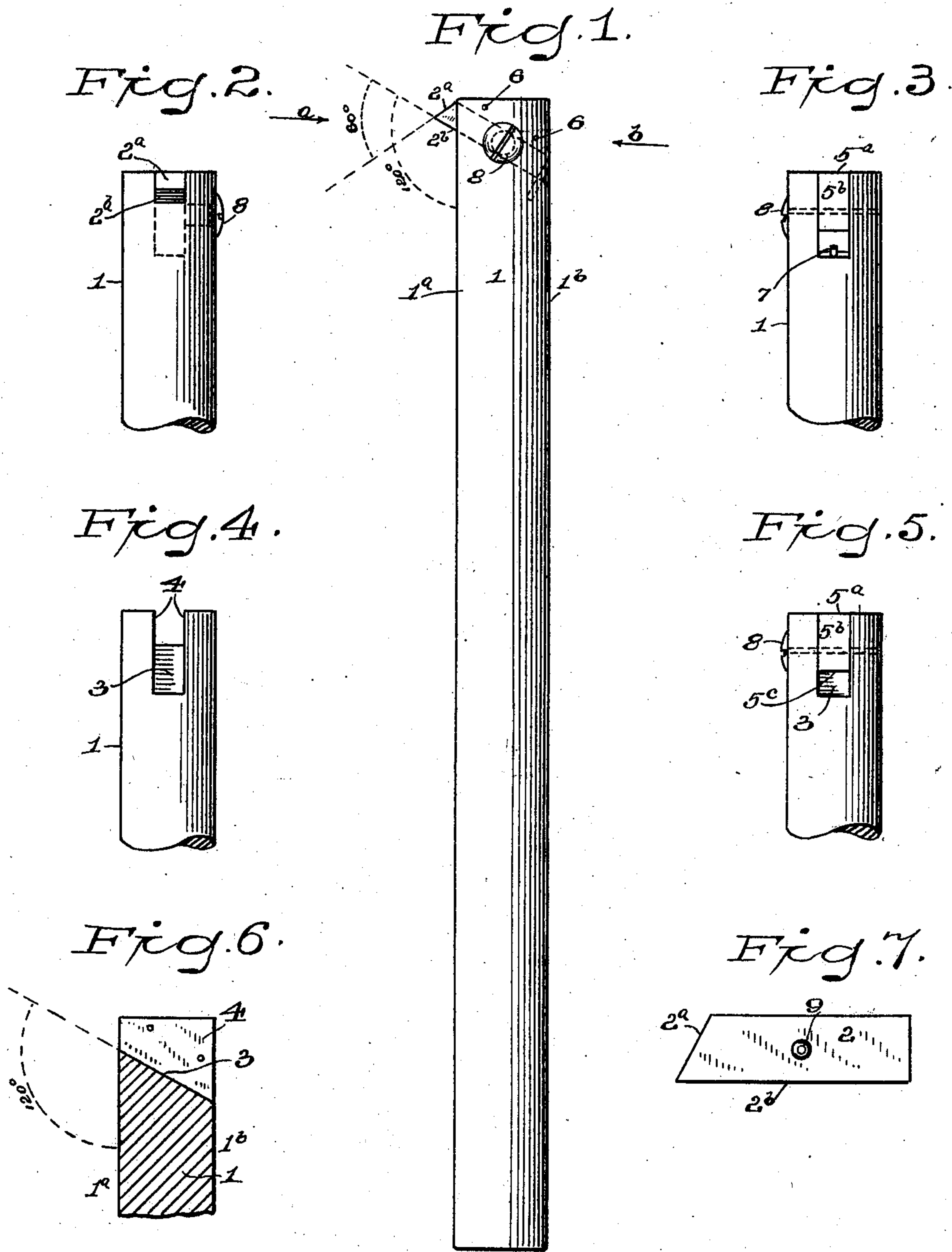


No. 763,070.

PATENTED JUNE 21, 1904.

