

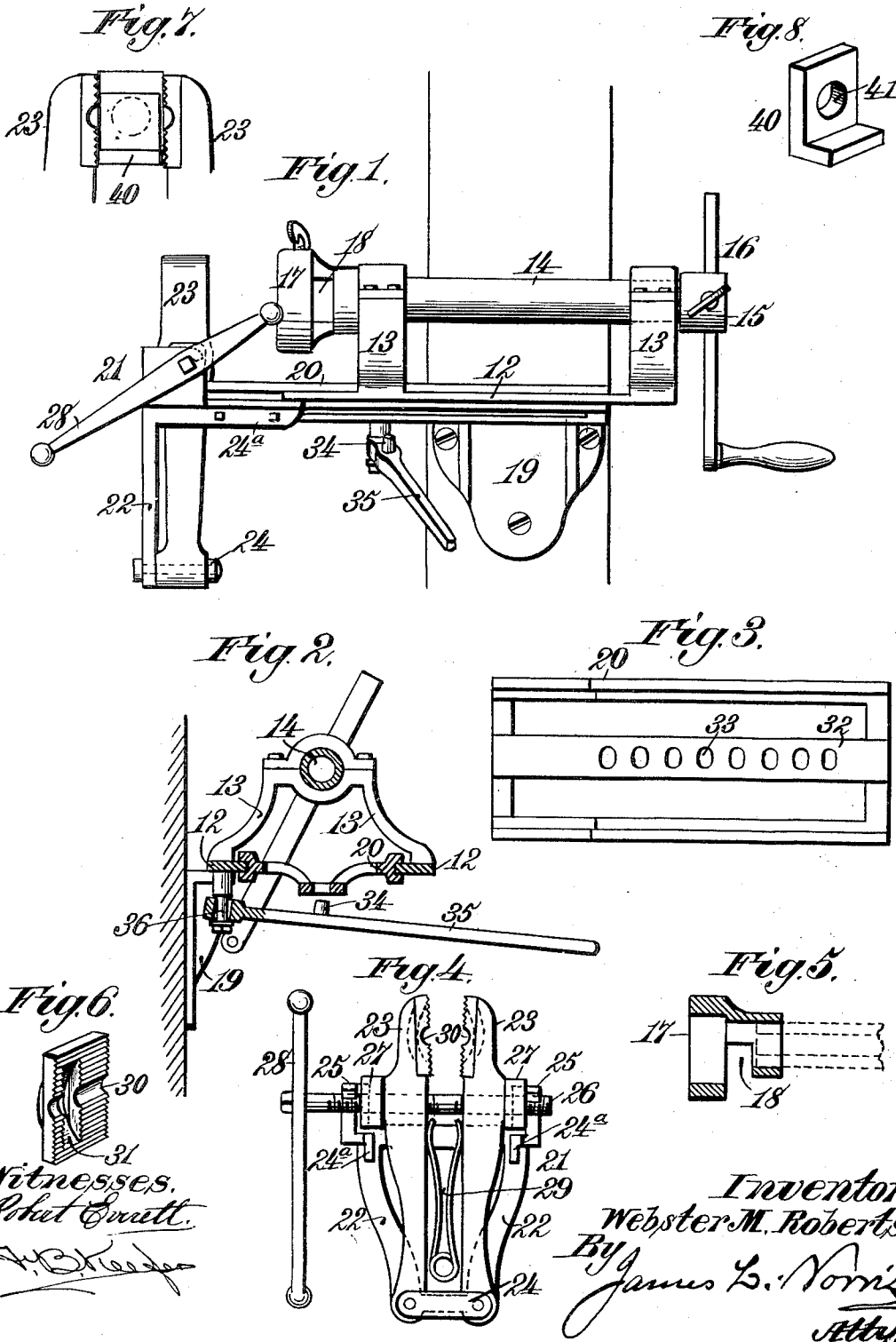
No. 697,887.

Patented Apr. 15, 1902.

W. M. ROBERTS.
METAL WORKING MACHINE.

(Application filed May 6, 1901.)

(No Model.)



Witnesses.
Robert Crutt.
J. B. Knepper

Inventor.
Webster M. Roberts.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

WEBSTER M. ROBERTS, OF BROWNSVILLE, OREGON.

METAL-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 697,887, dated April 15, 1902.

Application filed May 6, 1901. Serial No. 58,984. (No model.)

