

Jan. 23, 1951

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2,539,289

GRINDING BLOCK

Filed Aug. 2, 1948

Fig.1.

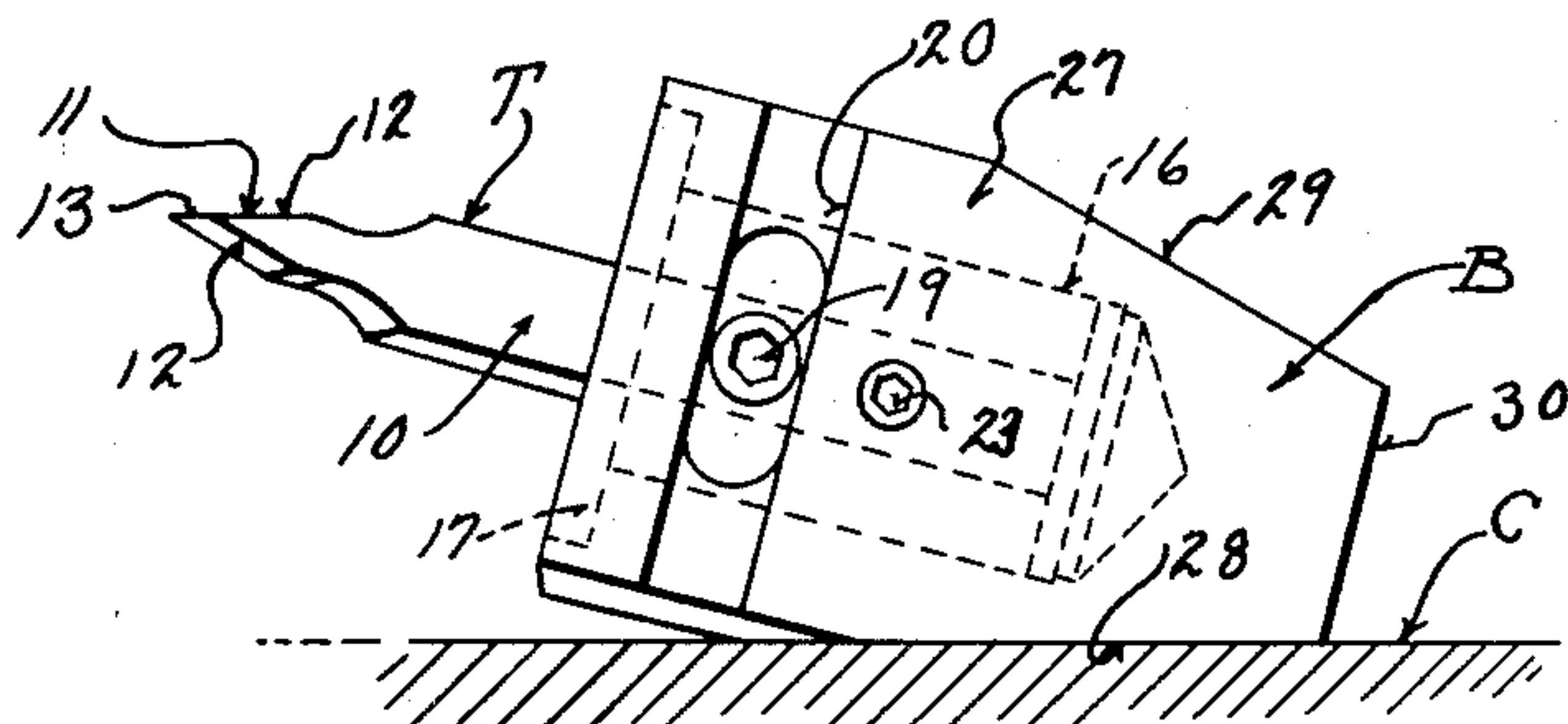


Fig. 2.

