

[54] **BLADED CUTTING TOOL WITH  
REMOVABLE AND REPLACEABLE BLADE**

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[51] Int. Cl.<sup>2</sup>..... **B26B 1/00**

[58] Field of Search ..... 30/337, 338, 339, 329,  
30/2, 342, 340, 162, 164

[56]

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[57]

**ABSTRACT**

A bladed cutting tool consisting of a handle slotted to receive and releasably retain and hold a cutting blade, by and in response to reciprocation within the handle of blade holding and releasing means.

**5 Claims, 12 Drawing Figures**

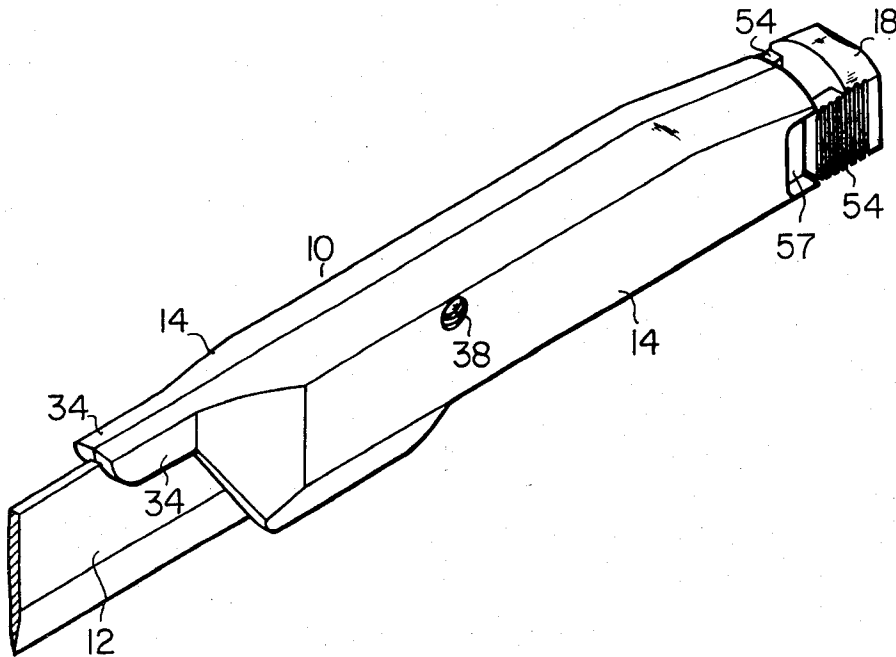


FIG. 1

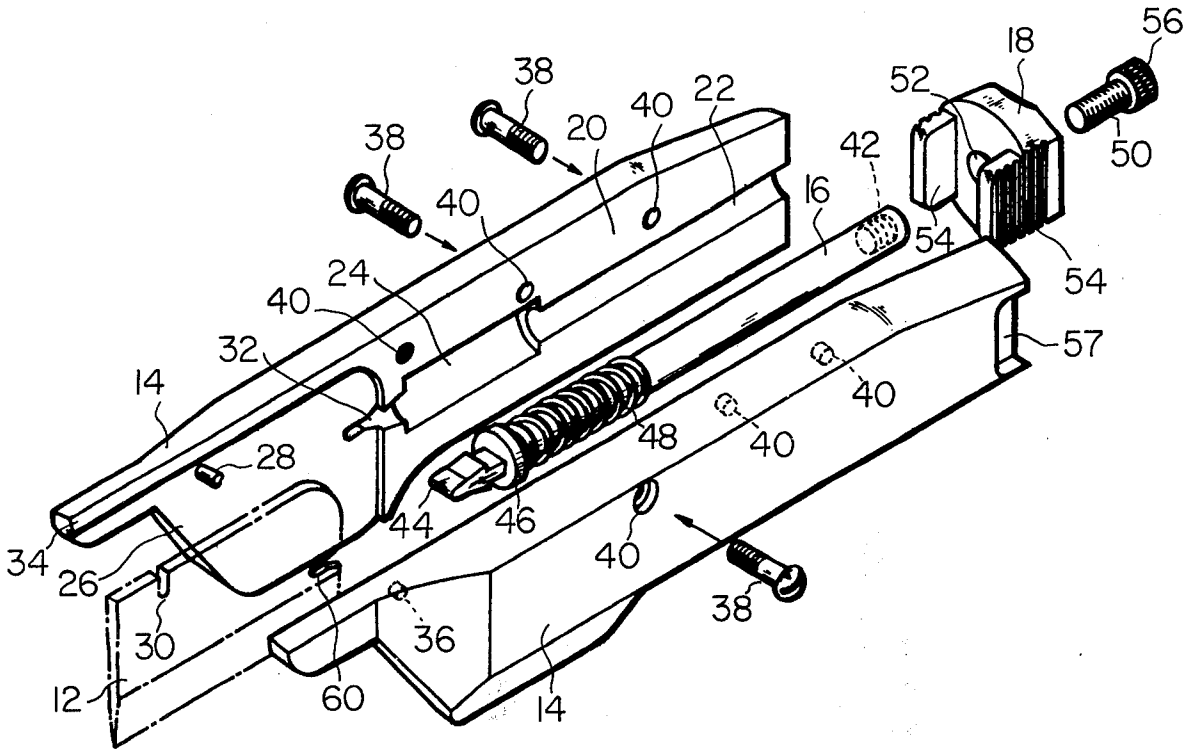


Fig. 2

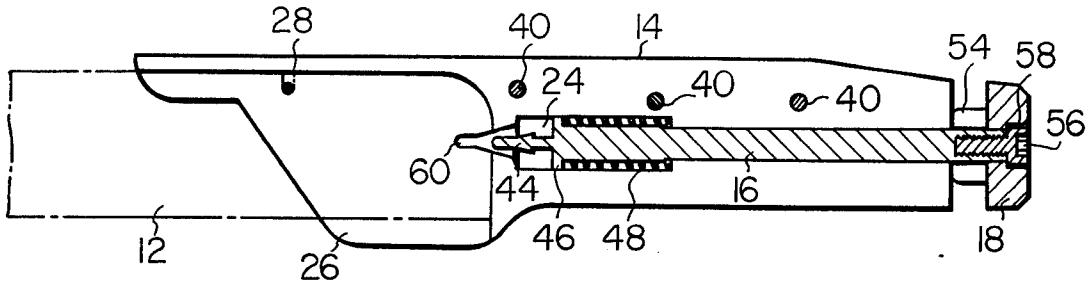


Fig. 3

