

Jan. 12 , 1926.

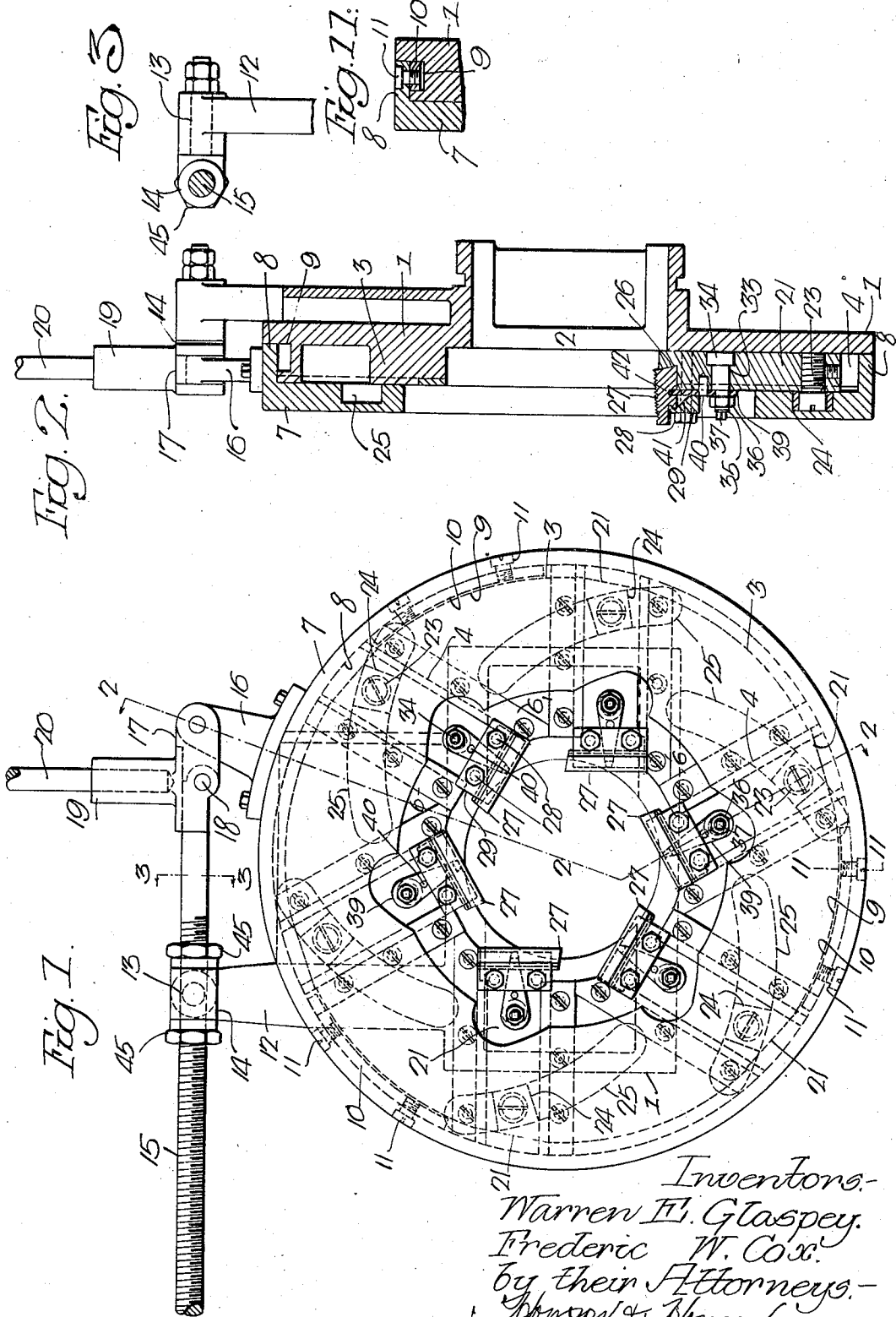
W. E. GLASPEY ET AL

1,569,740

PIPE THREADING DIE

Filed Nov. 2, 1922

4 Sheets-Sheet 1



Inventors:
Warren H. Glaspey.
Frederic W. Cox.
by their Attorneys.
Johnson & Johnson

