2 Sheets--Sheet 1.

J. F. WEBSTER.

Metal Screw-Machine.

No. 166,166. Patented July 27, 1875.

Fig. 1

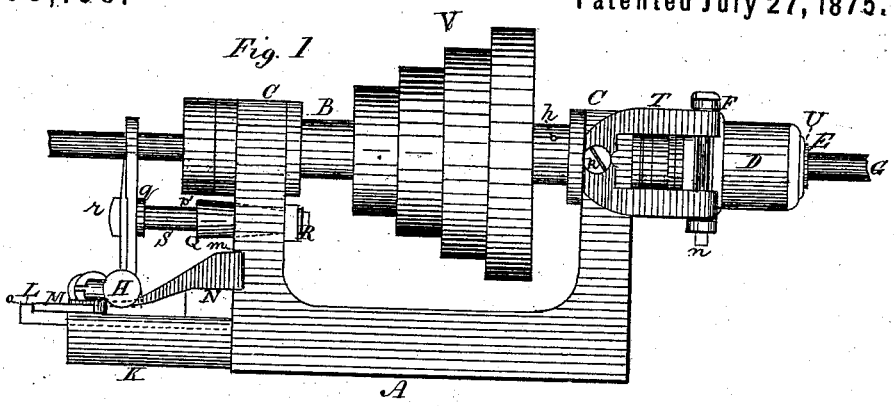


Fig. 2

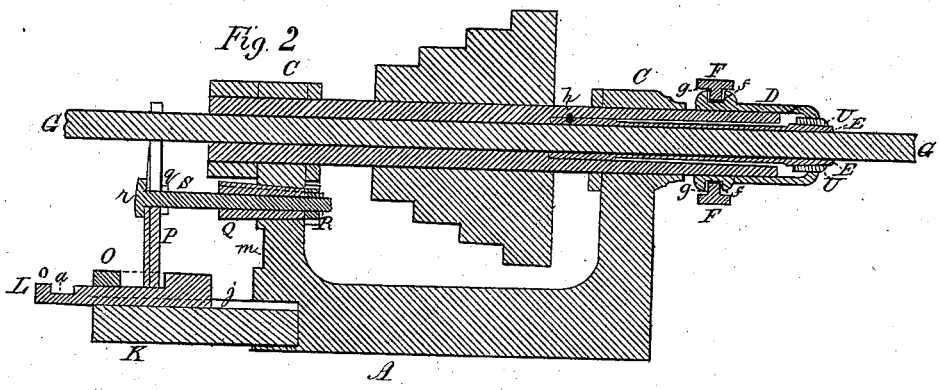
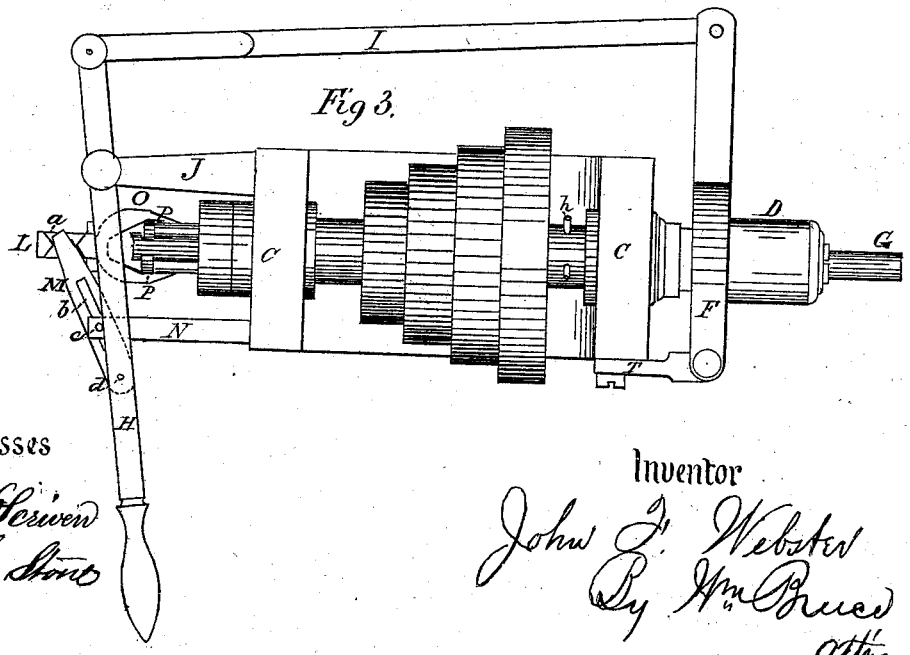


Fig 3.



