

1,040,022.

Inventor-
John R. Saylor
by his Attorneys-
Howen & Howen.

UNITED STATES PATENT OFFICE.

JOHN R. SAYLOR, OF POTTSTOWN, PENNSYLVANIA.

DEVICE FOR CUTTING SCREW-THREADS.

1,040,022.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed April 11, 1912. Serial No. 690,103.

To all whom it may concern:

Be it known that I, JOHN R. SAYLOR, a citizen of the United States, residing in Pottstown, county of Montgomery, State of Pennsylvania, have invented certain Improvements in Devices for Cutting Screw-Threads, of which the following is a specification.

My invention relates to certain improvements in dies or taps using chasers, which are detachably secured to the body of the tool and which are for the purpose of cutting an internal or an external thread.

The object of the invention is to construct the die or tap so that the chaser can be adjusted to present new cutting portions as the cutting surface becomes worn.

My invention also relates to details of construction, which will be fully described hereafter, reference being had to the accompanying drawing, in which:—

Figure 1, is a sectional elevation illustrating my invention applied to a die for cutting external threads; Fig. 2, is a transverse sectional view on the line 2—2, Fig. 1; Fig. 3, is a perspective view of the eccentric lock for securing the chasers in position; Fig. 4, is a detached perspective view of one of the chasers; Fig. 5, is a detached perspective view of one of the tapered adjusting blocks; Fig. 6, is a side view illustrating my invention as applied to a tap for cutting an internal thread; Fig. 7, is a sectional view on the line 7—7, Fig. 6; and Fig. 8, is a view of a modification.

Referring to Figs. 1 to 5 inclusive of the drawing, A is the die held to the spindle B in the ordinary manner. In the present instance, the spindle has a flange *b* and the die has a flange *a*. The sleeve B' has a threaded portion adapted to the thread on the flange *a*, and an internal flange which overlaps the flange *b*; holding the two parts rigidly together.

In the inner wall of the body A is a series of longitudinal slots *a'* in which are mounted the chasers C, shaped as shown in Fig. 4, each having a toothed face *c*. These teeth are slightly backed off in the ordinary manner so as to present a sharp cutting point at the forward side of the chaser.

Within the body is a lock D consisting of a cylinder D' having a ring D², secured to the upper end of the body by a threaded joint and held by a pin *z*. On the opposite end of this lock is a series of eccentric seg-

ments *d'* separated by notches *d*² of a width greater than the width of the chasers. The periphery of each segment has a thread corresponding to the thread on the face *c* of each chaser. This face is eccentric so that as the lock is turned and while the threads engage the threads on the chasers, the lock also forces the chasers against the rear of the slot in the body A; locking them firmly in position and, as the thread is continuous throughout the several sections, it adjusts each chaser so that they will track properly to cut a thread. The eccentric lock can be turned by a suitable tool inserted in the chaser, which, in the present instance, has notches *e* on its inner wall with which engages the projections on a wrench or other tool. I preferably make the eccentric lock hollow, as it is desirable, in some instances, to extend a tap or cutter through the die, although, in some instances, the eccentric lock may be solid.

At the lower end of the body, opposite the flange *a*, is a threaded portion *a*², and adapted to this threaded portion is a ring H having an internal flange provided with a beveled face *h*, which rests against the beveled face *g* of blocks G adapted to slots *f* in the body portion directly back of each chaser C, so that, upon turning the ring in one direction, the blocks will force the chasers toward the center and will relieve the chasers when the ring is turned in the reverse direction. Thus, as the teeth of the chasers wear, the chasers can be set up to compensate for the wear.

Chasers, when in use, wear rapidly at the outer end; the wear taking place mainly on the first and second teeth. By my device the chasers can be readily withdrawn from the die and the ends ground so as to remove the first and second teeth; the chasers being re-adjusted in the die and locked therein in the new position after being moved forward a distance equal to the length of the toothed portion removed; as it will be understood that the teeth of the threaded portion of the lock engage the cutting teeth of the chasers. Consequently, the chasers can be moved forward when they become worn, as above stated, which prolongs their life and lessens the cost of the cutting operation.

In Figs. 6 and 7, I have illustrated my invention as applied to a tap using detachable chasers. A' is the body portion of

the tap having a series of longitudinal grooves in its periphery and in these grooves are the chasers C'. The body portion is arranged at a slight taper so that the threaded portion of the article to be acted upon will be slightly tapered. The invention can also be used in connection with a tap in which the body portion is not tapered.

D² is an eccentric lock, preferably secured to the body portion A', as shown, and this lock has an internal thread interrupted by the recess d³. This threaded surface is eccentric and bears against the edge of the chasers, as shown in Fig. 7, so that when the lock is turned in one direction, the chasers are firmly secured to the body portion A', and, when turned in the opposite direction, the chasers aline with the slots d³, and can be readily removed from the body portion, or, when necessary, adjusted therein.

