(No Model.)

J. A. BECHER.

REVOLVING TURRET BOLT THREADING MACHINE.

No. 419,174. Patented Jan. 14, 1890.

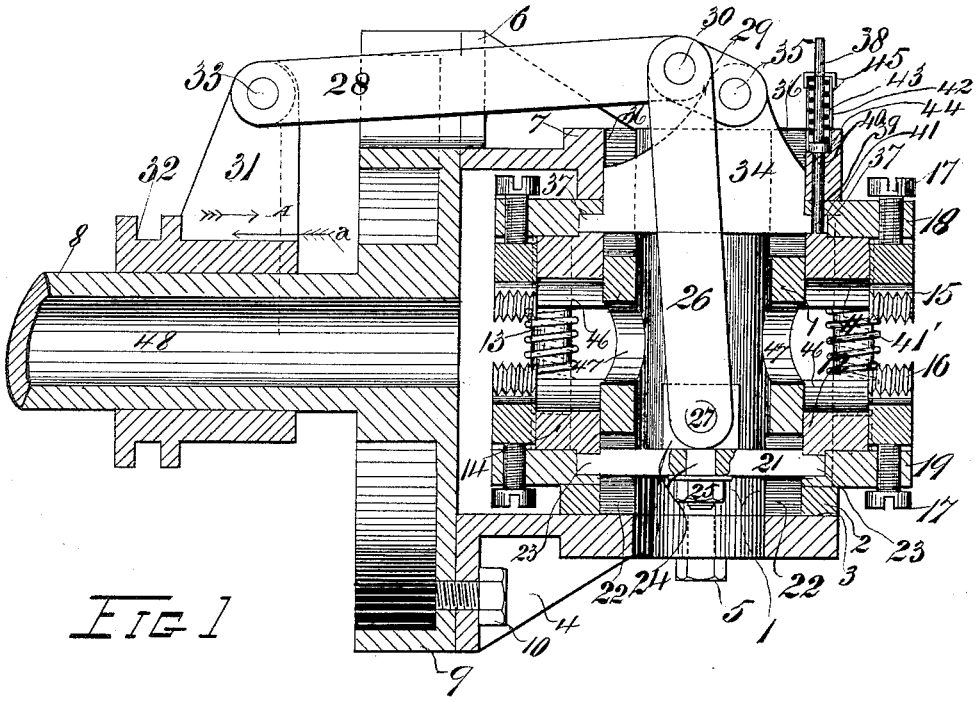

FIG 1

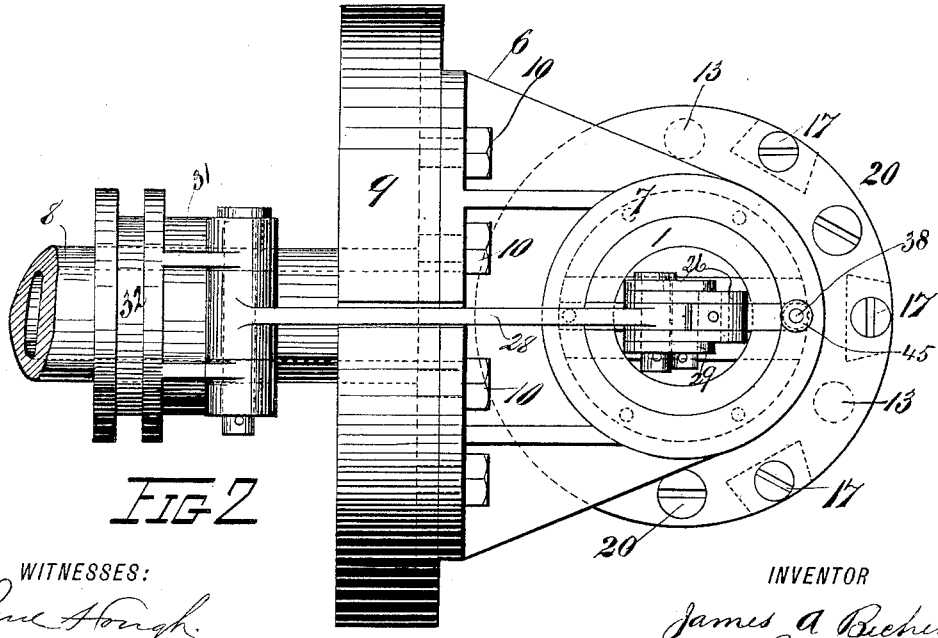

FIG 2

WITNESSES:

Paul Hough

W. L. Kellogg

INVENTOR

James A Becher

BY J. R. Bell

ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES A. BECHER, OF MISHAWAKA, INDIANA.

