D. POULOT.

Machine for Cutting Screw Threads.

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DENIS POULOT, OF PARIS, FRANCE.

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IMPROVED MACHINE FOR CUTTING SCREW-THREADS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, DENIS POULOT, of Paris, in the Empire of France, have invented certain new and useful improvements in Screw-Cutting Machines; and I hereby declare the following to be a full, clear, and exact description of a machine embracing said improvements, reference being had to the accompanying drawings.

The continually increasing development of the industrial arts has greatly enhanced the value of screw-cutting machines, by demonstrating the service they can render to all who are engaged in mechanical pursuits or occupations. The defects, however, which it has been heretofore found to be impossible to remove from these machines, have prevented their being brought into general use, and even the Whitworth machine, the best known at present, in spite of its many excellencies, is far from being perfect.

In the invention which is the subject of this application, I have sought to obviate the defects which attach to existing machines, and to obtain new and important advantages. The results which I have attained, as well as the method employed to arrive at these results, can best be explained and illustrated by reference to the accompanying drawings, in which:

Figure 1 is a side elevation of a machine constructed according to my invention, and Figures 2 and 3 are respectively an end elevation and plan view of the same.

The other figures, from 4 to 19, represent detached parts, to be hereinafter described.

The different mechanisms of which the machine is composed are mounted in a frame, A, of cast iron, which rests directly upon the ground. A shaft, F, has its bearings in the lower part of the frame, and carries a cone of pulleys, tapering so as to have four diameters, by means of which the velocity may be varied. The cones are connected, by belting or other suitable means, with the motor or prime mover.

The cone-shaft carries a pinion, which gears with a toothed wheel mounted on a second shaft, B, placed above the first, and having its bearings likewise in the frame A. This shaft, which carries the grasping-mechanism for centring or holding the blanks to be operated on, is hollow throughout its whole length, so that bolts or rods of any length can be inserted therein. It has secured to one of its ends a plate, C, for holding the jaws D D, the distance between which can be increased or lessened to suit the dimensions of the piece to be held between them. The plate has a perforation, E, formed in it on the prolongation of the bore of the hollow shaft.

The construction of the jaws D is shown more fully in Figure 19. They are disks pivoted to pieces which slide in grooves of suitable form in the plate C. In the peripheries of the disks a series of dies or forms, a, is cut, the dies upon both corresponding with one another, and near to each die a circular hole, y, is formed in the disks. A hole is formed in the plate or sliding piece behind, in such manner that it shall be immediately underneath the hole of the particular die in use, so that by inserting a screw into the two holes, the disk will be held tightly to the plate behind, and rendered incapable of further movement. The sliding movement of the dies may be effected by means of screws, or by other means hereinafter described.

Under the foregoing arrangement, the set of the jaws can be readily varied to grasp pieces of any shape and size. To do this, it is only necessary to remove from each the screw which, passing through the hole, y, near the die which is in use, into the plate behind, maintains the die in position and steadies the whole jaw, and then to turn the jaws upon their pivots or centres, until the desired die upon each has been brought into position, care being taken that these dies should be of corresponding form. Each jaw is then secured by the fastening-screw, as before, and they are now ready to be moved towards or away from each other, according as the size of the piece to be grasped may require.

Extending out in front of the hollow shaft B, and its grasping-mechanism, are two parallel ways or guide-rods, i i, upon which is mounted the sliding carriage H, for holding the screw-dies or cutters k k. A hand-wheel, j, placed within reach of the workman, serves to adjust the set of the cutters or dies k. They are secured to bars or plates, i l, which are moved towards or away from each other by means of screws m, operated by means of gearing, a b, figs. 2 and 3, and hand-wheel j. The dies are, of course, so arranged that their cutting-parts shall be on the prolongation of the bore of the hollow shaft B, in order that they may operate with facility upon a rod or bolt centred by the shaft, and grasped by its jaws D D. Under the arrangement shown, the car-
riage can slide or be brought in close proximity with the jaws D D, so as to admit of the thread being cut upon the velt or other piece as far up as its collar or shoulder.

In the front part of the frame is arranged a trough, m, intended to receive both the oil by which the dies k and D are lubricated, and the shavings or chips cut from the pieces operated on. Both the oil and the shavings fall on an inclined plane, which causes the shavings to be freed from the oil, the latter flowing through a perforated diaphragm into a reservoir, o, and thence into a tube, from which it may be removed, and again used for lubricating purposes. Mechanism for shifting the belting is within reach of the operator, so that the working of the machinery can be instantaneously arrested.

At the further extremity of the hollow shaft B, outside or beyond the frame of the machine, may be fitted a grasping-mechanism, for centering and holding the end of a long tube upon which a screw is to be cut.

In the drawings are represented, in Figures 4 and 5, mechanisms for grasping and centering the screw-blank, and in Figures 6, 7, 8, 9, 10, and 11, devices of a similar character, for the cutting-mechanism of the sliding carriage. Figure 14 represents an arrangement of dies for tapping nuts, and Figures 15, 16, 17, and 18 represent different methods of arranging the sliding and circular dies. To the devices shown in the above-mentioned figures, from 4 to 18 inclusive, I make no claim, however, in this patent.

It will be perceived that, under my invention, the thread may be cut upon bolts or pins of any length, which can be inserted through the shaft B, and centred in the machine with ease, by means of the grasping or holding and centering-mechanism herein described. The jaws, too, are circular, and have dies of various forms, by means of which bolts or other pieces of different sizes and shapes can be readily held. There are many other advantages, also, which need not be here recited, as they are apparent to any one skilled in the art to which this invention relates.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The arrangement, herein described, of the perforated rotating and sliding jaws D, plate C, and the hollow shaft B, with mechanism for rotating the same.

2. In combination with the above-specified mechanism, I claim the guide-rods i and sliding-die carriage H, constructed and operating substantially as described.

3. The arrangement, in the die-carryage, of the cutting-dies k and sliding blocks l, in combination with the screws, gearing-shaft, and hand-wheel, for operating the same, so that said dies can be moved simultaneously, either toward or away from each other, as set forth.

4. The inclined and projecting trough or receptacle, located beneath the cutting-mechanism, and arranged to receive the shavings or chips and lubricating oil, and to conduct the latter to a separate receptacle, as herein shown and described.

In testimony whereof, I have signed my name to this specification before two subscribing witnesses.

D. POULOT.

Witnesses:
A. BLETRY,
E. F. RANDOLPH.