To all whom it may concern:

Be it known that I, WEBSTER M. ROBERTS, a citizen of the United States, residing at Brownsville, in the county of Linn and State of Oregon, have invented new and useful Improvements in Metal-Working Machines, of which the following is a specification.

This invention relates to metal-working machines.

One of the features of the invention consists in providing improved means for holding the work and a shaft carrying a tool, which may be of any suitable character, such as a threading-tool, and means for readily actuating the work-holder or its carrier to bring the work into position for operation by the tool.

Another feature consists in furnishing a work-holder of peculiar construction adapted to hold the stock longitudinally in line with the tool-shaft to assure accurate work, and in providing a construction capable of holding the head of a short bolt or like part in such a manner that it cannot be marred or otherwise injured and with the same square with the die. Besides these points the entire structure is light, yet strong, and its different parts can be readily separated, and when assembled the machine is compact, and when in use the work-holder need be moved the requisite distance only from the tool required for the introduction of the work.

The invention includes other advantageous points, which will be hereinafter set forth, and the novel features will be covered in the claims.

In the drawings accompanying and forming part of this specification, Figure 1 is a side elevation of the complete machine. Fig. 2 is a perspective view with the work-holder and its slide removed. Fig. 3 is a bottom plan view of the slide. Fig. 4 is a perspective view of the work-holder and its frame. Fig. 5 is a rear face view of a collet. Fig. 6 is a detail of one of the vise-jaws, and Figs. 7 and 8 are details hereinafter described.

Like characters designate like parts in all the figures of the drawings.

The metal-working machine constituting the subject-matter hereof includes in its construction a main frame adapted to support a shaft or arbor for carrying a tool, that de-

scribed herein being for thread-cutting. Said main frame involves two parallel bars or guides, as 12, which are shown as horizontally arranged and which are adapted to sustain a slide. These bars are rigidly connected by arched boxings, as 13, having bearing-openings to receive the hollow shaft 14. Said shaft is provided at its rear end with a cap crank 15, having an opening to receive the hand-crank 16, which may be moved in a direction at right angles to the shaft to increase or decrease the effective length of said hand-crank, the latter being held in an adjusted position by means of a set-screw on the cap adapted to bind against said crank. The forward end of the shaft is provided with a collet 17, secured thereto in some convenient manner and adapted to carry a die of ordinary construction. The machine will be equipped with collets of different sizes and styles to hold any of the standard dies, and in the present case the collet has a plurality of openings, as 18, in its body, through which chips can pass and through which the operator can more readily see his work. Also by passing the fingers or a suitable tool through these openings the die can be easily pushed out.

The main frame, consisting of the bars 12 and boxings 13, may be mounted on a bracket, as 19, adapted to be secured in some suitable manner to a post or other upright part.

The main frame sustains a slide, as 20, shown as rectangular and the side bars of which have grooves to receive the bars 12 of the main frame, whereby the slide can be moved back and forth on the main frame below the tool shaft or arbor or entirely separated from said frame by being slid off the bars 12.

The work to be threaded or otherwise acted upon is clamped in a work-holder, shown as a vise carried by an auxiliary frame connected rigidly with the slide 20 for movement therewith. The vise-frame is denoted by 21, and it has depending arms, as 22, to the lower ends of which the jaws 23 are pivoted for independent movement, and against the lower ends of which the transverse plate 24 fits, it serving to more securely maintain them in position and strengthen the structure. The vise-frame is provided with inwardly-extending arms, as 24^a, overlapping and suitably

secured to lugs or projections on the slide 20. Upon the upper side of the vise-frame are ears or bearings 25 at opposite sides thereof, through which the jaw-actuating screw 26 passes, the latter also extending through elongated slots in the vise-jaws, which construction permits the jaws to be moved independently of each other and relatively to the screw back and forth on said screw. The ends of the screw where they are supported by the bearing-lugs 25 are reduced, which construction forms shoulders adapted to abut against said lugs. The screw 26 has right and left hand threaded surfaces located just outside the jaws adapted to be engaged by correspondingly-threaded surfaces on nuts 27, adapted to engage the jaws of the vise. The screw is furnished at one end with a handle 28, by turning which in the proper direction the nuts 27 can be moved toward each other to clamp the work to be operated upon. Said jaws are opened, and thus held by a spring, as 29, suitably secured between the same, and the branches of which bear against said jaws to force them outward when the handle 28 and feed-screw 26 are reversely rotated.

