May 1, 1956 S. DONIGER 2,743,524

TOOLS

Filed Aug. 8, 1955

Fig. 1.

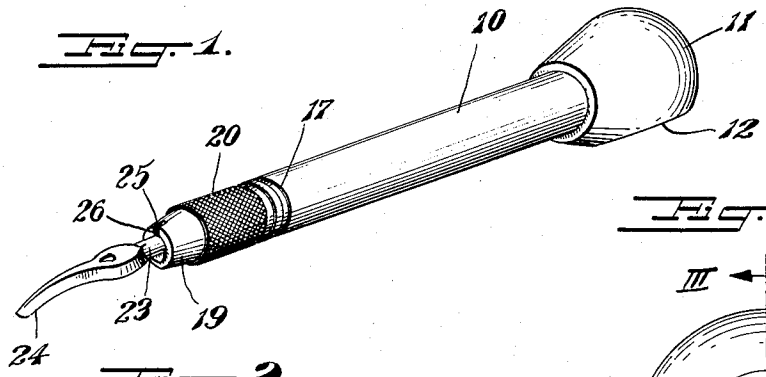


Fig. 2.

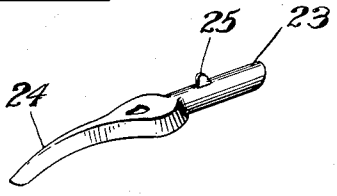


Fig. 4.

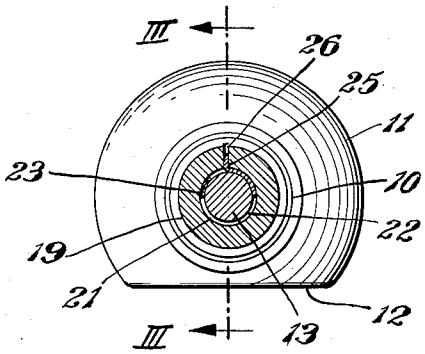


Fig. 3.

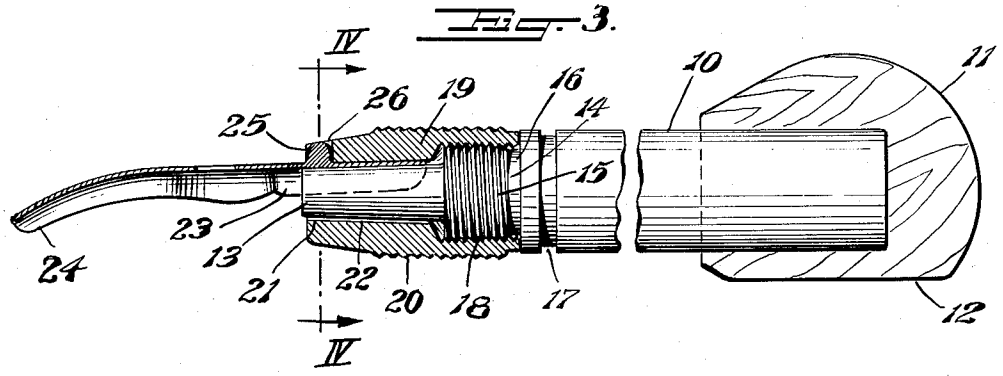


Fig. 5.

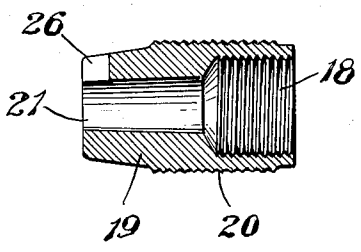
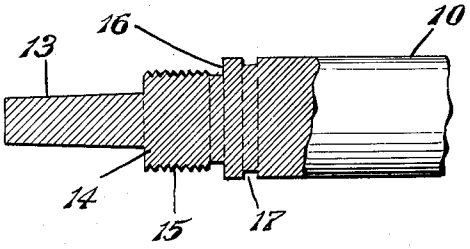


Fig. 6.



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TOOLS

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Application August 8, 1955, Serial No. 526,995

5 Claims. (Cl. 30—342)

This invention relates to cutting tools, and is exemplified herein as a gouge such as used for carving designs in linoleum or other materials.

In its broad aspect, the invention contemplates provision of an improved tool as above characterized and incorporating a removable blade.

More specifically, the invention proposes rigid, non-rotatable retention of a removable blade in a rigid handle.

A feature of the invention is to provide an interengagement between the blade and handle which will both prevent longitudinal slippage and rotational displacement of the blade with respect to the handle in use.

In conjunction with the foregoing object, the invention also provides for readily and conveniently releasing the blade and for extracting the same from the handle without danger of the user cutting himself in performing that operation.

Other objects, advantages and novelty of construction will appear to persons skilled in the art to which the invention appertains, as the description proceeds, both by direct recitation thereof and by implication from the context.

Referring to the accompanying drawing in which like numerals of reference indicate similar parts throughout the several views;

Figure 1 is a perspective view of a cutting tool constructed in accordance with my invention;

Figure 2 is a perspective view of the blade alone;

Figure 3 is a longitudinal sectional view of the said cutting tool, as on line III—III of Fig. 4;

Figure 4 is a cross-sectional view taken on line IV—IV of Fig. 3;

Figure 5 is a longitudinal sectional view of the holding collar alone; and

Figure 6 is a view partly in longitudinal section showing the end portion of the handle alone which cooperates to receive the blade and collar.

