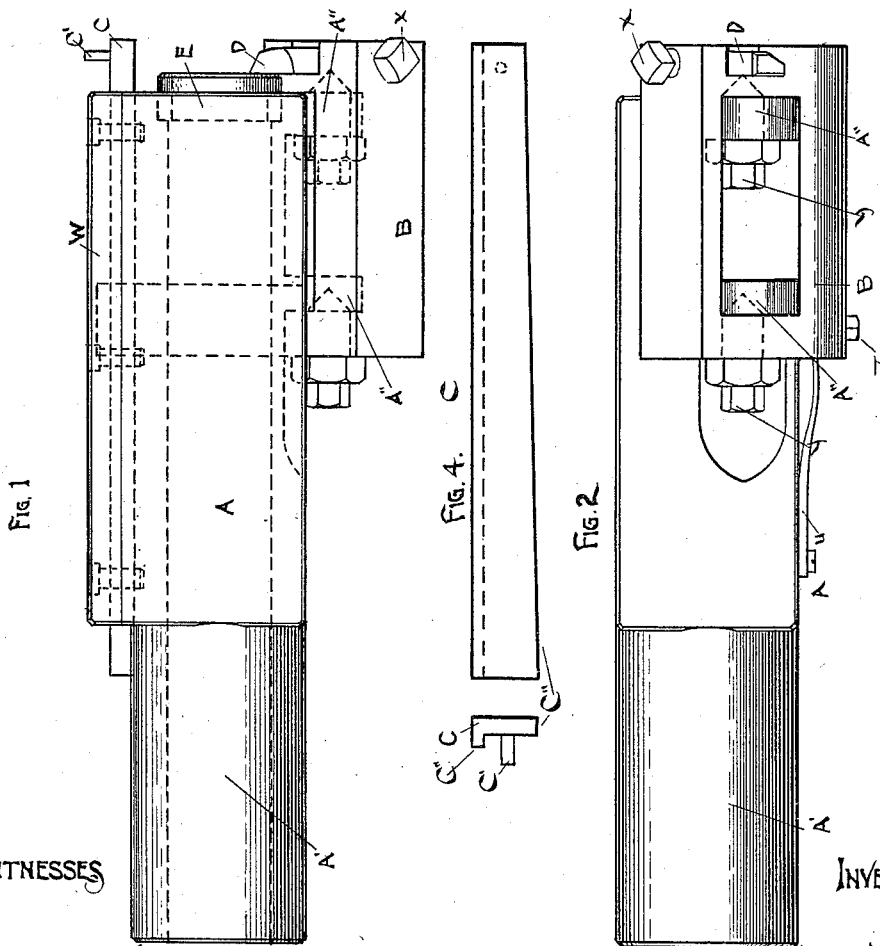
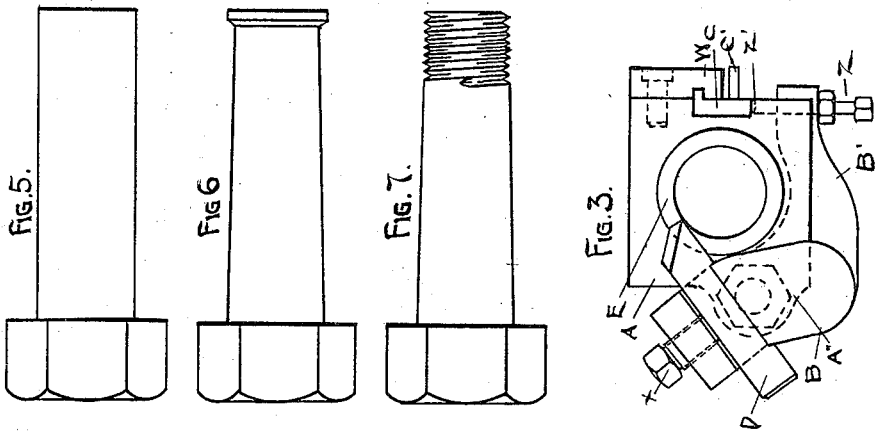


(No Model.)

J. HARTNESS.
SCREW MACHINE TOOL.

No. 424,979.

Patented Apr. 8, 1890.



WITNESSES

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SCREW-MACHINE TOOL.

SPECIFICATION forming part of Letters Patent No. 424,979, dated April 8, 1890.

Application filed October 2, 1889. Serial No. 325,816. (No model.)

To all whom it may concern:

Be it known that I, JAMES HARTNESS, a citizen of the United States, residing at Springfield, in the county of Windsor and State of Vermont, have invented a new and useful Tool for Turret-Lathes, of which the following is a specification.

My invention relates to improvements in that kind of turning-tools for use in the turret of turret-lathes, commonly called "box-cutters;" and the objects of my invention are to obtain an accurate working, cheap, and simply-constructed box-cutter for turning taper and symmetrical shapes. These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan; Fig 2 the side, and Fig. 3 the end, elevation of the box-cutter complete. Fig. 4 is a side and end elevation of the former *c* in Figs. 1, 2, and 3. Fig. 5 shows work before it is operated upon, Fig. 6 as turned by the herein-described invention, and Fig. 7 as finished by other tools.