R. McNEIL.  
INSIDE THREADING TOOL.  
APPLICATION FILED JAN. 21, 1904.

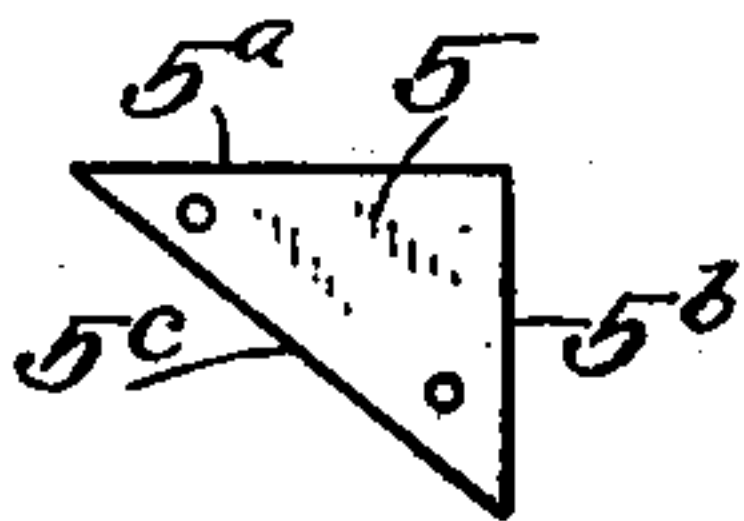
NO MODEL.



WITNESSES:

H. F. Lamb.  
G. W. Finn

Fig. 8.



INVENTOR:  
Robert Mc Neil.

BY Geo. S. Phillips.  
his ATTORNEY.

# UNITED STATES PATENT OFFICE.

ROBERT McNEIL, OF PORT CHESTER, NEW YORK.

## INSIDE-THREADING TOOL.

SPECIFICATION forming part of Letters Patent No. 763,070, dated June 21, 1904.

Application filed January 21, 1904. Serial No. 190,071. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT McNEIL, a citizen of the United States, and a resident of Port Chester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Inside-Threading Tools, of which the following is a specification.

My invention relates to inside-threading tools for lathes; and it has for its object to so construct the cutter and its holder that the cutter can be easily set to accurately cut a female thread without the use of a thread-gage; further, to provide a seat in the holder for the cutter in a cheap and simple manner, and to set the cutter in the holder at such an angle that only one face of the cutter need be ground, all of which improvements will be more fully set forth in the following specification.

Figure 1 represents the holder and cutter. Fig. 2 is a broken front elevation of the holder looking in the direction of arrow *a*, Fig. 1. Fig. 3 is a broken rear elevation of the holder looking in the direction of arrow *b*, Fig. 1. Fig. 4 is a broken rear elevation of the cutter-holder with the filling-piece removed. Fig. 5 is a broken rear elevation of the cutter-holder with the cutter removed and the filling-piece inserted in the end of the holder. Fig. 6 is a broken central sectional elevation of the cutter-holder. Fig. 7 is an enlarged detail plan view of the threading-cutter. Fig. 8 is a detail side elevation of the filling-piece.

Its construction and operation are as follows:

1 is the cutter-holder, which consists of a round straight piece of metal adapted to be secured in any suitable device secured in the tool-post of a lathe for boring or turning metal.

While my improved holder is adapted for all kinds of inside work, such as boring and threading, I have shown its particular adaptation to the cutting of inside V-threads, and for this purpose I have devised a construction whereby the proper angle of the threading-cutter is obtained in a cheap, novel, and simple manner.

The thread-cutter 2 (see Fig. 7) is a piece of steel rectangular or square in cross-section and having one end only, 2<sup>a</sup>, ground at an an-

gle of sixty degrees with the edge 2<sup>b</sup>. Consequently with the seat 3, Fig. 6, formed in the holder at an angle of one hundred and twenty degrees with the axis of the holder the two cutting edges—viz., 2<sup>a</sup> and 2<sup>b</sup>—of the thread-cutter will form an angle of sixty degrees, as shown at Fig. 1, which is the proper angle for V-threads. Therefore all that is required to set the cutter to accurately cut an inside V-thread is to set the holder 1, which, as before mentioned, is straight, on a line parallel with the spindle or axial line of the lathe. This is done either by placing the beam of a square on the face-plate of the lathe or on a faced portion of the work and setting the cutter-holder true with the blade.

