W. TUCKER.

Improvement in Screw-Taps.

No. 129,376. Patented July 16, 1872.

Fig. 1.

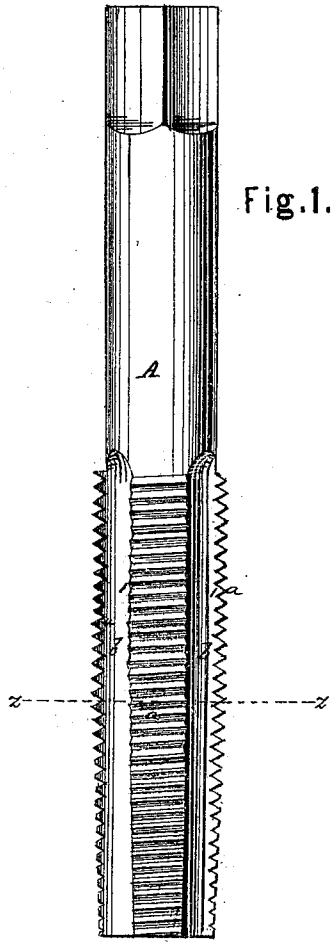
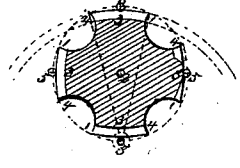


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM TUCKER, OF FISKEDALE, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND EMORY L. BATES, OF SAME PLACE.

IMPROVEMENT IN SCREW-TAPS.

Specification forming part of Letters Patent No. 129,376, dated July 16, 1872.

Specification of an Improved Screw-Tap, invented by WILLIAM TUCKER, of Fiskedale, in the county of Worcester and State of Massachusetts.

The invention relates to that class of screw-taps in which the sections or cuts are separated and formed by longitudinal grooves, which also serve to discharge the cuttings or chips.

These have heretofore been manufactured of two general forms—the first circular in cross-section; the second having sections or cuts depressed from front to rear to give saliency to the cutting-edges. The second form is free from the objections to the first, but is itself objectionable in two very important respects: First, the open space at the heel of each section permits and tends to cause the chips to enter and wedge between the tap and the cut thread, injuring the latter and endangering the breakage of the tap. Second, the tap is liable to deflection, owing to its few points of contact.

This invention consists in shortening the radiuses of the tap or depressing the threads between the cutting-edge and the back or heel of each section or cut; the object being to retain the prominency of the threads at the heels so as to scrape the chips into the grooves in turning the tap backward, with the advantage also of multiplied points of contact for insuring a straight cut and to obtain the desired saliency of the cutting-edges. The improved tap is adapted to be made by machinery, and with thread of full depth at the depressed points.

In the accompanying drawing, Figure 1 is an elevation of a tap illustrating the invention. Fig. 2 is a transverse section of the same on the line *z z*, Fig. 1, and also a diagram illustrating the improved construction.

In carrying out my invention, I make a solid steel tap, A, with circumferential screw-thread *a*, increasing in height from the entering point, and interrupted by longitudinal grooves *b* to form cutting-faces or points 1 and to discharge the chips, as heretofore practiced. To give proper saliency to the cutting-edges or points 1, and at the same time insure the free withdrawal of the tap and proper and sufficient points of contact, I form the thread or threads *a* at different distances from the axis 2, or with radiuses of different lengths in a given transverse plane, as illustrated in Fig. 2. The radiuses of a circuit of the thread are greatest at the cutting-edges 1. From the cutting-edge of each section the radiuses shorten to a point, 3, at about the middle of the section, and then lengthen to the back edge or heel 4, where the radius is equal to that of the cutting-edge less the decrease incident to the pitch of the thread in the slightly-conical tap. In other words, the radiuses of the tap are shortened or the thread depressed between the cutting-edge and heel of each section or cut without reducing the prominency of either of said points, and without varying the depth of the thread. The prominent heels 4 touch within the bore in withdrawing the tap and scrape any chips which may have adhered into the grooves *b*, and also form additional points or lines of contact, insuring a straight cut. The centrally-depressed faces of the respective sections may be cut in an ordinary screw-cutting lathe by using ecentric "centers" 5, as illustrated by dotted lines in Fig. 2; or they may be otherwise produced.

I claim as new herein—

A screw-tap with the thread depressed or radiuses shortened between the cutting-edge 1 and heel 4 of each section or cut, the radiuses at the heels being equal to those at the cutting-edges less the decrease incident to the pitch of the thread, substantially as described.

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Witnesses:
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