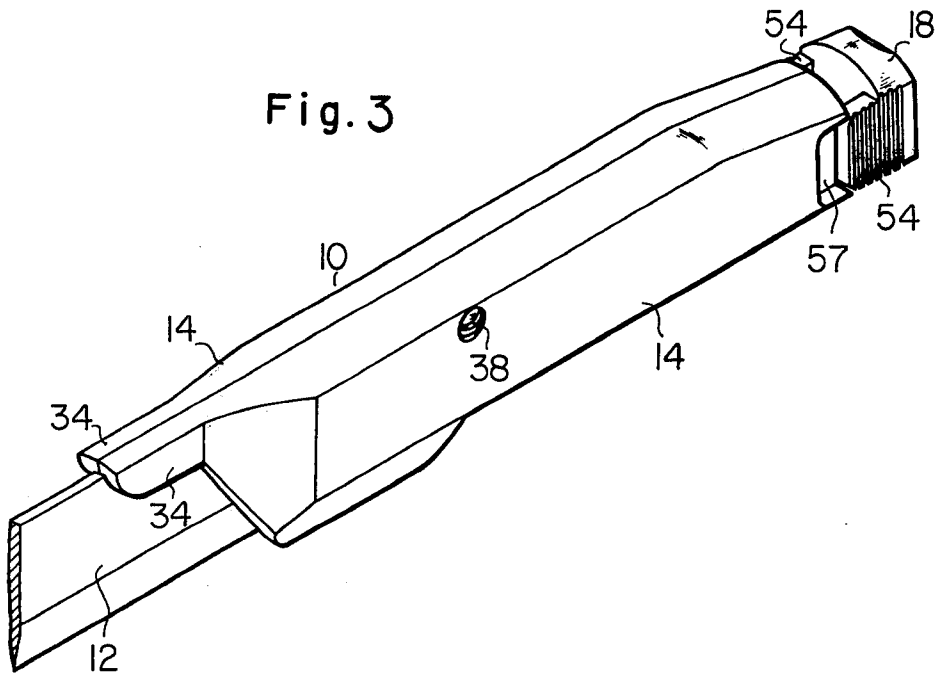


FIG. 4

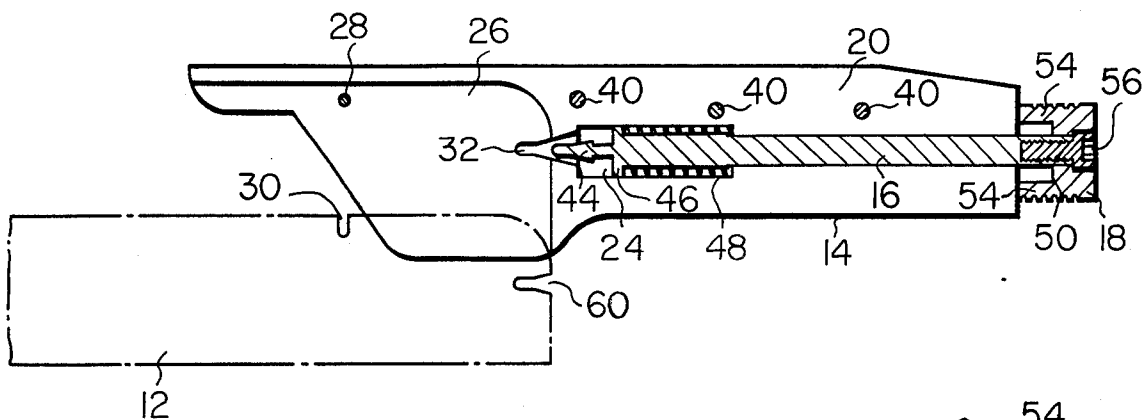


FIG. 5

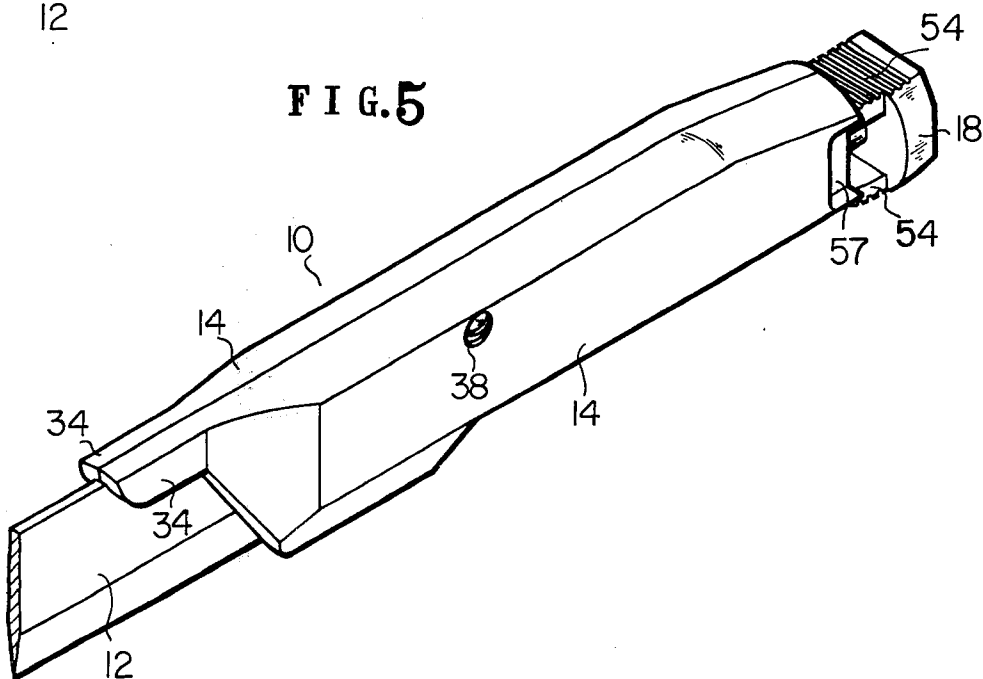


FIG. 6

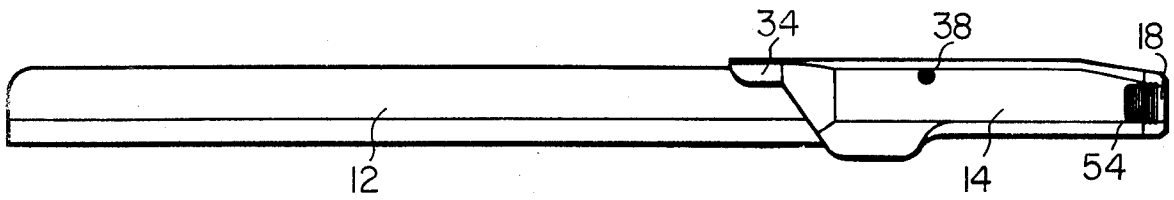


FIG. 7

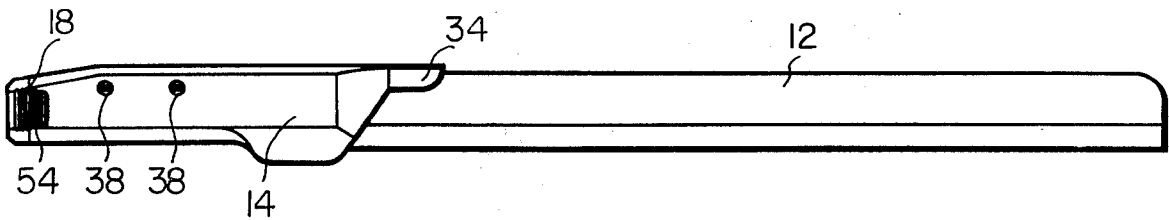


FIG. 8

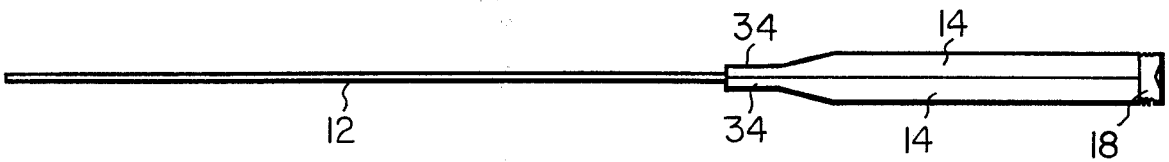


FIG. 9



FIG. 10

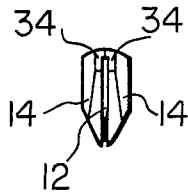


FIG. 11

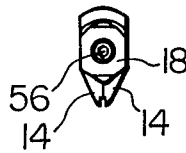
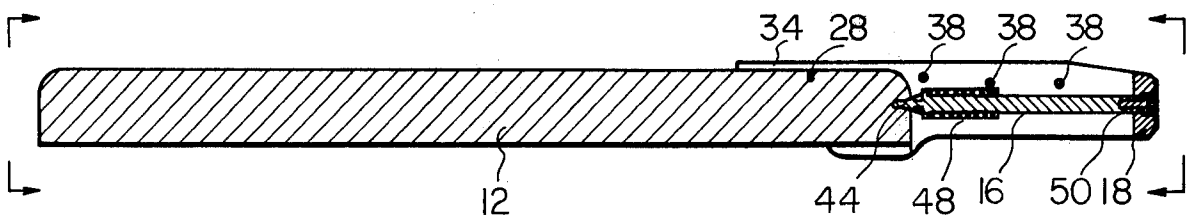


FIG. 12



## BLADED CUTTING TOOL WITH REMOVABLE AND REPLACEABLE BLADE

### BACKGROUND OF THE INVENTION

This invention relates to a cutting instrument consisting essentially of a handle having means to receive and releasably retain and hold the end of a blade.

