A. D. PEJAUO & H. J. McGIVERN.

THREAD CUTTING TOOL.

APPLICATION FILED FEB. 21, 1914.

1,195,717.

Patented Aug. 22, 1916.

2 SHEETS—SHEET 1.

Fig. 1

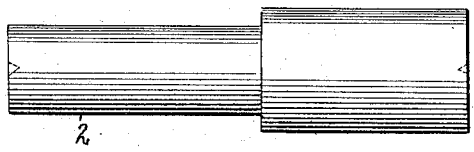


Fig. 2

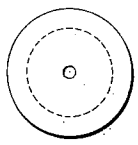


Fig. 3

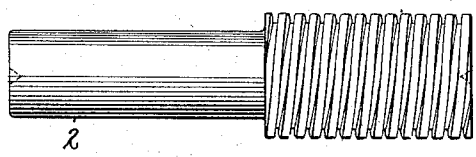


Fig. 4

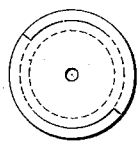


Fig. 5

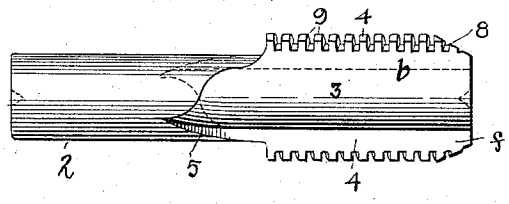


Fig. 6

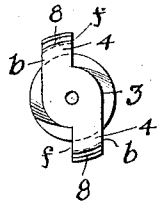


Fig. 7

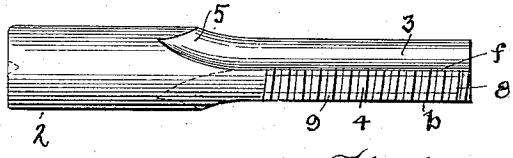
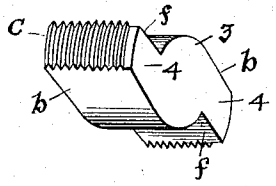


Fig. 8



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Fig. 9

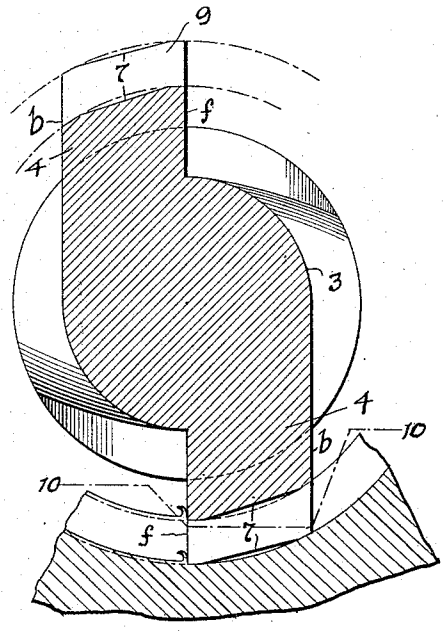
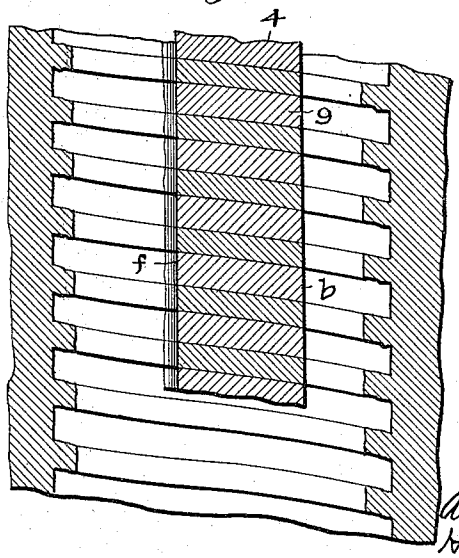


Fig. 10



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UNITED STATES PATENT OFFICE.

ALBERT D. PEJAUO AND HUGH J. McGIVERN, OF CLEVELAND, OHIO.

THREAD-CUTTING TOOL.

1,195,717. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed February 21, 1914. Serial No. 820,154.

To all whom it may concern:

Be it known that we, ALBERT D. PEJAUO and HUGH J. McGIVERN, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Thread-Cutting Tools, of which the following is a specification.

Our invention relates to improvements in thread cutting tools, and the invention comprises the novel construction of tool herein shown and described and more particularly pointed out in the claims.

Our object is to provide a threading tap or chaser which will not clog; which will cut its full diameter and not more; which will permit enlargement thereof when the cutting edges are worn down; which will cut absolutely free and true to its form; and which will have permanent radial cutting edges.