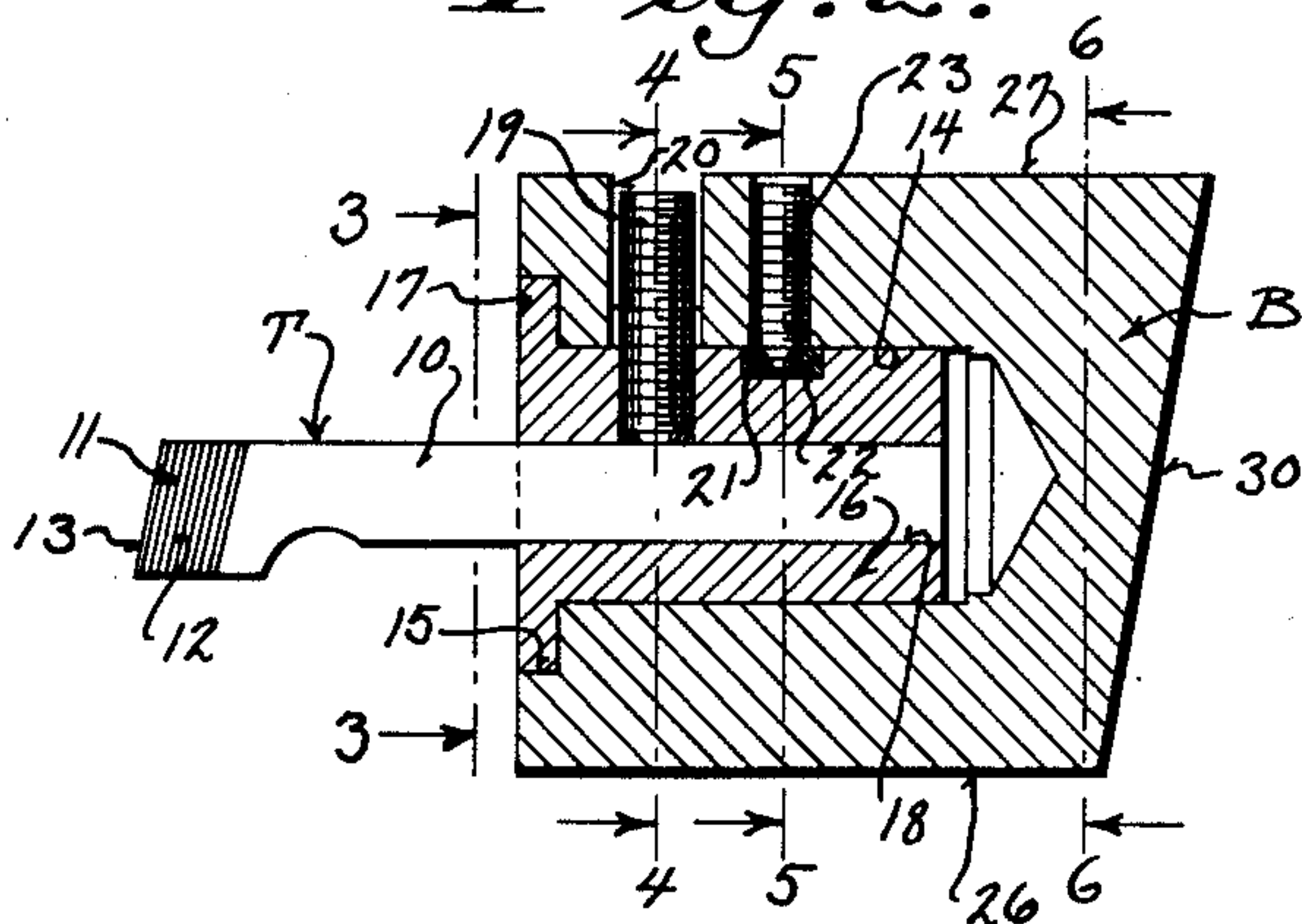


Fig. 3.

