that the whole rigidity of the rollers is brought to bear on the rod and slightly swage it, bringing it nearly to the exact size of the space between the grooves. Thus the swaging action is continuous from the time the rod enters the concentric faces of the grooves in the rollers until it is discharged after the return movement of the same.

If desired, the grooves may be of different sizes, and the rods passed in and out of more than one groove before reducing it to a round of the required diameter.

I claim as my invention—

1. The pair of reciprocating swaging-rollers having semicircular concentric grooves in their peripheries, in combination with gage-rods of a size which will readily pass between the rollers at the grooves and mechanism for reciprocating said gage-rods out of and into said grooves, substantially as described, and for the purpose specified.

2. The combination of the rollers A B, gear *d*, of a size larger than the diameter of said rollers, the rack *g*, and the gage-rods *c*, the rods and rollers having a differential movement, all substantially as described, and for the purpose set forth.

ORSON W. STOW.

Witnesses:

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