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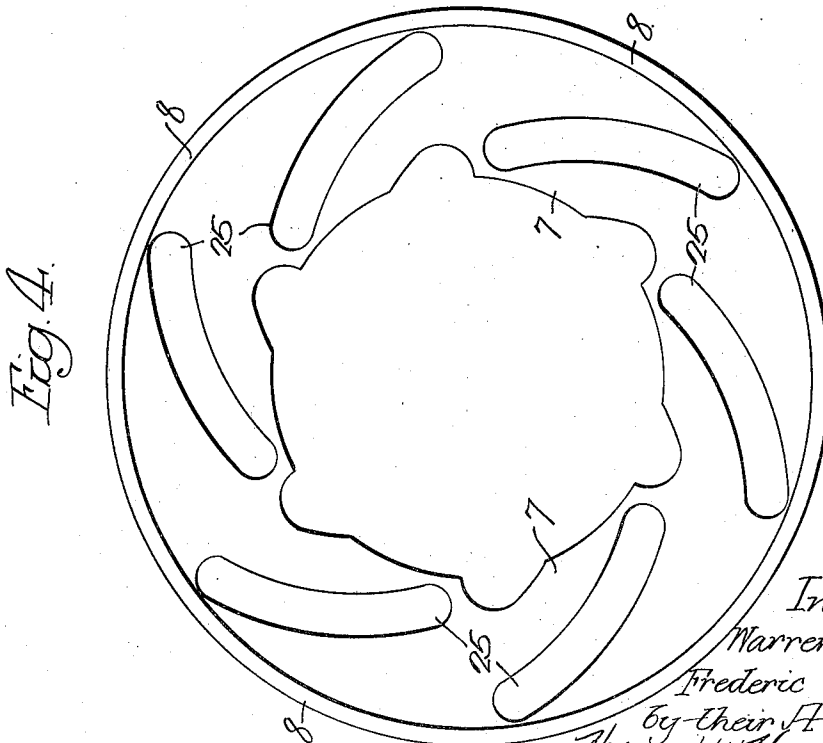
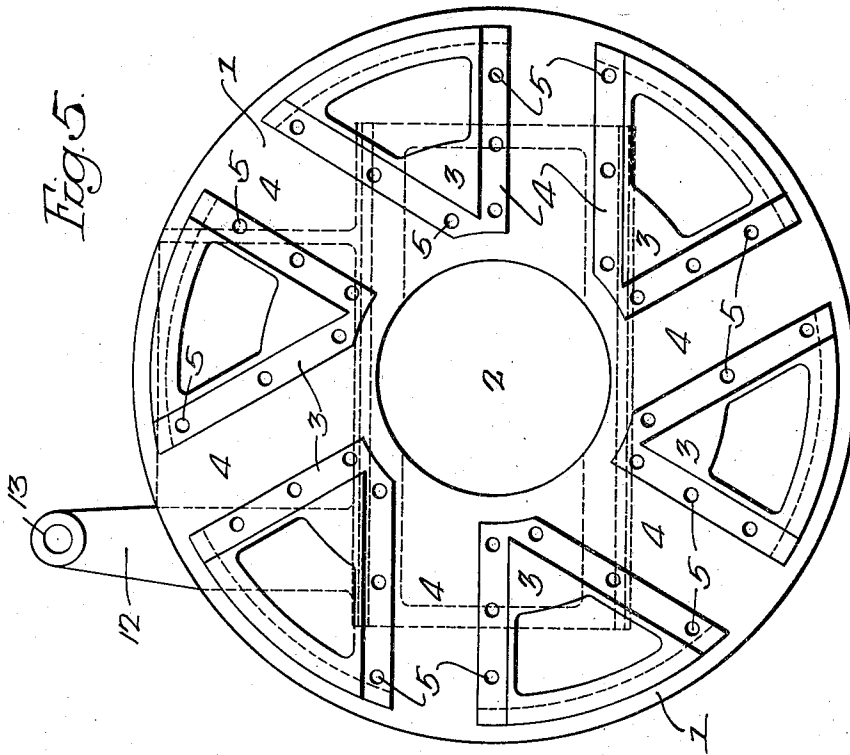
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PIPE THREADING DIE