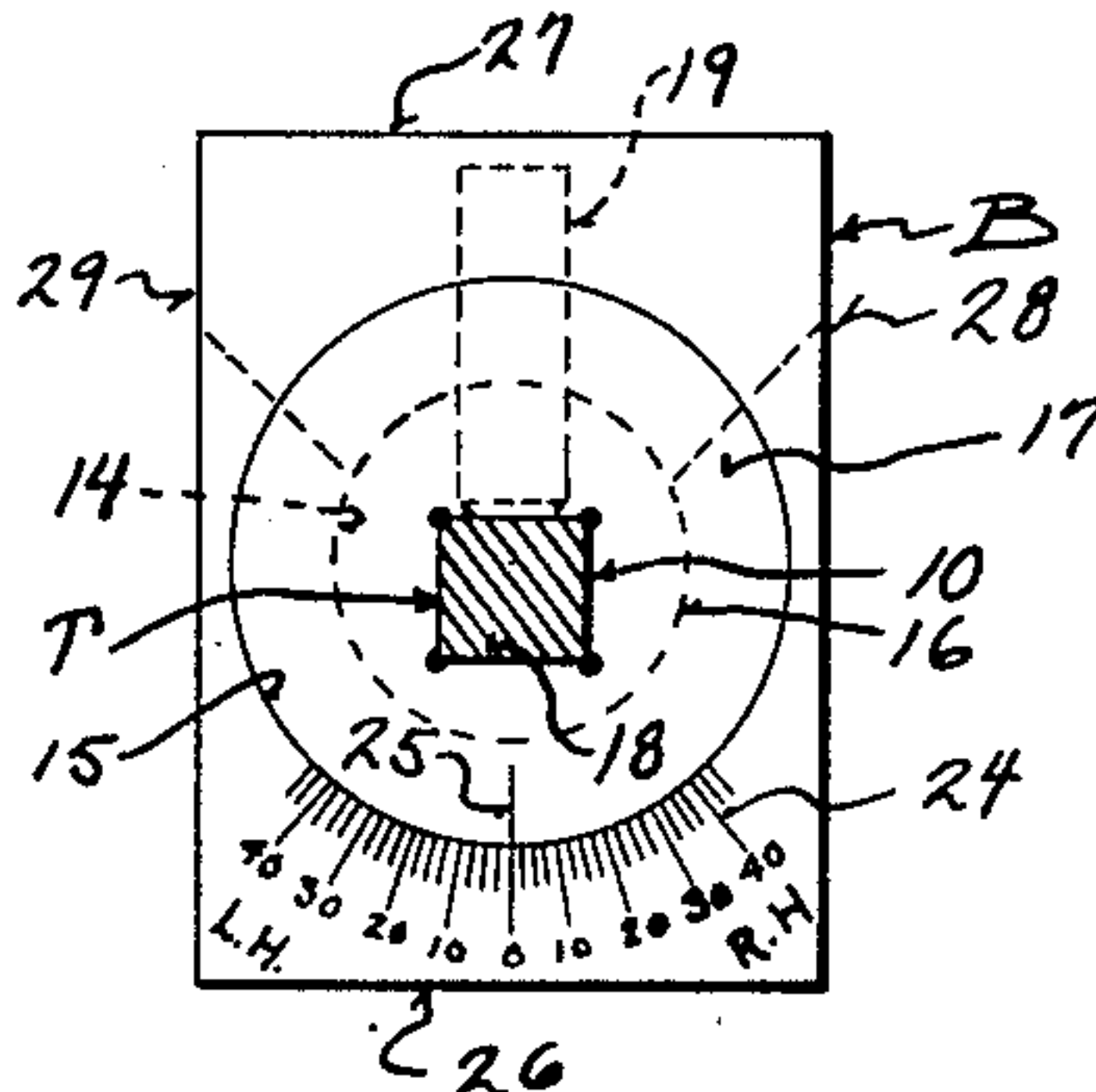


Fig. 4.