Witnesses

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2 Sheets--Sheet 2.

J. F. WEBSTER.

Metal Screw-Machine.

No. 166,166. Patented July 27, 1875.

Fig. 4

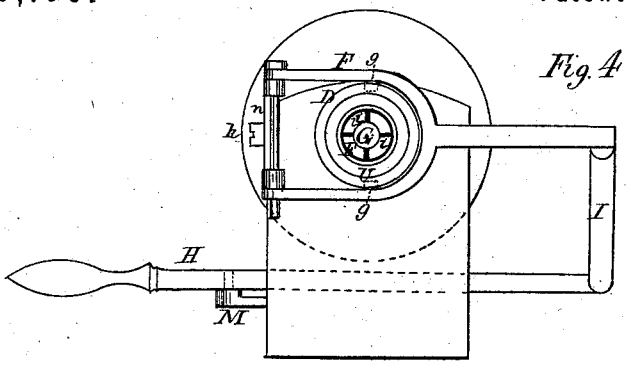


Fig. 5.

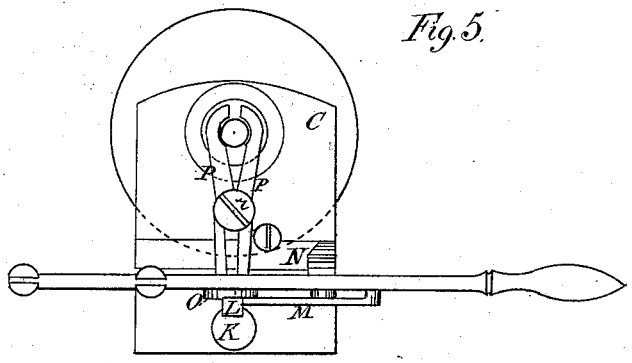
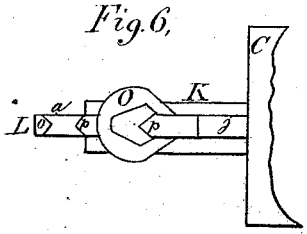


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN FRASER WEBSTER, OF HAMILTON, CANADA.

IMPROVEMENT IN METAL-SCREW MACHINES.

Specification forming part of Letters Patent No. **166,166**, dated July 27, 1875; application filed April 19, 1875.

To all whom it may concern:

Be it known that I, JOHN FRASER WEBSTER, of the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Screw-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

This invention relates to certain improvements in apparatus for feeding a screw or other blank through a hollow mandrel of a screw-cutting or other lathe and clutching the same therein.

My invention consists of a novel construction and combination of parts in screw-cutting machines, which is fully hereinafter described, and pointed out in the claims, and therefore a preliminary description is not considered essential.

Figure 1 represents a side view of a part of the machine. Fig. 2 represents a section through the center. Fig. 3 represents a plan or top view. Fig. 4 is a front end view. Fig. 5 is a rear end view. Fig. 6 is a top view of a portion of the rear end of the machine, showing the cam, &c.

