

March 12, 1963

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3,080,653

CUTTING TOOL

Filed April 20, 1962

Fig. 1



Fig. 2

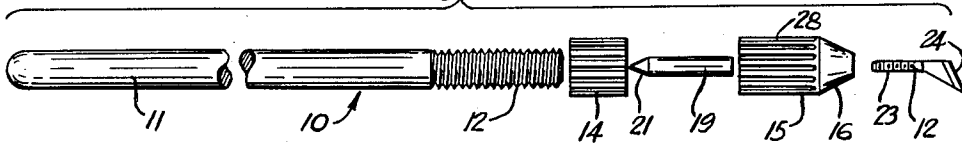


Fig. 4

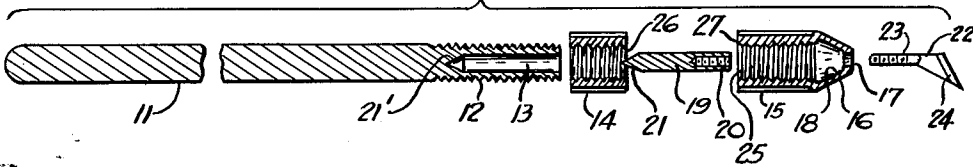
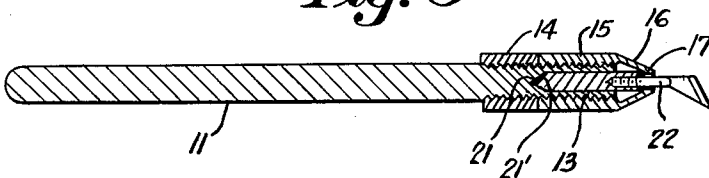


Fig. 3



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CUTTING TOOL

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Filed Apr. 20, 1962, Ser. No. 189,110

3 Claims. (Cl. 30-317)

This invention relates to a cutting tool and refers more particularly to a knife with a swivel blade.

In silk screen printing, the screen stencil is generally prepared by cutting away the layer of gum-like substance which overlays the paper or vinyl backing sheet, the cutting being effected in a design corresponding to the intended printing pattern. Customarily, a knife with a rigid blade is used. Since frequently the intended design takes the form of an intricately shaped pattern, the person doing the cutting is required to shift his grip on the knife in order to follow the outline of the pattern. Thus, the frequent grip changes increase cutting time and in addition necessitate the use of extra care lest the person accidentally cut through the backing sheet in which case the stencil may be rendered useless.

It is, therefore, the primary object of the present invention to provide a swivel blade knife for cutting silk screen stencils.

Another object is to provide a knife which can be used for cutting intricate designs without requiring that the user shift the position of his grip on the knife for following the course of the design.

A further object is to provide a knife which in use contributes to more efficient silk screen film cutting operations.

Other objects of the present invention will become apparent in the course of the following specification.

In achieving the aforementioned objectives of the present invention it was found advantageous to provide a knife having an elongated handle, one end of which has an external threaded portion and an axial bore hole. An internally threaded lock nut and an internally threaded adjustment nut are mounted in alignment on the threaded end of the handle. A cylindrically shaped blade holder is loosely supported in the bore hole of the handle and has a portion which extends beyond the end of the handle. The extended portion of the blade holder has an internally threaded bore hole which receives the threaded shank of a cutting blade. The blade holder and connected blade are held in place on the handle by means of the adjustment nut which has a conical tip enclosing the blade holder and blade shank, and which contains an internal shoulder which keeps the blade holder from moving axially out of the bore in the handle. By loosening the adjustment nut slightly on the thread portion of the handle, the blade holder and hence the blade will be free to rotate within the handle bore. The locking nut may then be moved up tight against the adjustment nut and the blade will remain rotatable. If it is desired to lock the blade on the handle, the adjustment nut is tightened to cause the internal shoulder therein to bind the blade holder. This will keep the blade from rotating in use.

The invention will appear more clearly from the following detailed description when taken in conjunction with the accompanying drawing showing, by way of example, a preferred embodiment of the inventive concept.

In the drawing:

FIGURE 1 is a plan view of a knife constructed in accordance with the principles of the present invention.

FIGURE 2 is an exploded view of the knife shown in FIGURE 1 showing the component parts of the knife.

FIGURE 3 is a longitudinal sectional view of FIGURE 1; and

FIGURE 4 is a longitudinal sectional view of FIGURE 2.

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Referring now in greater detail to the drawing wherein like reference numerals are used to indicate like parts, the knife 10 has an elongated handle 11 which is threaded 12 at one end and contains an axial bore hole 13. An internally threaded lock nut 14 and an internally threaded adjustment nut 15 are removably mounted in alignment on the threaded portion 12 of handle 11. Both the lock nut 14 and adjustment nut 15 are cylindrical in shape. Adjustment nut 15, however, has a conically shaped end 16 which terminates in a central bore opening 17. The conically shaped end 16 of the adjustment nut 15 has an internal shoulder 18, the function of which will be described later on in the specification.

The knife 10 also includes a cylindrically shaped blade holder 19 which has an internally threaded bore hole 20 at one end and is pointed at the other end 21. The blade holder 19 is used to hold the blade 22 which has a threaded shank 23 which is insertable in blade holder bore hole 20. The blade 22 also includes a cutting edge 24.