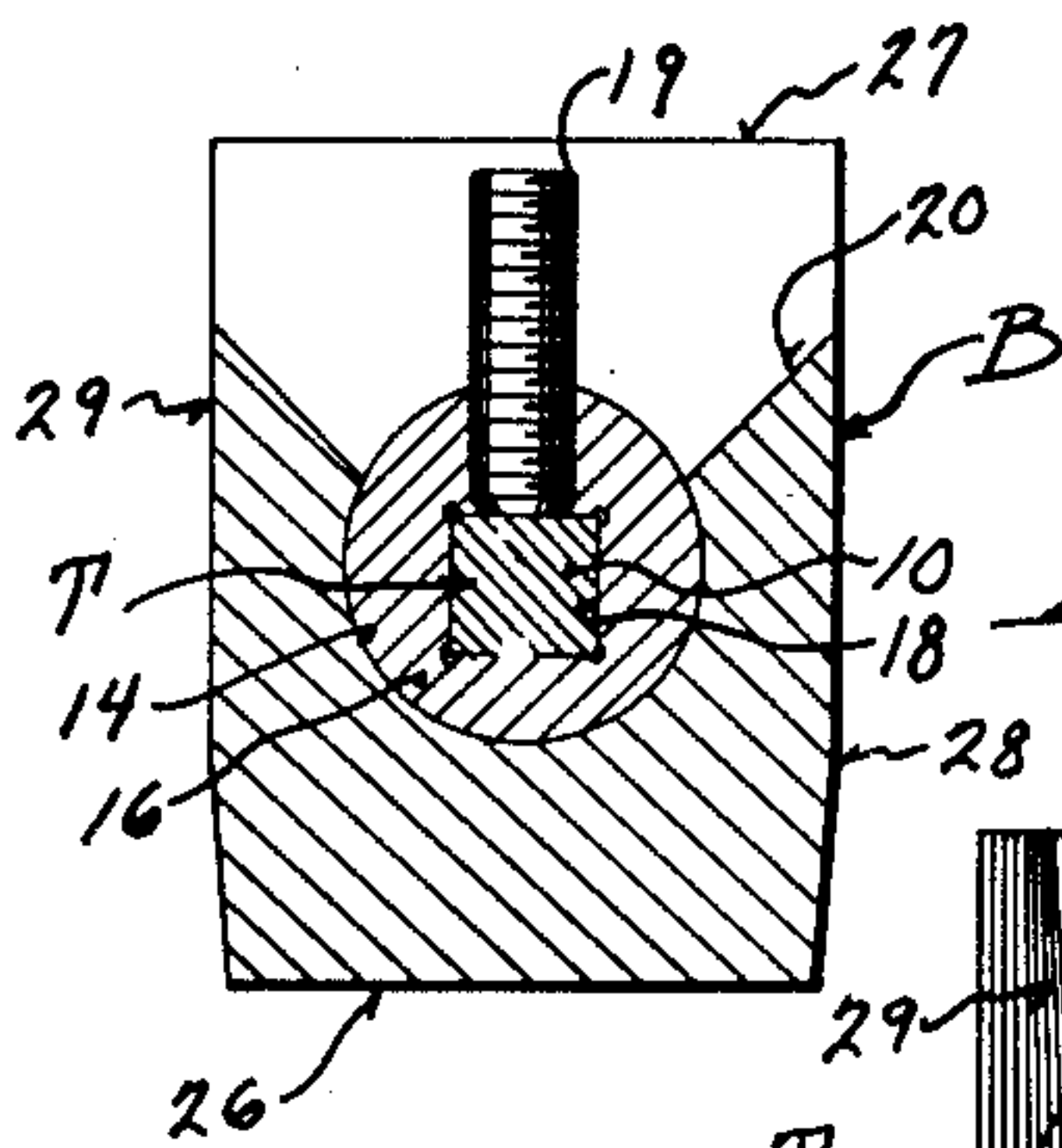


Fig. 5.

