(No Model.) 2 Sheets—Sheet 1.

W. W. DOOLITTLE.

SCREW CUTTING MACHINE.

No. 489,222. Patented Jan. 3, 1893.

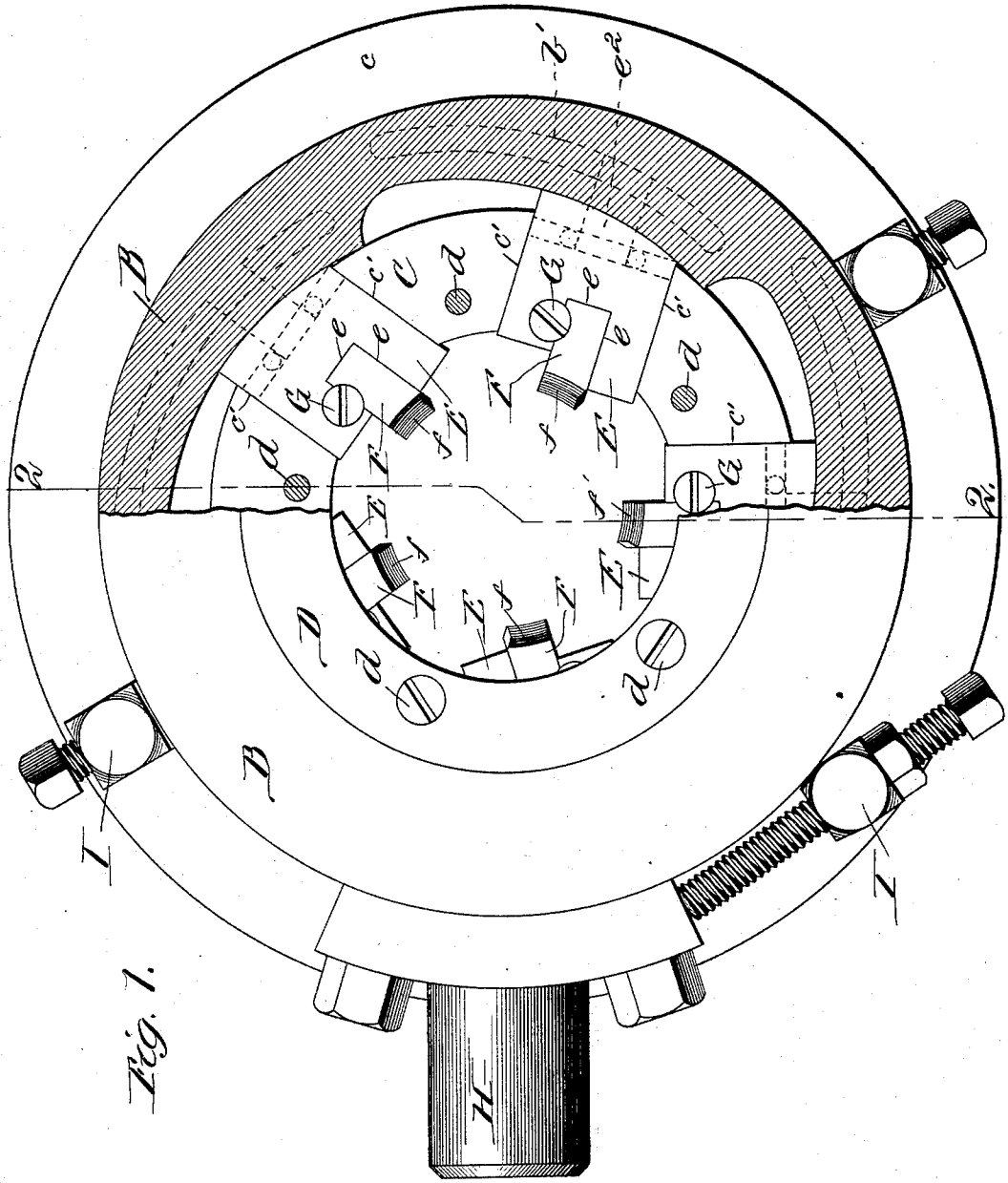

Fig. 1.

Witnesses.
W. C. Codlics
Fredk. N. Miles.

Inventor
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By Osborne & Thacher
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. W. DOOLITTLE.

SCREW CUTTING MACHINE.