As the cutter-holders will vary in size proportional with the work to be done, it would be a very difficult matter to broach a square hole through the bar for the cutter, even at right angles thereto, without defacing or bending it, besides adding greatly to the cost of manufacture, and to attempt to broach a square hole at such an acute angle as shown and have such angle accurate would be not only impracticable, but would render the use of such a tool as I have devised entirely prohibitive as an article of manufacture. To overcome these objections, I mill, plane, or otherwise form the slot 4, Figs. 4 and 6, in the end of the holder or bar 1 with the bottom 3 of the slot formed, as before mentioned, at an angle of one hundred and twenty degrees with the axis of said holder. Then the right-angled filling-piece 5, Fig. 8, is inserted in the mouth of said slot and is secured therein by means of the pins or rivets 6, (shown more clearly at Fig. 1,) the thickness of said filling-piece being equal to the width of the slot, so that when it is secured in place and the edges of said piece are dressed off with the end and sides of the holder the hole for the cutter will have the appearance of being formed through the solid stock of the holder and will be equally as strong, besides being far cheaper and better. It will be observed that the perpendicular face 5<sup>a</sup> of this right-angled filling-piece will be on a line with the end of the holder. The base 5<sup>b</sup>, with the rear face 1<sup>b</sup> of the holder and the hypotenuse 5<sup>c</sup>, will form the upper wall



of the square opening for the cutter in the bar, as shown at Fig. 5.

7 is a pin inserted at or near the bottom of the incline 3 of the holder to support the cutter against the cutting strain, the set-screw 8 serving merely to keep the cutter from tipping up or falling out. The end of the set-screw could, however, be pointed and the depression 9, Fig. 7, formed in the upper face of the cutter to receive such pointed end, and thus do away with the pin 7.

From the foregoing description it will be observed that my improved cutter and holder have many advantages, both in economy of construction and adaptability for inside work, not found among tools for like purposes now in use. When once the cutter holder or bar is set on a line with the axis of the lathe, new cutters can be inserted without any change being made either in the cutters or holder, as the cutters can all be made of equal lengths from the cutting-point to the end, so that when resting against the stop-pin 7 the cutting-point will stand in the same relative position with respect to the work as the old cutter did, and the cutting can be resumed without unnecessary delay. As the rear of the cutter does not project beyond the holder, it is evident that female threads can be cut where the hole is but little larger than the diameter of the holder. A slight cutting clearance is given to the edge 2<sup>b</sup> of the cutter without disturbing such edge. Therefore, as before mentioned, the only labor required on the cutter is to grind the end 2<sup>a</sup> at an angle of sixty degrees with the front edge 2<sup>b</sup>. These cutters can be made in quantities, so that when a cutter is dull it will be much cheaper to replace it by a new one rather than attempt to grind the old. The filling-piece feature is equally as applicable to the cutters setting at right angles to the holder as it is for cutters setting at an acute angle, as shown. It can also be applied in the center of a bar.

While I show a round cutter-bar, I do not wish to be confined strictly to this feature, but hold myself at liberty to employ a bar of any shape in cross-section, or, if desired, tubing of sufficient strength can be used.

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

1. The combination, in an inside-threading tool adapted for cutting V-threads, comprising a holder having a straight body, and a groove in the end, the bottom of said groove having an inclination of one hundred and twenty degrees with the axis of the holder, a right-angle filling-piece secured in the end of said bar so as to form a cutter-slot diagonally through the holder, a cutter having the cutting end 2<sup>a</sup> beveled at an angle of sixty degrees with the cutting edge 2<sup>b</sup> so as to cut a V-shaped thread having an angle of sixty degrees, for the purpose set forth.

2. A cutter-holder comprising a straight bar having a slotted end, a filling-piece secured in the mouth of said slot so that the space between the bottom of said slot and the bottom of said filling-piece will form the cutter-slot, for the purpose set forth.

3. The combination, with a holder having straight body and a slot in its end formed at an angle with its axis, and a filling-piece secured in the end of said holder so as to form a cutter-slot diagonally through said holder, of the cutter having the cutting end 2<sup>a</sup> beveled at an angle of sixty degrees with the cutting edge 2<sup>b</sup> so as to cut a V-shaped thread having an angle of sixty degrees, for the purpose set forth.

Signed at Port Chester, in the county of Westchester and State of New York, this 8th day of January, A. D. 1904.

ROBERT McNEIL.

Witnesses:

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GEORGE M. RUDD.