By reference to Fig. 1 it will be seen that A is a head-stock having two upward projections, C C, which act as journals, through which the hollow spindle B passes. D is a sleeve or thimble sliding on the spindle. The rear end of it is slightly enlarged, which enlargement contains a groove, *f*, the particular use of which will be explained hereafter. The said sleeve contains a hardened bush, U, which is fitted into its front end, as shown in Fig. 2, for the purpose of closing the collet E when the sleeve is driven back on the spindle. It prevents undue pressure on the sleeve D, and it being hardened will not wear so easily, and if necessary can be easily removed and replaced. The collet E incloses the rod, from which the screws are made, and it is split with four slits, *i i i i*, about half its length to give it the desired spring to close upon the screw-rod. Its front is made tapering outward, but it can be made with an opposite taper, if found desirable. It is secured at its rear end by means of a pin, *h*, passing through the spindle B, and sufficiently in the collet to hold it firmly. F is a forked lever connected to the hand-lever H by means of the connecting-rod I. It is also fastened to the bracket T by means of the screw *k* and pin *n*. On the inner side of each arm I construct pins or tablets *g g* to run in the groove *f* of the sleeve D, as will be more fully shown hereafter. G is the rod from which the screws are made, passing through the spindle B and collet E, as shown. H is a hand-lever for operating the machine, placed at the rear end of the machine. It is pivoted to the end of the standard J, and its backward and forward movement pushes in and out the sleeve D by means of the connecting-rod I, forked lever F, and tablets *g g* of the said lever. I is the connecting-rod which is curved and in one solid piece, as shown, although I prefer to construct it with a joint in the center to make the machine more perfect. J is the standard firmly affixed to the machine for attaching the lever H. K is a slotted stud let into the rear end of the machine for the purpose of holding a cam and sliding bar, as will be hereinafter shown. The said stud has a longitudinal groove, *j*, cut in it from the top its whole length. A square bar, L, is made to fit this groove and slide in it. It is provided with a recess, *a*, near its outer end, and a projection, *o*, at its extreme end. It has also a cam affixed to it, as shown in Figs. 2, 3, 5, and 6. M is a short slotted auxiliary lever, pivoted to the under side of the hand-lever H by a pin, *d*, Fig. 3. It is constructed with a longitudinal slot, *b*, as shown in the same figure. A pin, *c*, passes through the end of a movable bracket, N, and is made to work in the aforementioned slot *b*. The extreme end of the said lever is made to play in the recess *a* of the square sliding bar L for the purpose of pushing it back and forth, which actuates the cam O. N is a movable bracket bent at right angles. One part slides across the end of the head-stock in a horizontal groove, *m*, cut in the head-stock, or it may be otherwise affixed, dispensing with the groove. The other portion projects outward and downward, and is connected to the slot *b* of the lever M by means of the pin *c*. Its use is to regulate the length of the wire required for screws of different sizes. The cam O is

attached to the top of the sliding bar L, and its use is to open and close the jaws P, which grasp the wire-rod G and holds it tight while it is being fed through the machine. P P are the jaws, which are pivoted to the sliding standard S. Their upper ends are curved to grasp both sides of the rod G, as shown Fig. 5. Their lower ends are beveled and are made to be operated upon by the cam O. The point *p* of the cam runs between the lower ends of the jaws and releases the grip on the wire; at the same time pushes the jaws back for another grip to feed the wire up to the machine. The opposite sides of the cam then close the lower part of the jaws and tighten the upper part of them around the rod G. The lower portion of said jaws coming in contact with the cam may be constructed with tablets attached, so as they may run on the cam and prevent undue friction. Q is a tapering slotted collar let into and passing through the rear end of the head-stock, and held by means of a nut, R, which tightens it upon the stud S to give the desired friction to the said stud, so that it will not slip away from the cam until the jaws gripe the wire-rod G. The slot *p* in the said tapering collar, with the assistance of the nut R, most readily gives the required friction on the stud S, to which the jaws P are held by a ring, *q*, on one side, and the head *r* on the other. I is a bracket bolted on the side of the head-stock by the bolt or screw, *k*, and to which the forked lever F is attached by means of a pin, *n*. U is the hardened bush inserted in the front of the sleeve D. It is hardened so as to withstand the great pressure it is subject to while pressing and closing on the collet E around the wire-rod G. V is the pulley for the driving-belt to operate the machine.

The operation of the machine is as follows: The wire or rod G, from which the screws are to be made, is inserted through the hollow spindle B, and its right end pushed up against the screw-cutting head of the machine, (not necessary to be shown in the drawing, as I claim nothing on that part.) The handle or lever H is then drawn forward by the operator, which has the effect of tightening the sleeve and bush on the outer end of the collet E, and thereby firmly hold the rod G and cause it to rovolve with the spindle B while the screw is being cut on it. When the first screw is cut the rod must be fed up to the stop, which is done by the operator pushing the lever back. The cam O, which releases the collet E, closes the jaws on the rod, and the auxiliary lever M pushes the cam and jaws with the rod G up toward the head-stock, and thereby feeds the rod to the stop, the length of which is adjusted by the movable bracket N and auxiliary slotted lever M. The lever H is then again drawn forward and the wire held by the aforementioned device, and the second screw cut, and so on until the whole length of the screw-rod is cut up into screws.

It will be observed that screws made with my device will not vary, but will all be exactly the same length.

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

1. In combination with the lever H, the oscillating lever M, operating the sliding bar L, cam O, and sliding jaws P, for the purpose of feeding the blank through the hollow mandrel, substantially as herein set forth.

2. The combination of the hollow mandrel B, grooved sleeve and collet, and the levers F and H, connected by the rod I, cam O, and jaws P, constructed to operate substantially as herein set forth.

Dated at Hamilton, Canada, March 23, 1875.

JOHN FRASER WEBSTER.

In the presence of—

WM. BRUCE,

GEORGE WEBSTER.