REVOLVING-TURRET BOLT-THREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,174, dated January 14, 1890.

Application filed August 24, 1889. Serial No. 321,906. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. BECHER, a citizen of the United States, residing at Mishawaka, in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Revolving-Turret Bolt-Threading Machines, of which the following is a specification.

My invention relates to improvements in turret bolt-threading machines, in which a turret die-carrier having opening and closing turret-jaws is mounted on suitable standards secured to a lathe or screw-cutting-machine spindle in such a manner that the axis of the said turret is transverse with its axis of rotation.

The object of my invention is to provide means whereby the revolving-turret jaws may be opened and closed at any stage in the operation of screw-cutting without stopping the machine; also, means whereby the turret-jaws may be rotated to bring any pair of the series of the cutting-dies into operation and concentric with the axis of rotation of the lathe or screw-cutting spindle. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of the turret through the lines x x, (see Fig. 2,) and Fig. 2 is a plan of the turret.

Similar numbers refer to similar parts throughout the several views, in which—

1 designates the turret sleeve or post, preferably of cast-iron, having the collar 2 formed thereon and integral therewith. Said collar is secured to the face 3 of the standard 4 by the bolts 5.

6 designates the supporting-standard, having its bossed end 7 bored to receive neatly the free end of the sleeve 1.

8 designates the usual lathe or screw-cutting hollow spindle, and 9 is its disk or face-plate, against which are secured the turret-sleeve standards 4 and 6 by the securing-bolts 10.

11 and 12 designate the turret opening and closing jaws, preferably of cast-iron, and similar to the turret-jaws described in my former patent, Serial No. 299,445, dated February 9, 1889, mounted on the sleeve 1, hereinbefore described, adapted to slide a limited distance and rotate thereon, and held in their relative positions by the guide and stop pins 13, preferably of steel. The guide and stop pins 13 are firmly secured to the turret-jaw 11 at one end, and have their free ends inserted into the guide-holes 14 formed in the turret-jaw 12, and slide freely therein.

15 and 16 designate the threading or cutting dies, arranged in opposite pairs around the peripheries of the turret-jaws 11 and 12, and adjusted by their adjusting-screws 17.

18 and 19 designate the turret-caps, secured thereto by countersunk screws 20.

The cross-piece 21, adapted to slide backward and forward only in the guideways or slots 22, and having its reduced ends inserted loosely in the annular grooves or ways 23 formed in the cap 19, the toggle-bolt 24, secured to the said cross-piece 21 by the nut 25, the toggles 26, pivoted at their bottom ends to the toggle-bolt 24 by the pin 27, and pivoted at their other ends to the connecting-rod 28 and to the toggles 29 by the pin 30, the said connecting-rod having its outer end pivoted to the lugs 31, formed on the clutch-sleeve 32 by the connecting-pin 33, and the said toggles 29 pivoted to the fulcrum 34 by the fulcrum-pin 35, the said fulcrum being also arranged to slide a limited distance in the grooves 36 formed in the turret-post sleeve, constitute the opening and closing mechanism of my invention. The fulcrum 34 also has its reduced ends inserted loosely into the annular grooves 37, formed in the turret-cap 18, is adapted to slide backward and forward only in the guideways or slots 36, and is thereby held in its relative radial position opposite to the cross-piece 21. I provide the set-pin 38, neatly fitting the holes 39, formed in the turret-cap 18, and the hole 40, formed in the standard boss 7, said pin-holes being concentric and at the same radial distance from the turret center as the hole 41, formed in the reduced end of the fulcrum 34, said radial holes 39 coinciding with the radial center planes of each of the pairs of dies 15 and 16, for the purpose of maintaining the turret in a fixed position when operating any one pair of the series of dies in threading a bolt of corresponding diameter.

The reduced ends of the fulcrum 34 and the cross-piece 21, inserted in the annular grooves 37 and 23, hold the turret-jaws and their dies to their proper position, at the same time permitting the simultaneous rota-

tion of the said turret-jaws 11 and 12 and their attachments when the set-pin 38 is withdrawn free of the turret-cap 18 and the fulcrum 34.