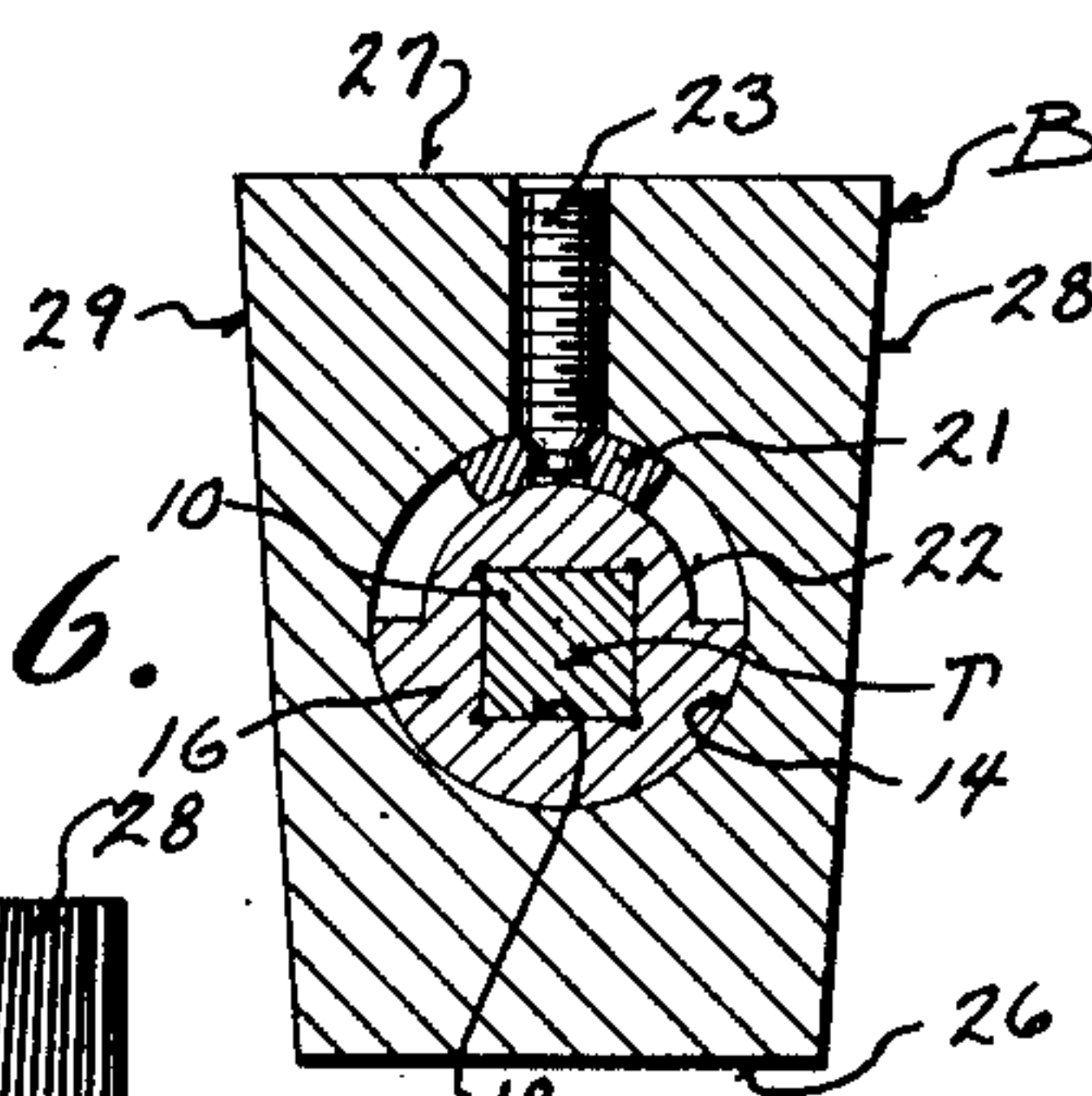
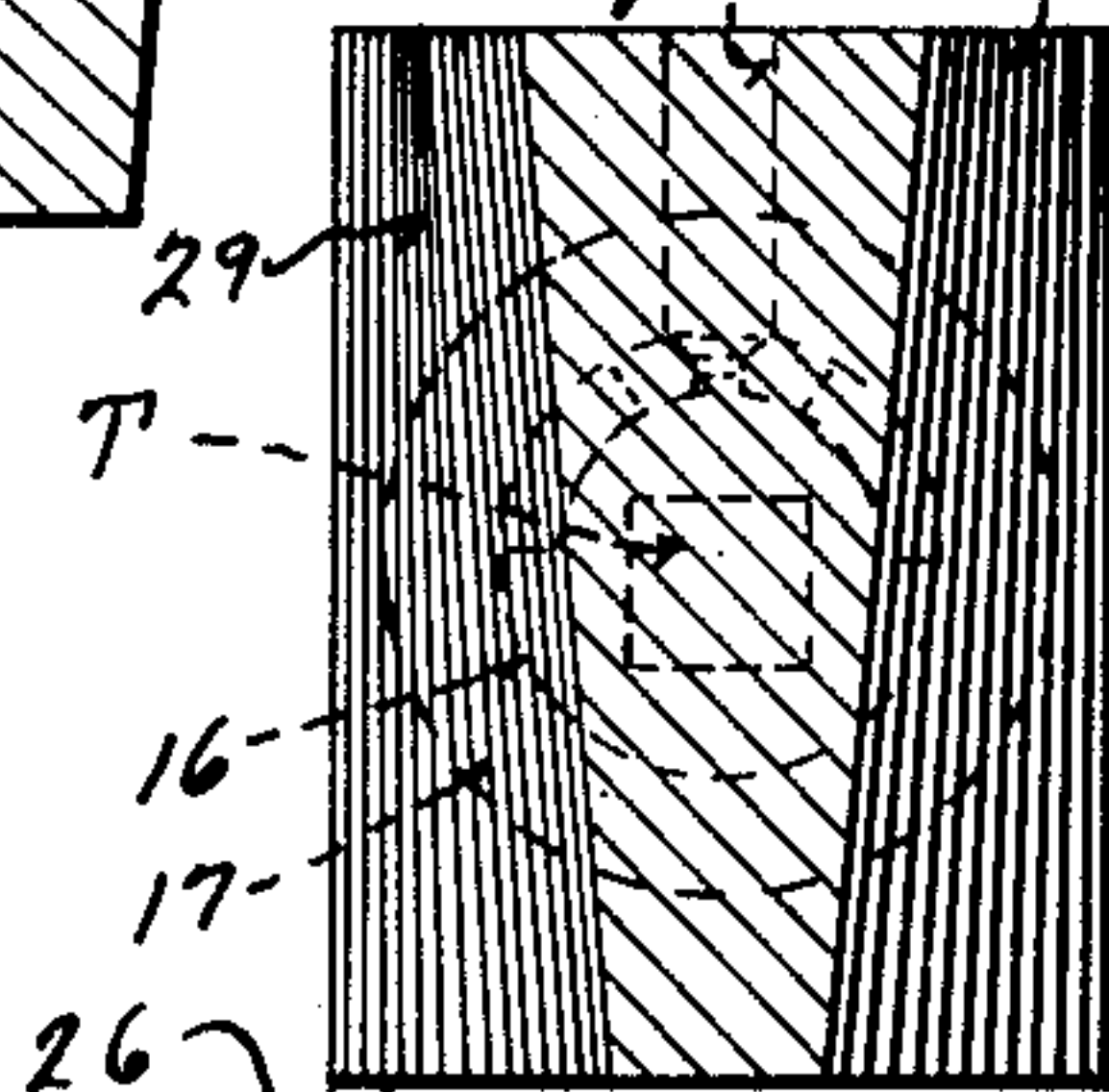