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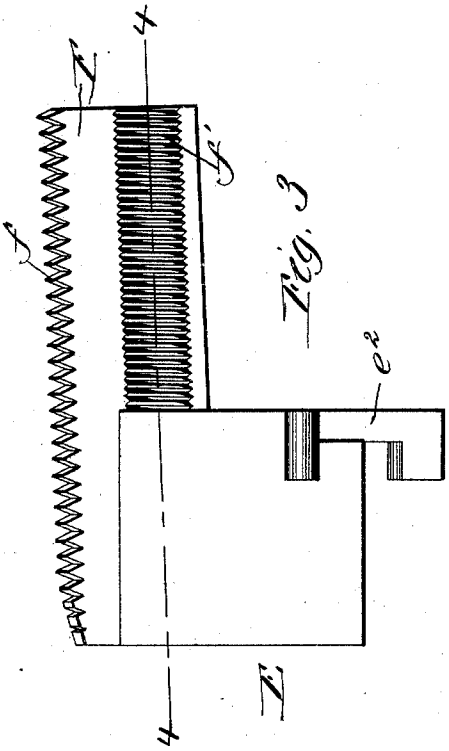

Fig. 3.

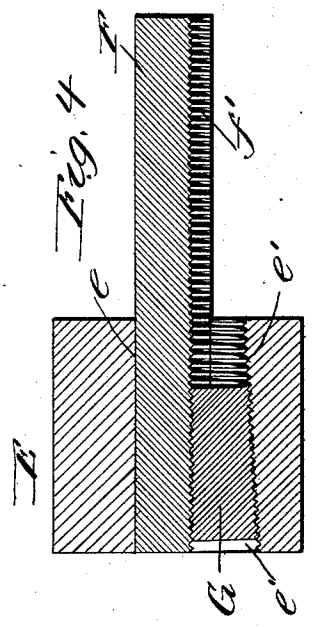

Fig. 4.

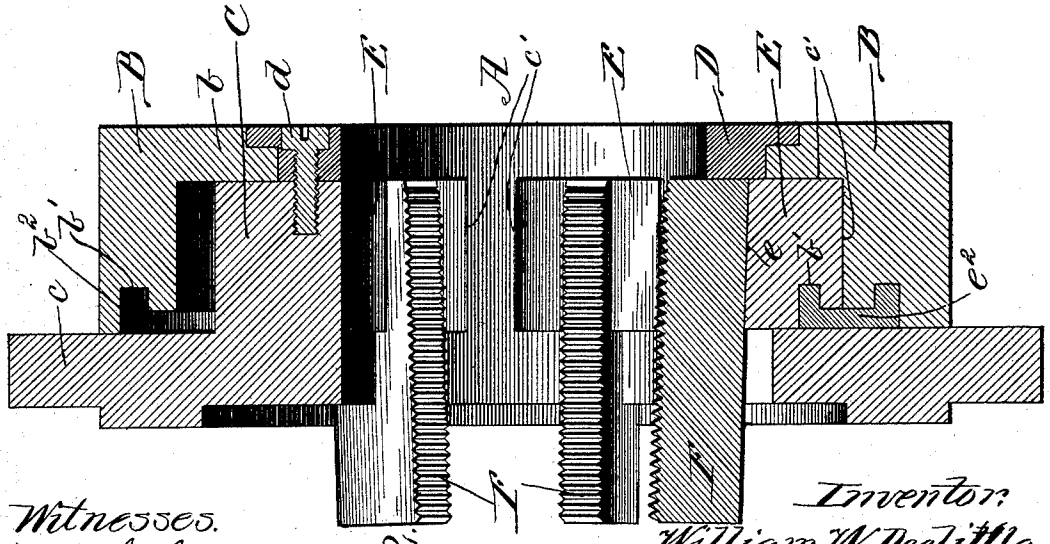

Fig. 2.

Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM W. DOOLITTLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CRANE COMPANY, OF SAME PLACE.

SCREW-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,222, dated January 3, 1893.

Application filed February 15, 1892. Serial No. 421,607. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DOOLITTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Screw-Cutting Machines, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1, represents a front elevation of the die-head or holder of a threading machine embodying my invention, partly broken away. Fig. 2, a section of the same taken on line 2—2 of Fig. 1. Fig. 3, a side elevation of one of the dies and its holder detached, and Fig. 4, a section of the same taken on line 4—4 of Fig. 3.

My invention relates to machines for cutting threads on bolts, tubes, rods, &c.; and the invention consists in a certain construction of the dies and their holders, and the means of fastening and adjusting the former in the latter.

As my present invention relates only to the above named particular part of the machine, it is not necessary to show and describe a complete machine, for, in other respects, it is of ordinary and well known construction. I have therefore shown in the drawings and will describe only such part of the machine as is necessary to an understanding of the construction and operation of my improvements, and these latter will be definitely pointed out in the claims.