In the accompanying drawings Figures 1 and 2 are side and end views respectively, of a cylindrical piece of stock from which our improved tool is made. Figs. 3 and 4 are side and end views respectively of the tool in the form which it assumes after a multiple screw thread has been formed therein. Figs. 5 and 6 are side and end views respectively of a finished tap, and Fig. 7 is a view projected from Fig. 5. Fig. 8 is a perspective view of a chaser which is obtained by cutting off a given length of a tool constructed according to our invention. Fig. 9 is a sectional view of a tap on an enlarged scale showing the formation of the teeth and their cutting relation to a piece of work. Fig. 10 is a sectional view on line 10—10, Fig. 9, showing that the cutting teeth of the tap correspond absolutely throughout their length to the natural generation of the thread which is being produced in the work.

Referring more particularly to the tap form of the tool for producing internal threads, said tool comprises a shank 2 and a reduced rounded body portion 3 having two oppositely-extending land portions 4 which are tangentially-related to the axis of the tool.

The width of the lands may be one-fourth of their diameter, more or less, and their front sides or faces *f* are flat and formed on straight radial lines of the tool and extend from the circumference thereof to the end of the reduced rounded body portion 3 which merges with the flat straight back *b* of the opposite land portion. The front and back faces *f* and *b* are parallel or substantially parallel and the backs *b* are particularly distinguished in that the base or inner ends thereof are curved or rounded and concentric with the axis and terminate at the base or inner ends of the straight radial faces *f*.

In producing the tool the shank and body are turned to the desired size, see Figs. 1 and 2, and then a thread of any desired kind is cut the full length of the body, see Figs. 3 and 4. A double square thread is shown, and this form of thread is desirable in a tap for cutting double threads in brass articles, such as faucets and cocks. After a natural thread has been cut the body is milled to produce the flat and offset land portions 4, and the shank is also partly cut away at 5 as shown. The teeth 6 as thus produced on the lands are necessarily segments of the natural thread, and in our tool this natural generation of the thread is retained. The first few teeth 8 at the end of the body are chamfered and provide the cutting teeth and the remaining teeth 9 steady and center the tool and burnish the work.

The top or circumferential portions of the teeth and the bottom of the spaces between the teeth are flattened or reduced at 7 centrally of the lands to provide clearance and to permit the tap to run free, see Fig. 9. The offset lands with their flat and inwardly curved backs, the radial cutting edges, and the clearance provided centrally of the teeth on the lands prevent the chips from wedging between the land and the work when the tap is reversed. We also find that the chips are short and that the tap will not clog while at work. The tap also wears better and lasts longer than other taps known to us, and less sharpening is required. To explain, in our tap the land is not reduced in width and weakened by sharpening, nor is the original cutting face ground away to sharpen the teeth as is customary. In other words, the radial front face *f* remains unaltered, and sharpening of the tool is obtained by merely grinding down the end and chamfering the end teeth.

When the land wears at the circumference the original cutting diameter of the tap is easily restored by heating the tap and hammering the central rounded body portion between the lands to slightly spread the

same. The same advantages accrue in a chaser, and Fig. 8 illustrates a tool C of this kind having V threads, and which tool provides a reversible chaser, or one having a double set of chasing teeth. A section or short length of a tap provides a chaser, and if the tap from which the chaser is cut off has a right-hand thread the chaser may be used in cutting left-hand threads, and vice-versa. The cost of producing our tool and the cost of making threads by the tool is materially less than the known tools used for the same purpose. Our tool also produces a finished and burnished thread without resorting to additional burnishing by emery as practised heretofore. In backing off the tool no bind or seizing occurs, in fact the tool runs free, and the tool may be backed off by hand alone in demonstrating a free reverse action of the tool and the absence of wedging and freezing results.

What we claim is:

1. A cutting tool comprising a reduced body having two lands at opposite sides of the axis thereof and provided with front cutting teeth extending in opposite directions on the same radial line, and said body having circumferential portions beginning at the base of each radial face of one land and merging with the back face of the opposite land.

2. A thread cutting tool comprising a reduced elongated body having straight land portions extending outward at opposite sides at one side of the axis thereof and having front cutting faces radially of the tool, and said land portions having a series of uniformly spaced teeth at the circumference thereof comprising sections of a naturally generated thread, and the circumferential portion of said teeth and the bottom of the spaces therebetween having a portion of the stock removed to provide clearance in cutting operations.

In testimony whereof we affix our signatures in presence of two witnesses.

ALBERT D. PEJAUO.
HUGH J. McGIVERN.

Witnesses:
R. B. Moser,
F. C. Harrold.

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