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4 Sheets-Sheet 2



Inventors:
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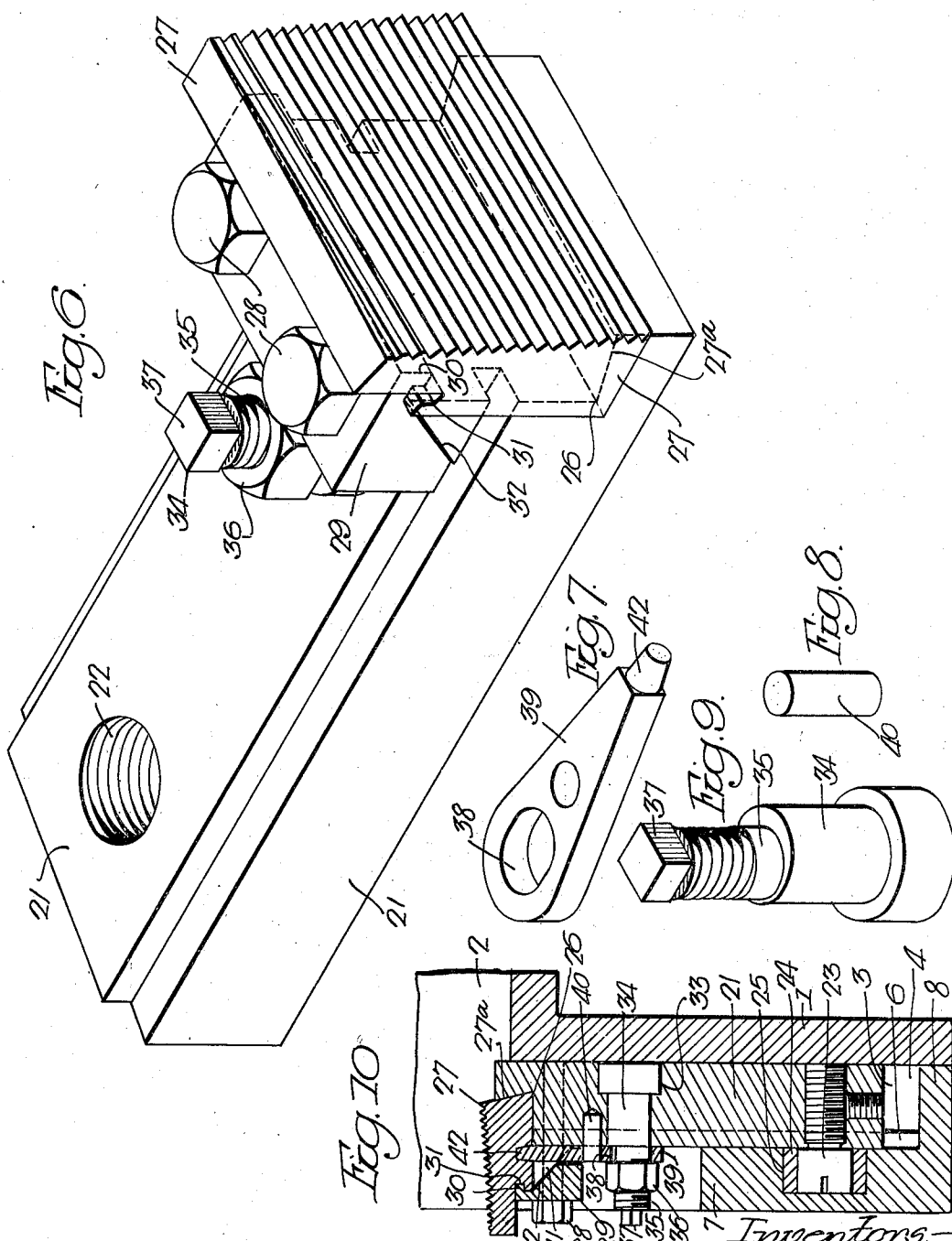
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PIPE THREADING DIE

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4 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

WARREN E. GLASPEY AND FREDERIC W. COX, OF BRIDGETON, NEW JERSEY, ASSIGNORS TO THE COX AND SONS COMPANY, OF BRIDGETON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PIPE-THREADING DIE.

Application filed November 2, 1922. Serial No. 598,575.

To all whom it may concern:

Be it known that we, WARREN E. GLASPEY and FREDERIC W. COX, citizens of the United States, residing in Bridgeton, New Jersey, have invented a Pipe-Threading Die, of which the following is a specification.

Our invention relates to pipe threading dies, and the principal object of the invention is to provide novel and improved means for holding and adjusting the chasers in the die body.