In the drawings, A represents the cutter or die head of a screw threading machine, and is the only part of the machine necessary to an understanding of my invention. It will be understood of course, that this head is mounted on the machine in the usual way; in some machines the head is revolved and in others it is stationary. The cutter-head here shown is of a well known type of construction, which provides for the opening and closing of the cutters by the movement of one ring upon another, and is sometimes known as a ring-holder. Briefly stated, it consists of an outer ring B, and an inner ring C. The ring B, has an inwardly projecting flange *b* at one edge, which extends over the front of the ring C, and the two are secured together by means of a thin ring D, rabbeted to the flange *b* and secured to the ring C, by screws *d*, as seen in Figs. 1 and 2. The inner ring C, has an externally projecting flange *c* at its rear edge, against which the ring B, abuts. This ring is also provided with openings or sockets *c'* cut in through the body thereof, as seen in Figs. 1 and 2. These openings are for the reception of the cutter or die holders E, which are shaped to set into the former, as seen in Fig. 1. These holders are substantially rectangular blocks, in the inner ends or faces of which are cut grooves or channels *e*, extending entirely across the holders, and adapted to receive the dies or cutters F. The latter are long rectangular strips adapted to set into the rectangular grooves in the holders and provided at their outer edges with the required cutting teeth *f*. In one side of each cutter there is also provided a shallow concave groove *f'* which is threaded, as seen in Fig. 3; this threaded groove is arranged so as to lie within the seat groove for the cutter in the holder E, and in the latter, directly opposite this groove in the cutter, there is provided a similar threaded groove *e'*. These two threaded grooves or channels, when the cutter is properly seated within the holder, form a circular threaded aperture for the reception of a screw G, which being turned into place, as seen in Fig. 4, of the drawings, will effectually fasten the cutter in proper position in its holder. These fastening screws are set in from the front and are covered by the fastening ring D, as seen in Fig. 1. If desired the opening may be slightly tapering and the screw correspondingly shaped, as seen in Fig. 4, but this particular construction is not essential.

The cutters are made much longer than necessary for actual use at first, and the method of mounting them in the holders described above, provides for their adjustment as they are worn out. In order to effect this, the fastening screws are removed, the cutters taken out and the worn sections ground or cut off, when they are replaced and secured as explained, so that the cutters may be used up almost their entire length. The screws also provide for setting the cutters; the latter may be set by the cutting teeth, if desired, by pulling out the same number of teeth on each

one; they may also be set by the fastening screws, for if the threads of the latter are the same as the cutting teeth, it will be only necessary to change the position of the screw a certain number of threads to make a corresponding adjustment of the cutter, or if the threads of the screw are only one-half the size of the cutter threads, the movement of the screw must be double the number of threads required for the projecting cutting teeth.

In the drawings, the opening within the cutters is shown slightly contracted, this is an ordinary arrangement for making a conical thread, but it will be understood that it is merely an arbitrary arrangement, and that the holders are set parallel to each other when required, and even sometimes slightly incline the other way when it is desired to cut a very long thread.

The means here shown for expanding and contracting the opening within the cutters, are of well known construction, and need only brief reference. The outer ring B, is provided with a series of eccentric depressions or recesses b' made in its inner surface and corresponding to the openings in the inner ring for the cutter holders. The edge of the ring is also cut away along these recesses to form an angular opening b^2, as seen in Fig. 2. The cutter holders E, are provided with arms e^2 on their outer ends, with a hook or angular bend at their extremities, adapted to take into the angular opening or groove b^2, and these latter being also eccentric, corresponding to the recesses outside of which they run, as indicated in dotted lines in Fig. 1, the movement of the outer ring upon the inner one will obviously adjust the main holders in and out, in a well known way. The outer ring is provided with a short handle H, for giving this movement and there are stops I, for limiting it as usual. I do not wish to be understood as limiting my invention to this particular construction of head, however, for the method of mounting and fastening the cutters in their holders here shown and described is applicable to any head, and I contemplate the application of this method to any construction of head, and in fact, any particular construction of holder with which it may be used. This way of mounting and securing the cutters is also applicable to tapping machines as well as threading machines; the relative position of the parts being changed as required; this will be evident to any one familiar with the construction and operation of these machines. I wish to be understood therefore, as claiming the improvement whereof it may be applicable.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In screw threading and like machines the cutter holder provided with longitudinal seats for the cutters and threaded grooves running along one side of said seats and opening thereinto, in combination with long cutters mounted in said seats and provided with threaded sections on the side adjacent to the said threaded grooves, whereby the said two parts form a threaded aperture, and fastening screws adapted to be turned into said threaded apertures lengthwise of the cutters to secure the latter, substantially as described.

2. The cutter holder E provided with grooves e running lengthwise of the surface thereof and slightly tapering threaded grooves e' running through the holder and opening into the seat grooves at one side thereof, in combination with long cutters F provided with threaded grooves f' running along one side thereof and making a tapering threaded aperture with the threaded side grooves e' and tapering fastening screws G adapted to fit the said threaded apertures, substantially as described.

WILLIAM W. DOOLITTLE.

Witnesses:
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W. C. CORLIES.