The inner faces of the jaws of the vise are corrugated, and in addition thereto they have complementary grooves, as 30, extending the entire width thereof. Said grooves are horizontally disposed, and when the jaws are shut the work, such as a rod, can be introduced into the grooves, and thereby held in exact line with the axis of the tool-shaft 14 and square with the die, the grooves in this respect being in the nature of a gage for insuring accurate work. Besides these horizontal work-containing grooves the jaws have perpendicular grooves, as 31, crossing the horizontal grooves, and in the case of short bolts the heads thereof can be placed in these transverse grooves 31, with the shanks thereof extending forward therefrom and lying in the coacting horizontal grooves. In this way the threads can be formed accurately on the bolt close to the head without possibility of injuring the latter.

To advance the vise to bring the work into position to be acted upon, the slide 20 will be drawn in, and I provide a means for securing the reciprocation of the slide to carry the vise toward and from the die with some force, a simple and convenient form of which will now be described. The end bars of the slide are connected by a bar 32 in parallelism with and substantially midway between the side bars thereof, said bar 32 having a plurality of alined holes, as 33, any one of which is adapted to receive a pin 34 at the upper end of an actuating-lever 35. These holes 33 are made somewhat larger than the pin 34 to allow a greater sweep of the lever before the circular course of the pin would bind by being out of line.

The actuating-lever is held in place by a pin, as 36, connected with the main frame and projecting through an elongated slot in

said lever, which construction permits the lever to drop slightly when the machine is not in use, so as to uncouple the lever from the slide. By moving the lever a short distance upward the pin 34 can be introduced into one of the holes 33, and thereafter the slide 20 can be moved back and forth with considerable power.

The invention is not limited to the construction previously described, for it may be varied within the scope of the appended claims. For example, I may employ the apparatus for tapping nuts, and in this case clamp a substantially L-shaped member 40 between jaws of the vise, the horizontal portion of which is to support the nut and the vertical portion of which has opening, as 41, opposite to and at the rear of the nut-blank opening and into which the head of a top can pass. The top is not shown, but can be suitably supported by the collet 17.

By my improvements I am enabled to secure a compact structure, for when the work-holder slide or frame is drawn back it occupies a position directly under the main frame.

Having described the invention, I claim—

1. In a machine of the class specified, a pair of frames one of which is relatively fixed and the other of which is slidable upon said relatively fixed frame, and the slidable frame being movable backward to a position directly under the fixed frame, and having a plurality of holes extending lengthwise thereof and a loosely-mounted lever having a projection for entering one of said holes.

2. In a machine of the class specified, a pair of frames one of which is relatively fixed and the other of which is slidable upon said relatively fixed frame, and the slidable frame being movable backward to a position directly under the fixed frame, and having a plurality of holes extending lengthwise thereof, a loosely-mounted lever having a projection for entering one of said holes, a tool-carrying shaft upon the fixed frame, and a work-holder upon the movable frame.

3. In a machine of the class specified, a pair of substantially rectangular frames one slidably supported by and between the side bars of the other and having a perforated bar extending lengthwise thereof, a work-holder carried by one of the frames, a tool-carrying shaft on the other frame, and a lever the free end of which is adapted to enter one of the perforations of said perforated bar.

4. In a machine of the class described, a pair of parallel bars, boxings connected to said bars, a shaft supported by the boxings, a slide having side bars grooved to receive said parallel bars and also including a bar having a series of holes and a loosely-mounted lever having a pin to enter one of said holes.

5. In a machine of the class described, a pair of parallel bars, boxings connected to said bars, a slide consisting of a rectangular

frame, the side bars of which have grooves to receive said parallel bars, and said slide including an intermediate bar in parallelism with the side bars, having a plurality of alined holes, a lever having a longitudinal slot, and provided with a pin adapted to enter one of said holes, and a pin passing through said longitudinal slot. 15

6. In a machine of the class specified, a pair of frames one of which is relatively fixed and the other of which is slidable upon said relatively fixed frame, and the slidable frame being movable backward to a position directly under the fixed frame, and having a 10

plurality of holes extending lengthwise thereof, a loosely-mounted lever having a projection for entering one of said holes, a tool-carrying shaft on one of the frames and a workholder on the other frame, including a pair of jaws and each jaw having a pair of transversely-disposed intersecting jaws. 20

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

W. M. ROBERTS.

Witnesses:

L. L. ROBERTS,
B. S. MARTIN.