The opening and closing turret-jaws 11 and 12 and their attachments are subject to a motion of translation along the turret-sleeve 1, which, in the operation of closing or advancing the dies 15 and 16, is limited by the amount of end clearance between the guide-pins 13 and the turret-cap 19, and in the reverse operation of opening or receding is also limited by the clearance or play between the turret-jaw cap 18 and the supporting-sleeve-standard boss 7 and the turret-sleeve collar 2, the sleeve 32 being moved along the spindle 8 in the direction of the arrow *a* by any suitable clutch-lever a portion of its travel till the turret-jaw cap 19 contacts with the sleeve-collar 2, the remaining portion of the throw of the toggles 29 being taken up by the disengaging-springs 41′, thus simultaneously opening the turret-jaws 11 and 12 and disengaging their dies 15 and 16 from the bolt or rod operated upon.

I provide the spring 42, inclosed in the casing 43 and encircling the set-pin 38, bearing on the collar 44 formed thereon and against the casing-cap 45, for the purpose of holding the said set-pin in position.

The operation of my attachment is as follows: When it is desirable to thread a bolt of a diameter corresponding with one of the pairs of series of dies, the set-pin 38 is drawn till its engaging end is clear of the cap-holes 39, and the turret is revolved till the pair of dies suited to the blank or rod to be threaded are in their working position opposite the bolt, at which position the engaging end of the set-pin is forced into the stop or set hole 39, thus holding the turret in a fixed position. The blank or rod is held by a suitable holder secured to the ordinary lathe-carriage. The turret-jaws 11 and 12 are closed till the guide and stop pins contact with the cap 19 by sliding the sleeve 32 on the spindle 8 in the direction of the arrow A, thus operating the toggles 26 and 29 through the connecting-rod 28 and bring the threading-dies 15 and 16 into position, in which position the turrets are held by the cross-piece 21 and the fulcrum 34, said fulcrum and cross-piece resting in and held in position by the ways 22 and 36 formed in the sleeve, hereinbefore described. The carriage supporting the bolt-grip is moved along on its ways toward and to the dies till the bolt or blank is cut or threaded the requisite length. The sleeve 32 is permitted to slide back into its former disengaging position, thus opening the dies 15 and 16, disengaging and permitting the bolt or rod to be instantaneously withdrawn, without stopping the machine or reversing the rotation of the spindle 8. I provide the grooves 46, formed in the jaws 11 and 12, radial to the dies, the holes 47 formed in the turret-sleeve 1 and concentric with the hole 48, formed in the spindle 8 for the purpose of permitting a long bolt or rod to pass through while being threaded.

It is obvious that the turret having its axis transverse or at right angles to its axis of rotation, and consequently to the axis of the spindle 8, any pair of the series of dies may be readily brought into operation, and will fall concentric with the axis of the spindle.

Having thus fully described the construction and operation of my invention, what I claim as new and useful, and desire to cover by Letters Patent, is—

1. A revolving screw-cutting turret-head having opening and closing screw-cutting turret-jaws, with their axes at right angles to and intersecting the axis of rotation, a revoluble spindle on which the said jaws are mounted, an engaging-sleeve adapted to slide on and rotate with the said spindle, and suitable connections whereby the said jaws are opened and closed while in rotation, substantially as and for the purpose set forth.

2. A revolving screw-cutting turret-head having opening and closing turret-jaws and suitable cutting-dies arranged around their peripheries, said turret-head having its axis at right angles to and intersecting its axis of rotation, and means for opening and closing the said jaws while in rotation, substantially as and for the purpose described.

3. A revolving screw-cutting turret-head having opening and closing turret-jaws and suitable adjustable cutting-dies arranged around their peripheries, with their cutting-faces turned inwardly, said jaws adapted to slide and turn on a suitable sleeve, the sleeve-supporting standards secured to the revoluble spindle, and means for opening and closing the said jaws while in rotation, substantially as and for the purpose described.

4. The combination, with a revolving turret-head having opening and closing screw-cutting turret-jaws and a supporting-sleeve on which the said turret-jaws are adapted to slide and to turn, of suitable fixed supporting-standards secured to the revoluble spindle, and means for opening and closing the said jaws while in rotation, substantially as and for the purpose described.

5. The combination, with a turret-head having opening and closing screw-cutting turret-jaws, a supporting-sleeve and supporting-standards, of an engaging-sleeve adapted to slide on and rotate with the revolving spindle, its connecting-rod, and the opening and closing toggle-links and their fulcrum and cross-piece, substantially as and for the purpose described.

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

JAMES A. BECHER.

Witnesses:
ALBERT GAYLOR,
CHAS. E. DRAPIER.