In the attached drawings:

Figure 1 is a view of the assembled die;

Fig. 2 is a section on the line 2—2, Fig. 1;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a face view of the cam controlling the chaser holders;

Fig. 5 is a view of the die body;

Fig. 6 is a view in perspective of one of the chaser holders with its chaser;

Fig. 7 is a view in perspective of the chaser adjusting lever;

Fig. 8 is a view in perspective of the chaser adjusting lever pivot pin;

Fig. 9 is a view in perspective of the chaser adjusting lever operating cam;

Fig. 10 is a fragmentary enlarged section of a portion of the die illustrating the details of the chaser adjusting lever and associated elements;

Fig. 11 is a section on the line 11—11, Fig. 1;

Fig. 12 is a fragmentary view illustrating a modification of the operating parts;

Fig. 13 is a section on the line 13—13, Fig. 12;

Fig. 14 is an end view of the fragment shown in Fig. 12, and

Fig. 15 is a view in perspective of one element of the toggle shown in Fig. 12.

With reference to the drawings, the die consists of a body 1 having therein a central opening 2 and on its forward face a series of substantially triangular projections 3, 3, the spaces 4 between which constitute guide slots for chaser holders. Die bodies of this general type are well known in the art and require no special description. Suitable tapped holes 5 are provided at the edges of the projections 3 for the reception of screws which secure to the said projections guide plates 6 of the usual form, which

maintain the chaser holders in the guide slots 4 between the projections.

The die further comprises a cam disk 7 which in the present instance is provided at its periphery with a flange 8 adapted to fit around the outer edges of the projections 3, as shown in Fig. 2. Also as shown in this latter figure and as indicated in Fig. 5, the projections 3 are grooved at their outer edges, these grooves 9 being provided for the reception of retaining segments 10 secured to the inner face of the flange 8 by set screws 11, these segments while maintaining the cam disk 7 in place upon the body, in no way interfering with relative rotation of the disk and body. The cam disk 7 is provided also with cam slots 25 whose function will be described hereinafter.

The body 1 of the die has an arm 12, in the outer end of which is a bearing 13, and journaled in this bearing is a sleeve 14 adapted to carry a threaded rod 15, shown in Fig. 1. Attached to the cam disk 7 is a lug 16, to which is pivotally attached a link 17 which also has pivotal connection at 18 with the rod 15, the said link 17 and the rod 15 constituting together a toggle. The link 17 further comprises a socket 19 for the reception of an operating lever 20, by means of which the toggle may be operated. It will be apparent that operation of the toggle will result in relative rotation between the cam disk 7 and the body 1 of the die, and the body 1 normally being fixed, such manipulation of the toggle will cause the disk 7 to oscillate upon the body.

The chaser holders are best illustrated in Fig. 6, and are mounted as shown in Fig. 1 and in well known manner within the guide slots 4 of the body 1, in which as previously described they are retained by the plates 6. That end of each of the holders 21 lying nearest the periphery of the die is provided with a threaded aperture 22 in which is a stud 23, and journaled on the projecting end of the stud is a block 24 which fits within the cam grooves 25 of the cam plate 7. It will now be apparent that rotation of the plate 7 upon the body, owing to the oblique nature of the cam slots 25, will effect a movement of the holders 21 in the guide slots 4 of the body which will either advance or retract

the inner ends of the holders in which the chasers are mounted toward or from the center of the die, depending upon the direction of rotation of the cam disk.

5 At the inner end of each of the holders 21 is a recess 26 for the chaser 27, one side 27^a of the recess 26 being beveled for the correspondingly beveled side of the chaser. The chaser is provided not only with longitudinal cutting teeth on its front face but also
10 with longitudinal back and lateral bearing surfaces adapted to engage the back and lateral walls of the recess 26 as already stated. Opposite the said lateral bearing surface and adjacent this clamping surface
15 is a longitudinal groove 31 having a wall adjacent and at an angle to the said clamping surface. Preferably the front longitudinally grooved cutting face of the chaser
20 extends laterally beyond the plane of the clamping surface as is very clearly shown in Figs. 6 and 10. There is provided and secured to the holder by means of bolts 28, 28^a, a clamping bar 29 which engages the
25 before-mentioned longitudinal clamping surface on the chaser. The clamping bar has a hook portion 30 which fits the said groove 31 in the chaser. By reason of its engagement with the clamping surface on the chaser
30 and the wall of the groove adjacent the clamping surface, the said clamp serves to firmly hold the chaser in its seat on the holder. It will be noted that the abutting surfaces of the holder 21 and the clamp 29 are beveled,
35 as shown at 32 in Fig. 6, and these beveled faces are so arranged that the inner edge only of the clamp bears on the beveled surface of the holder and the bolts 28 have a
40 tendency both to force the chaser 27 against the beveled side 27^a of the holder and also tightly against the bottom face or base of the recess 26, whereby the chaser is held with extreme tightness to its seat in the holder.