The main part or body A of this invention (shown in Figs. 1 and 2) is provided with a round shank by which it is held in the turret. A flange bolted to the outside is sometimes used instead of said round shank.

A'' (shown dotted in Figs. 1 and 3) are lugs to which cutter-holder B is secured by pointed screws *y*, said screws being adjusted to allow a free pivotal motion to the same, the cutter D being forced into the work by former *c* and withdrawn by spring *u*, said spring keeping a constant bearing of adjusting-screw *z* on former *c*.

Fig. 4 shows the shape of former used for making bolts, as shown by Fig. 7, and for other work this shape may be changed to a more or less taper or to an irregular pattern, as required. This former is preferably made of one piece, although it can for taper-work be made of several pieces, forming an adjustable former.

The gib *w* in Figs. 1 and 3 is used for holding the former *c* in position.

Pin *c'* in Figs. 1, 3, and 4 is used for holding the former *c* motionless as the box-cutter passes over the work—in other words, to keep the former in the same relative position to the work during the entire cutting time of the

movable cutter D. This causes the cutter-holder B, Fig. 2, to move on pivot-screws *y*, Fig. 2, and give substantially a radial travel toward center of work of the tool-point.

Bushing E in body A is used only on slender work requiring a support or back-rest, and in using it the entire length is not taper, but, as shown by Fig. 6, is left to be finished by other tools.

The relative position of the pivotal point *y*, Fig. 3, to the cutter-point and the point of contact *z'* of cutter-holder with former *c* gives great accuracy of work, for if the former is slightly inaccurate that inaccuracy is divided at the tool-point. The cutter-holder B is substantially a lever with a tool attached to the short end.

When this box-cutter is used on turret-lathes with a non-reversible power-feed, it is necessary to run the lathe backward to make the feed travel from the shoulder or head toward the point, and for this reason I make the box-cutter "left-handed" and place the back-rest bushing E back instead of front of cutter; but I do not confine my claims to this peculiar construction, for on other kinds of work it is sometimes desirable to have the tool made "right-handed"—*i. e.*, to cut with forward motion of lathe. On long and slender work requiring the back-rest it is necessary to turn the work the size of bushing E. This may be accomplished by cutter D or by another tool; but when used on work that does not require the taper close to a shoulder a fixed tool is clamped in front of the back-rest and the movable cutter is placed back of the back-rest.

To operate this box-cutter on work, (shown by Fig. 7,) I prefer to proceed as follows after the work has been reduced to a cylindrical shape a trifle larger than the largest part of the finished piece and closely fitting back-rest E: First, by passing the tool over the work, said work being motionless till the cutter reaches the head; second, by bringing a projection from the carriage or bed of the lathe into contact with pin *c'* on former *c* to prevent its traveling, then starting the lathe backward and gradually feeding the tool toward the point of the work until the required amount is turned, the former in the meantime

having no travel relative to the work. The former is then released and is pushed back into position for starting on the next piece of work.

5 Another mode of operating is to leave a large end on the work, as shown by Fig. 6, turned to fit closely the hole in the body-piece A, this hole being one diameter its entire length, thus steadying the extreme end of the
10 work as the other part is shaped by the radially-traveling point of cutter D. When used in this way, the cut is usually taken from the point toward the head, and the tool then precedes the back-rest, the former being
15 pushed into instead of withdrawn from the main body.

I am aware that in some instances taper-turning machines for metal work have been constructed employing a former acting direct,
20 with no advantage or leverage over the tool, as the taper attachment commonly used on engine-lathes, and that in wood-working machines the tool is controlled by a former in a lathe commonly called the "gage-lathe." The
25 present claims do not cover such.

I claim as my invention—

1. In a box-cutter, the combination of a main body and a cutter-holder pivotally secured to said main body and caused to move

on its pivots by former *c*, substantially as 30 shown and described.

2. The combination, in a box-cutter, of a main body, a swivel cutter-holder, and a former sliding in said main body and acting
35 upon said cutter-holder, said former having no travel relative to the work when the tool is working, all as shown, and for the purpose specified.

3. A taper and symmetrical turning box-cutter for turret-lathes, combined with a long
40 former fitted to slide in a slot in the main body and pass into the turret to obtain an extra length of working capacity without extra length of body-piece, substantially as shown and set forth.

4. In a box-cutter for taper and symmetrical shapes, the tool-holder forced toward the work by a former and withdrawn by the spring *w*,
45 all substantially as shown and described.

5. A box-cutter for turning taper and sym- 50 metrical shapes on turret-lathes, consisting of a main body A, cutter-holder B, and former *c*, substantially as shown and described.

JAMES HARTNESS.

Witnesses:

F. C. HAMMOND,
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