FIGURES 1 and 3 show the knife 10 in an assembled condition. FIGURES 2 and 4 show the knife in its broken-down condition. Let us assume that the knife is in the latter condition and one desires to assemble and use it. The first step requires that the lock nut 14 be screwed onto the threaded end 12 of handle 11 and moved axially therein to the end of the threaded section. Next the blade holder 19 is positioned inside the adjustment nut 15 by passing it through the bore opening 25 in the adjustment nut. The blade holder is now located such that the threaded bore hole 20 therein aligns with the bore opening 17 in adjustment nut 15. The blade 22 is now inserted through opening 17 so that the thread shank 23 thereof engages and can be screwed into the blade holder 19. In this position the blade holder 19 is located with its bored end in contact with the internal shoulder 18 of the adjustment nut. Next, the adjustment nut along with the blade holder and blade is screwed on the threaded end 12 of handle 11. As the threads on the adjustment nut engage the threads on handle 11, the blade holder will extend partly into bore hole 13 in handle 11. Continual rotation of the adjustment nut will cause the blade holder to move axially deeper into bore hole 13 of the handle, since the internal shoulder 18 of adjustment cap 15 exerts a force on the bore end 20 of the blade holder. When the adjustment nut has been screwed up tight on the handle, the pointed end 21 of the blade holder will be in contact with the similarly shaped end 21' of bore hole 13. Likewise, the bore end 20 of holder 19 is in engagement with shoulder 18. A strong frictional bond at each end thus keeps the blade holder 19, and hence the blade 22 from rotating within the bore hole 13 of handle 11. In this condition, the knife 10 is suited for cutting along substantially straight courses. On the other hand, if it is desired to make the knife suitable for cutting curved courses in intricate patterns without shifting the grip on the knife handle, one need only back off a fraction of a turn on adjustment nut 15 to obviate the friction forces acting on blade holder faces 21 and 20. The blade holder 19 and the connected blade 22 will thus be free to rotate within bore hole 13 and the top 16 of adjustment nut 15. Next the lock nut 14 is backed down until its face 26 contacts the immediate face 27 of the adjustment nut. This will render both nuts incapable of further axial movement on the threads 13 of handle 11 until another further adjustment is made, while at the same time the blade holder and blade are still freely rotatable within the bore hole 13.

As seen in FIGURES 1 and 2, the adjustment nut 15 and lock nut 14 may be provided with knurled outer surfaces 28 to facilitate their threading and unthreading on the handle 11.

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It is believed that it is apparent from the foregoing specification that the knife of the present invention provides several advantages over prior art constructions. For one thing, the knife may be used with a freely rotatable blade for cutting intricate shapes and patterns with facility. On the other hand, the knife can be quickly adjusted to have a rigid blade. Furthermore, a variety of cutting edges can be provided by merely unscrewing the blade 22 from the blade holder 19 and inserting another different blade. Another advantage is that the knife has an indefinite life span since the only part that need be replaced is the blade.

While there is above described but one embodiment of the knife, it is possible to produce still other embodiments without departing from the inventive concept herein disclosed.

What is claimed is:

1. A knife comprising an elongated handle having an externally threaded portion and a bore hole extending axially in said threaded portion, a blade holder supported rotatably in said bore hole and extending partly beyond one end of said handle, an adjustment nut mounted rotatably on the threaded portion of said handle and having an inwardly tapered portion extending beyond the end of said handle enclosing the partly extended portion of said blade holder, said inwardly tapered portion terminating in a bore opening aligned in front of said blade holder and having an inner surface adapted to engage the extending portion of said blade holder for maintaining it in the bore hole of said handle, a locking nut mounted rotatably on the threaded portion of said handle adjacent said adjustment nut, and a knife blade carried by said blade holder and extending through the bore opening in the inwardly tapered portion of said adjustment nut.

2. A knife comprising an elongated handle having an

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externally threaded portion and a bore hole extending axially in said threaded portion, a blade holder supported rotatably in said bore hole and extending partly beyond one end of said handle, the extended portion of said blade holder having a threaded bore hole extending in alignment with axis of said handle bore hole, a cylindrically-shaped adjustment nut mounted rotatably on said handle, said adjustment nut having an internally threaded surface engaging the threaded portion of said handle and having an inwardly tapered portion extending beyond the end of said handle enclosing the partly extended portion of said blade holder, the inwardly tapered portion of said adjustment nut terminating in a bore opening aligned in front of said blade holder and being of lesser dimension than said blade holder, the inwardly tapered portion of said adjustment nut further having an inner surface adapted to engage the extending portion of said blade holder for restricting the axial movement of said blade holder in the bore hole of said handle, a cylindrically shaped locking nut mounted rotatably on said handle adjacent said adjustment nut, said locking nut having an internally threaded surface engaging the threaded portion of said handle, and a knife blade carried by said blade holder and extending through the bore opening in the inwardly tapered portion of said adjustment nut.

3. A knife in accordance with claim 2 wherein said knife blade has a threaded shank adapted to engage the threaded bore hole in said blade holder.

References Cited in the file of this patent

UNITED STATES PATENTS

2,569,286	Bunker	Sept. 25, 1951
2,659,143	Baker	Nov. 17, 1953
2,803,877	Belanger	Aug. 27, 1957