It is the chief purpose and aim to provide an instrument as aforesaid by which blades of various shapes, sizes and purposes may be substituted in and firmly held by one and the same handle.

A further object is to provide an instrument as aforesaid, wherein change of blades may be instantly and readily made without the use of a tool.

Another object is to provide a tool of the nature stated which is neat, attractive and smooth in appearance and in which the blade release mechanism is concealed within the handle, except for an actuating knob forming a smooth and attractive continuation of the rearward end of the handle.

A further object is to afford a handle which is formed of two similar halves having planar surfaces contacting at an interface, which surfaces are grooved or channeled to conjointly define and form chambers accommodating the blade-release and retaining mechanism.

Other objects and advantages will become apparent to those skilled in the art, after a study of the following detailed description, in connection with the drawing.

### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an exploded perspective view of the blade holder or handle with halves separated to show the blade retaining and releasing mechanism, the rearward portion of a blade being shown in dot-dash lines;

FIG. 2 is a vertical longitudinal section showing one handle portion, the blade holding mechanism being retracted to position releasing a blade the rearward end of which is shown in dot-dash lines;

FIG. 3 is a perspective view showing the fully assembled handle and the rearward end of a blade emplaced therein but with the knob of the blade-holding means retracted to release position.

FIG. 4 is a vertical longitudinal section similar to FIG. 2 but showing how a blade indicated in dot-dash lines, is inserted into the handle;

FIG. 5 is a perspective view like FIG. 3 but showing how the release knob at the end of the handle, may be rotated to retain the release mechanism retracted;

FIG. 6 is a side elevation to reduced scale, showing one side of the handle with a blade secured therein;

FIG. 7 is an elevational view like FIG. 6, of the other side of the handle with a blade secured thereto;

FIG. 8 is a top plan view of a fully assembled handle and blade;

FIG. 9 is a bottom plan view of the assembled instrument;

FIG. 10 is an end view looking from left to right, FIG. 6;

FIG. 11 is an end view looking from right to left, FIG. 6; and

FIG. 12 is a central longitudinal section through the assembled instrument, taken in a plane normal to the plane of FIG. 8 and showing the holding mechanism in operating position.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring in particular to FIG. 3, the blade holder comprises an assembly indicated at 10. From FIG. 1 it is noted that the handle consists of two similar halves 14, separable in a plane generally coincident with the plane of a flat blade 12. The handle portions may be of wood, plastic, metal or other suitable rigid material. The two halves are rigidly secured together by a number of machine screws 38, three being shown in the model selected for illustration. Each screw fits in and extends through its respective hole 40 in one handle portion and threads into a hole in the opposite section, as is clear from inspection of FIG. 1. Each hole 40 is counterbored at its outward end so that all screw heads are essentially flush with the surface of the handle.

The handle halves 14 are formed, each with a semi-cylindrical groove or channel 22 which mate when the handle is assembled, to form a guideway for slidably mounting in the axial or longitudinal direction, a push rod 16, shown as cylindrical. At their forward ends channels 22 are enlarged or counterbored as at 24, FIGS. 1, 2 and 4, to jointly form a chamber in which slidably fits a circular flange 46 and which may be integral with rod 16 at the forward end thereof. A coil spring 48 surrounds rod 16 for a free fit in counterbore 24. The parts are constructed and arranged so that in the assembled handle the spring abuts flange 46 at one end and at its rearward end engages the shoulder formed by and between grooves 22 and counter-bore 24. The spring acts continuously to urge rod 16 forwardly into its blade-locking position.