45 In each of the holders 21 there is also provided a counterbored aperture 33 adapted to receive an eccentric pin 34, the projecting eccentric end 35 of the pin being threaded for the reception of a lock nut 36 and having
50 at its extreme end and integral therewith a nut 37 whereby the pin may be rotated in the opening. The eccentric portion 35 of the pin passes through a slotted aperture 38 in a lever 39, which latter is pivotally mounted on a pin 40 in the chaser
55 holder, the lever 39 extending through a slot 41 in the holder and having at its end a tapered pin 42 which enters a recess or hole in the back of the chaser 27. Rotation
60 of the pin 34 by reason of the eccentricity of the portion 35 which occupies the opening 38 in the lever 39 effects oscillation on its pivot pin 40 of the said lever with a resultant movement of the chaser 27, while
65 the lever and consequently the chaser may

be fastened tightly to the holder by securing the lock nut 36 which prevents rotation of the pin 34. The parts described function not only as an additional lock for the chaser 27 in its holder, but also greatly facilitate
70 the accurate adjustment of the chaser in the holder.

It will be noted that the bases of the recesses 26 of the holders when the latter
75 are mounted in the die lie in planes parallel to the axis of the die and to the axis of a pipe inserted in the die for threading, and that the required tapering of the thread is accomplished through a tapered construction of the chasers themselves. As a consequence
80 of this construction, we may employ the same holders for chasers of different taper. In dies of the ordinary type, it has been customary to obtain the taper in the cut thread by a tapered construction of the holder, it being necessary to employ a different set of holders for each different taper. The tapering of the chasers themselves instead of the holders not only greatly reduces
85 the cost of manufacturing the die, but also facilitates the operation of changing chasers.

The operation of the device will be apparent. The lever 20 is shifted to straighten the toggle 15—17 and thereby causes partial rotation of the cam disk 7 in clockwise
90 direction, see Figure 1, with the result that the chasers are advanced into position ready for contact with the work. The pipe is then revolved and threaded into the die a distance equal to the length of thread required.
95 The lever 20 is then manipulated to break the toggle 15—17, thereby rotating the cam disk 7 in a counterclockwise direction, retracting the chasers and allowing the die to be withdrawn from thread cut. The extent
100 of the retraction of the chaser holders is controlled by adjusting the rod 15 in the sleeve 14, such adjustment being provided for by lock nuts 45 which normally retain the rod fixed in the sleeve. Adjustment of
105 the chasers in their holders to bring them into conformity with each other is accomplished by means of the aforescribed lever 39 with its operating pin 34, this lever as before mentioned also constituting an additional lock for the chasers when the die is
110 in operation.

In the modification illustrated in Figs. 12 to 15, the arm 16 is replaced by an elongated
115 lug 50 having a plurality of apertures 51; while the sleeve 14 is in this instance replaced by a sleeve 52 having apertured lugs 53 adapted to lie on opposite sides of the lug 50 and to be secured to the latter lug by a
120 bolt 54 passed through the apertures. The apertures 51 are so placed as to give settings of the die corresponding to pipes of different diameters, whereby in setting the die for a particular diameter of pipe, it is only necessary
125 to secure the sleeve to the lug 50 at the
130

specified aperture 51. In this instance also, adjustment of the sleeve 52 with respect to the rod 15 is provided for by the aforescribed nuts 45, 45, on the threaded end of the rod.

The operating toggle of which the rod 15 constitutes an element is also modified by use of the element 55, shown in perspective in Fig. 15, and pivotally attached to the arm 12 by a bolt 56.