In Fig. 8, I have shown a modification of the lock in which yielding segments are substituted for the eccentric segments. The threaded end of the lock D³ is slotted so as to provide a series of yielding segments and the interior of the lock is threaded to receive a tapered plug I, which is provided with a head or other device by which it can be turned, so that when the plug is turned in one direction the segments of the lock are forced against the chasers, firmly securing them to the body portion. When the plug is turned in the opposite direction, the segments are released from pressure, moving clear of the chaser so that the chasers can be withdrawn and readjusted.

In this construction it is not necessary to provide the lock with slots to allow for the removal of the chasers.

I claim: —

1. The combination in a device for cutting screw threads, of a body portion; a series of chasers arranged in the body portion; with a locking device having an eccentric threaded portion engaging the teeth of the chasers and confining the chasers to the body portion.

2. The combination in a device for cutting screw threads, of a body portion having longitudinal slots therein; a locking device confined longitudinally to the body portion and allowed to turn freely therein; said lock having an eccentric threaded portion; with chasers located in the slots of the body portion and having teeth on one face; said lock engaging the teeth and retaining the chasers in the position to which they are adjusted.

3. The combination in a device for cutting screw threads, of a body portion having longitudinal slots therein; chasers mounted in the slots; with a lock having a flange at one end engaging the body portion so as to prevent the lock from moving

longitudinally, but allowing it to turn freely therein; the opposite end of the lock having a series of segments spaced apart a distance equal to the width of the chasers and having a screw threaded cut thereon; the screw threaded portion being eccentric so that when the lock is turned in one direction it will bind the chasers to the body portion, and when moved in the opposite direction the space in the lock will be opposite the chasers so that the said chasers can be moved or adjusted in the body portion.

4. The combination in a device for cutting screw threads, of a hollow body portion having longitudinal grooves in its inner walls; chasers mounted in the grooves; the threaded surface of the chasers projecting beyond the wall of the body portion; with a lock mounted within the body portion and having a threaded section engaging the toothed surface of the chasers and acting to retain the chasers in position in the body portion.

5. The combination in a device for cutting screw threads, of a hollow body portion having longitudinal grooves in its inner walls; chasers mounted in the said grooves, the threaded surface projecting beyond the walls of the body portion; with a lock mounted within the body and having an eccentric portion engaging the teeth on the chasers.

6. The combination of a hollow body having longitudinal slots therein; a series of chasers mounted in the slots in the hollow body; a lock located within the body and held therein against longitudinal movement, but free to turn and having a series of segments spaced apart and threaded on their peripheries; said segments being eccentric so that when the lock is turned they will engage and hold the chasers in the body.

7. The combination of a body having a series of longitudinal slots in its inner wall and recessed at one end; a lock having a flange adapted to the recess; a series of chasers mounted in the slots of the body; said lock having at the end opposite the flange a series of eccentric segments spaced apart; each segment having a threaded surface arranged to engage the teeth on the chasers, whereby the chasers can be held in the position in which they are adjusted.

8. The combination in a device for cutting screw threads, of a body; a series of longitudinally arranged chasers; means for locking the chasers to the body; a sliding block located in the body back of the forward end of each chaser; with means for actuating the blocks to move the chasers so as to take up the wear.

9. The combination in means for cutting screw threads, of a hollow body having longitudinal grooves in its inner wall; a chaser in each groove; a lock within the

body engaging the chasers and holding them in the position to which they are adjusted; said body having a transverse opening back of each chaser near the forward end; with
5 blocks mounted in the transverse openings; said blocks being beveled at the rear; with a screw threaded ring adapted to the thread on the body and having a beveled surface bearing against the blocks, so that, upon
10 turning the ring, the blocks will force the chasers toward the center of the body.

10. The combination in a device for cutting screw threads, of a hollow body portion having longitudinal grooves in its inner
15 wall and having an annular recess at one end; a chaser mounted in each groove; a lock having a flange mounted in the annular recess and having at the opposite end a series of segments spaced apart; the spaces being
20 greater in width than the chasers; each segment having a screw thread thereon meshing with the teeth on the chasers; a transverse opening at the outer end of the

body portion back of each chaser; a block mounted in each opening and beveled at the
25 rear; a screw threaded ring adapted to the screw threaded portion of the body and having a beveled surface engaging the beveled surface of the blocks, so that, upon turning the ring, the blocks will force the
30 chasers toward the center of the body.

11. The combination in a cutting device, of a body portion having internal longitudinal grooves; cutters mounted in the
35 grooves; and a locking device located within the body portion and bearing against the toothed edge of the cutters for retaining said cutters in position.

In testimony whereof, I have signed my name to this specification, in the presence
40 of two subscribing witnesses.

JOHN R. SAYLOR.

Witnesses:

WM. E. SHUPE,

WM. A. BARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."