In the specific embodiment of the invention illustrated in said drawing, the reference numeral **10** designates the tool handle in general which provides a cylindrical body portion, preferably aluminum, and which is of convenient diameter and length for the user to hold comfortably in one hand. The rear end of the handle is equipped with a wooden or other knob **11** held frictionally or otherwise on said body portion and having a rounded exterior for comfortable engagement in the palm of the user's hand. One side of this knob is flattened, as at **12**, so the tool will not roll when laid on a bench or other surface.

The forward end of said body portion terminates with a stepped construction, the most forward part thereof comprising a slightly tapered or frusto-conical mandrel **13** the smallest diameter of which is at the most forward end of the handle. To the rear of said mandrel, there is a neck **14** coaxial with but of greater diameter than said mandrel and provided with exterior screw-threads **15**. To the rear of said threaded neck **14**, the diameter increases abruptly, forming an annular shoulder **16** which

faces toward the forward end of the handle. Somewhat to the rear of said shoulder, the peripheral surface of the handle is shown having a circular groove **17** therein which affords a good finger-grip when the tool is in use.

Removably applied at the forward end of the handle body around the mandrel **13** thereof and threaded at **18** to screw onto threaded neck **14** is an elongated collar **19** knurled at **20** on its exterior so as to be readily screwed onto or unscrewed from said body by hand without the need of a wrench or other tool for that purpose. The forward portion of said collar around the mandrel has a tapered hollow or bore therethrough, designated by numeral **21**. The taper of said hollow correpsonds in angularity to the taper of the mandrel, but at any given cross-sectional plane has greater diameter of bore than the diameter thereat of the mandrel. This construction therefore provides a frusto-conical gap **22** between the mandrel and the collar for receiving the shank **23** of a blade **24** therein. The radial dimension of the gap **22** is such that it substantially accommodates the metal thickness of the blade therein under condition of the collar being screwed home against shoulder **16**. Furthermore, the taper is such that as the small end of the mandrel is inserted at the larger end of the tapered hollow, the radial dimension in the gap (considering the mandrel and collar as coaxial) will be substantially double the thickness of the blade metal. As a matter of fact, however, the initial position of introduction of the mandrel into the hollow will be such that one side of the mandrel will rest against one side of the hollow, and thus temporarily provide a gap opening opposite those engaging sides which will be approximately four times the radial dimension of the blade shank. This has an advantage which will presently appear.

The tool shank **23** is sheet metal curled on a longitudinal axis, so as to be substantially semi-cylindrical, the inside radius of said shank being substantially equal to the radius of the small end of the mandrel, and the outside radius of said shank being substantially equal to the radius of the small end of the hollow or bore **21** of the collar. As a consequence, the inside and outside radii of the blade shank are different from the respective radii of the larger end of the mandrel and larger end of the bore of the collar. The metal of said shank is, however, resilient, and when the collar is screwed home said shank is flexed from its normal semi-cylindrical shape to a tapered condition and thereby obtains a very secure frictional gripping within the frusto-conical gap. The resilient deformation of the blade shank also operates to exert a binding reaction on said collar, and restrains said collar from unscrewing inadvertently.

A positive lock is provided between the blade and the collar, to both limit inward position to which the blade may be pushed and to prevent the blade from rotating while the tool is in use. As here shown, a lip or lug **25** is stamped from the metal of the blade shank at the crest of its semi-cylindrical curvature. A slot **26** of appropriate dimensions to receive said lug is cut radially in the forward end of collar **19**, and in assembling the blade with the handle, the blade shank is inserted into the collar and the lug caused to enter said slot. The collar is pushed inward to engage the threads **18** thereof with the threads **15** of the handle body. Then, as the collar is rotated, it is pulled by the interengaging threads toward and into end abutment with shoulder **16**, and while this transpires, the blade shank is spread and obtains the aforementioned frictional gripping and binding reaction which maintains the tool assembled for use and the blade locked against inadvertent rotation.

I claim:

1. A tool comprising a handle body having a mandrel

at its forward end and screw threads to the rear of said mandrel, a collar having threads for screwing onto the threads of said body and having a hollow for receiving said mandrel, said hollow being larger than said mandrel and receiving the mandrel loosely therein, and a blade having a shank engageable between said collar and mandrel in said hollow.

2. A tool comprising a handle body having a mandrel at its forward end and screw threads to the rear of said mandrel, a collar having threads for screwing onto the threads of said body and having a hollow for receiving said mandrel, said hollow being larger than said mandrel and receiving the mandrel loosely therein, said hollow and mandrel being correspondingly frusto-conical with the smaller end forwardly whereby a blade shank may be retained in said hollow by virtue of contraction toward the forward end of the hollow in which retained.

3. A tool comprising a handle body having a mandrel at its forward end and screw threads to the rear of said mandrel, a collar having threads for screwing onto the threads of said body and having a hollow for receiving said mandrel, said hollow being larger than said mandrel and both being correspondingly frusto-conical and when assembled providing a frusto-conical gap therebetween, and a blade having a normally semi-cylindrical shank, said shank being resiliently deformable to conform to the frusto-conical shape of said gap.

4. A tool comprising a handle body having a mandrel at its forward end and screw threads to the rear of said mandrel, a collar having a slot in the forward end thereof and having threads at its rear for screwing onto the threads of said body and having a hollow for receiving said mandrel, said hollow being larger than said mandrel and receiving the mandrel loosely therein, and a blade having a shank engageable between said collar and mandrel, said shank having a lug engageable in said slot.

5. A tool comprising a handle body having a mandrel at its forward end and screw threads to the rear of said mandrel, a collar having threads for screwing onto the threads of said body and having a hollow for receiving said mandrel, said hollow being larger than said mandrel and receiving the mandrel loosely therein, and a blade having a shank insertable and deformable between said collar and mandrel and having frictional and gripping and binding reaction with said collar and mandrel.

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