Fig. 6.



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2,539,289

GRINDING BLOCK

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Application August 2, 1948, Serial No. 42,089

1 Claim. (Cl. 51—220)

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This invention appertains to grinding blocks, and more particularly to a novel device for holding thread cutting tools during the sharpening or shapening of the various faces and edges thereof for the correct forming of a certain desired thread on a piece of work.

One of the primary objects of this invention is to provide a simple holding block for the thread cutting tool to be sharpened or shaped, having different angular faces on its sides which correspond exactly to the angle of the faces and edges to be given to the thread cutting tool held by the block, whereby by turning the block in proper sequence on its different faces, the cutter will be held at the exact desired angle relative to the grinding wheel.

Another salient object of the invention is to provide a grinding block for association with a magnetic chuck of a grinding machine, embodying like angular faces on its opposite sides corresponding to the angle of the side faces of the thread cutter, an angular face on its rear end corresponding to the desired angle of the leading edge of a cutter, and flat, horizontal faces on its top and bottom corresponding to the top edge of the tool.

A further important object of the invention is the provision of a tumbler rotatably carried by the block in which the cutter is clamped with means for setting and holding the tumbler and the tool at the exact desired angle corresponding to the helix angle of the thread to be formed by the tool.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a side elevational view of my novel grinding block with a thread cutter clamped therein and with the block laid on one of its side angular faces for the grinding of one side face of the tool.

Figure 2 is a central, longitudinal, sectional view through the block showing the block laid on its bottom flat horizontal face.

Figure 3 is a front elevational view of the block with the tool therein and shown in section, the section being taken on the line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a transverse sectional view through the block and tool, the section being taken on the line 4—4 of Figure 2, looking in the direction of the arrows, illustrating the means for clamping the tool in the tumbler.

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Figure 5 is a transverse sectional view through the block and tool taken on the line 5—5 of Figure 2, looking in the direction of the arrows, illustrating the means employed for clamping the tumbler to the block.

Figure 6 is a transverse, sectional view through the block, taken on the line 6—6 of Figure 2, looking in the direction of the arrows.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter B generally indicating my novel grinding block for a thread cutting tool T.