We claim:

1. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and provided with a recess having back and lateral walls at an acute angle to each other, a chaser formed with longitudinal cutting teeth on its front face and having longitudinal back and lateral bearing surfaces adapted to engage the walls of the said recess, the said chaser also having a longitudinal lateral clamping surface opposite the said lateral bearing surface and a longitudinal groove with a wall adjacent and at an angle to the clamping surface, and a clamp connected with the chaser holder and engaging the clamping surface of the chaser, the said clamp having a hook portion entering the groove in the chaser and engaging the aforesaid wall thereof.

2. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and provided with a recess having back and lateral walls at an acute angle to each other, a chaser formed with longitudinal cutting teeth on its front face and having longitudinal back and lateral bearing surfaces adapted to engage the walls of the said recess, the said chaser also having a longitudinal lateral clamping surface opposite the said lateral bearing surface and a longitudinal groove with a wall adjacent and at an angle to the clamping surface, a clamp engaging the clamping surface of the chaser and provided with a hook portion entering the groove in the chaser and engaging the aforesaid wall thereof, and means engaging the clamp and tending to move it both inward and rearward to exert pressure on the clamping surface of the chaser and also on the adjacent wall of the groove.

3. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and provided with a recess having back and lateral walls at an acute angle to each other, the said holder also having an inclined surface adjacent the recess, a chaser formed with longitudinal cutting teeth on its front face and having longitudinal back and lateral bearing surfaces adapted to engage the walls of the said recess, the said chaser also having a longitudinal lateral clamping surface opposite the said lateral bearing surface and a longitudinal groove with a wall adjacent and at an

angle to the clamping surface, a clamp engaging the clamping surface of the chaser and provided with a hook portion entering the groove in the chaser and engaging the aforesaid wall thereof, the said clamp being provided with a heel portion having contact with the inclined surface of the holder at a position separated from the clamping surface on the chaser, and means for exerting pressure on the clamp between the edge portions thereof and tending to move the clamp inward and rearward along the inclined surface on the holder.

4. A chaser for a thread cutting die formed with longitudinal cutting teeth on its front face and having longitudinal back and lateral bearing surfaces at an acute angle to each other, the said chaser also having a longitudinal lateral clamping surface opposite the said lateral bearing surface and a longitudinal groove with a wall adjacent and at an angle to the clamping surface.

5. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and having a chaser receiving recess, a chaser formed with longitudinal cutting teeth on its front face and fitting the recess for longitudinal movement therein, and a lever pivoted to the holder and engaging the chaser for moving it longitudinally as aforesaid.

6. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and having a chaser receiving recess, a chaser formed with longitudinal cutting teeth on its front face and fitting the recess for longitudinal movement therein, the said chaser having a hole in its back face and a lever pivoted to the holder and entering the hole in the chaser for moving the chaser longitudinally as aforesaid.

7. A thread cutting die comprising in combination, a body, a chaser holder mounted on the body and having a chaser receiving recess, a chaser formed with longitudinal cutting teeth on its front face and fitting the recess for longitudinal movement therein, a lever pivoted to the holder and engaging the chaser for moving it longitudinally as aforesaid, and means for locking the lever in different positions.

8. The combination with a holder, of a chasing tool seated on the holder, a lever pivoted to the holder and engaging the tool, a pin rotatably mounted in the holder and having an eccentric portion engaging the lever, and means for rotating the pin to adjust the position of the lever and of the chasing tool.

9. The combination with a holder, of a chasing tool seated on the holder, an apertured lever pivotally secured to the holder and engaging the tool, a pin rotatably mounted in the holder and having an eccentric portion extending through the aper-

ture in the lever, and means for rotating the pin to shift the lever and thereby to adjust the position of the tool on its seat.

10. The combination with a holder, of a
5 chasing tool seated on the holder, an apertured lever pivotally secured to the holder and engaging the tool, a pin rotatably mounted in the holder and having an eccentric portion extending through the aperture
10 in the lever, means for rotating the pin to shift the lever and thereby to adjust the position of the tool on its seat, and means for locking the pin against rotation.

11. The combination with a holder, of

a chasing tool seated on the holder, an 15
apertured lever pivotally secured to the holder and engaging the tool, a pin rotatably mounted in the holder and having an eccentric portion extending through the aperture
20 in the lever, the said pin having a threaded portion adjacent the eccentric portion, means for rotating the pin to shift the lever and thereby adjust the position of the tool on its seat, and a nut on the threaded portion
25 of the pin for locking the pin against rotation.

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