The thread cutting tool T is of the type commonly employed for cutting threads in a piece of stock, and hence includes the usual bit 10 and cutting head 11. The cutting head 11, includes the usual side angular faces 12 leading toward the angular front edge 13.

The grinding block B is formed from a single solid piece of metal having the properties of being attracted to and held by magnetic chuck C. The grinding block B has formed axially therein a cylindrical bore 14, which opens out through the front end of the block. The front face of the block can be provided with an annular rabbet 15 around the bore 14.

Rotatably mounted within the bore 14 is a tumbler 16. The forward end of the tumbler is provided with an annular flange 17, which is snugly received within the rabbet 15. The tumbler 16 and its flange 17 fit accurately within the block, but is free for turning movement therein. The axial center of the tumbler is provided with a socket 18 which snugly receives the bit 10 of the tool. Obviously, the cross sectional configuration of the socket 18 corresponds to the cross sectional configuration of the bit. Extending into the tumbler 16 is a set screw 19 and this set screw is employed for tightly clamping the bit of the tool in the tumbler. To permit turning of the tumbler in the block, the upper face of the block is provided with a transverse slot 20 and the set screw 19 moves in this slot during the turning of the tumbler.

The tumbler is also clamped tight in the block after the setting thereof, as will be later pointed out, and this clamp includes a friction shoe 21 received in a semi-circular groove 22 formed in the tumbler 16. Bearing against the shoe is a set screw 23, which is threaded in the block. Obviously, by threading down on the set screw, the shoe can be brought into firm clamping engagement with the tumbler.

The front face of the block has formed thereon or associated therewith, a scale 24, and this

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scale is graduated for left hand and right hand threads. The tumbler is provided with an indicating arrow or line 25, for cooperation with the graduations.

The formation of the outer surface of the block is important and these faces correspond to the angularity of the faces of the tool to be sharpened and shaped. The bottom and top faces 26 and 27 of the block are flat and parallel to one another, and parallel to the gripping faces 10 of the magnetic chuck C.

The side faces 28 and 29, adjacent to the rear end of the block angle rearwardly to the longitudinal axis of the block. The exact angle of these faces is carefully computed to correspond to the side face 12 of the cutting tool exactly. The rear face of the block 30 is angularly disposed relative to the transverse axis of the block. The angle of the face 30 is carefully formed and corresponds exactly to the angle of the front edge 13, of the tool.

In the use of my block the tool bit 10 is placed within the socket 18 and is firmly clamped therein by the set screw 19, as is commonly shown in Figure 2. The helix angle is computed and the tumbler 16 with the tool inside is turned to the corresponding angle on the scale 24 for right or left hand threads, as the case may be. The set screw 23 is now tightened to lock the tumbler in its set position. The tool T is then ready for grinding. The block B is then laid on the face 28, as shown in Figure 1, on the chuck C, in the correct position relative to the grinding wheel (not shown), and the tool is ground on one side. After this side is ground, the block is turned and laid on the face 29 on the chuck and the opposite side is ground. The side clearance angles and the helix angle have now all been formed. The block is then turned on its end and the forward edge 13 or the relief angle is then developed by the grinding wheel. The tool is ground in this position until it accurately fits the tool gage. If necessary, for some tools, the block is laid on its face 27 and the upper edge of the tool is ground.

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From the foregoing description, it can be seen that I have provided an exceptionally simple block in which, after the tool is once set in the block in the desired angle, the faces thereof can be accurately ground by the mere turning of the block on its different angular sides.

Obviously different blocks can be provided for different characters of threads.

Various changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

In a grinding block for threaded cutting tools adapted to be associated with a magnetic chuck, a solid body having different angular faces on its outer sides corresponding exactly to the angular faces and edges of the tool to be sharpened and a flat front face, said block having an axial bore opening out through the front face and a transversely extending slot communicating with the bore opening out through a side of the block, the front face of the block having an annular rabbet surrounding the bore, a tumbler mounted in said bore for receiving a tool, an annular flange on the forward end of the tumbler received in said rabbet and said flange having its outer face flush with the front face, a set screw received in the slot threaded in the tumbler for clamping engagement with the tool in the bore, said set screw being movable in the slot for turning the tumbler, means carried by the block adjacent to the slot for clamping the tumbler and tool in a desired set position in the block, said block and tumbler having a cooperating scale and indicator.

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