At their forward ends the blade halves are formed with integral forwardly-extending projections 34 each having a flat recess 26 in its inner face. Each recess has a depth or dimension transversely of the handle, of about one-half the thickness of the blade to be used therewith, so that there is thus formed a cavity or slot into which the end of blade 12 may smoothly fit. As seen from FIG. 1 the slot formed conjointly by recesses 26 is shaped to conform to the end of the blade. A pin 28 is fixed with and protrudes from the recess in one handle half 14 and in the assembled instrument fits a bore 36 in the opposite portion. This assures accurate registration of the halves and as will be subsequently explained the pin also fits and receives a notch 30 in blade 12 when the latter is fully emplaced. The blade is thereby positively held against longitudinal or axial movement in its slot in the handle. It is contemplated in certain models more than one pin like 28 may be provided, with each pin fitting its own slot in the blade.

The halves of the handle are formed at the forward end of counterbore 24, with notches which register and conjointly form or define a passageway 32 opening into the rearward end of recesses 26 forming the blade-receiving slot. The passageway is so shaped as to receive with a smooth sliding fit, a lug or nose 44 integral with or otherwise rigidly affixed to the forward end of rod 16. It is important to note from FIG. 2 that the forward portion of nose 44 has generally flat parallel faces which make this portion of essentially uniform thickness in the vertical direction, which thickness may gradually increase at and along the rearward portion. The transverse dimension of the nose may be uniform and is greater than the corresponding dimension of the blade-receiving slot. Thus when the nose is in its for-

ward or blade-locking position it is fixed against turning about the axis of rod 16, by reason of its smooth fit within passageway 32. Further, as is clear from FIG. 12, when rod 16 is moved by spring 48 into its forward or locking position, nose 44 fits smoothly within a correspondingly-shaped notch 60 in the rearward edge of blade 12 and thus prevents the latter from downward translation and/or pivoting in its slot in the handle.

At its end remote from nose 44, rod 16 is axially drilled and threaded as at 42, so that a release knob 18 may be secured thereto by a screw 56 passing through a hole 52 in the knob and threaded into the rod. The handle halves are recessed at their outward rear surfaces as indicated at 57, FIGS. 1, 3 and 5. The knob has spaced forwardly-extending lugs 54 integral therewith each of which has a smooth fit in a respective one of the recesses 57 when the knob is in its forward or blade-locking position. The angular relation of nose 44 and lugs 54 is such that when the nose is in the position of FIGS. 1, 2, 3 and 12 about the axis of rod 16, the lugs are in registration, each with a respective recess 57, thus enabling spring 48 to move the nose forwardly into full blade-retaining position. But when the knob is grasped, axially translated rearwardly against the urge of the spring, to retract lugs 54 from their recesses, the assembly comprising the knob, rod and nose may be rotated 90° to a second position wherein when the knob is released, the ends of lugs 54 engage the contiguous end of the handle and thus act to retain the nose in blade-releasing or retracted position.

The operation and use of the invention will be generally clear from the foregoing description. Starting with the blade and handle separated, knob 18 is retracted and turned 90° as previously explained. Then the blade with its forward end tilted downwardly somewhat, is slid into its slot in the handle until notch 60 registers with passageway 32. By tilting or moving the blade slightly upwardly its notch 30 fits over and about pin 28. Then knob 18 is slightly retracted, rotated 90° and released so that spring 48 may move the nose forwardly to seat smoothly and firmly in notch 60. At the same time each lug 54 seats in its recess 57. The blade is then firmly but releasably locked to the handle.

The advantages of the invention are numerous. A blade can be easily removed for sharpening, straightening or replacement with a new or used blade. No tools are required for the interchange. Blades of various lengths, shapes and purposes can be readily and quickly substituted. The forward extensions 34 at and along the top of each blade half 14 are very useful, especially for long blades because these conjointly form a continuation of the upper edge of the blade-receiving slot of the handle and permit increased force or leverage on the blade, downwardly in the cutting direction. So long as the rearward end of each blade is properly shaped and notched, it can have any selected length within practicable limits and be designed and shaped for a variety of purposes such as in surgery, woodworking, household use in slicing and cutting and numerous other uses and purposes. The blade may also be made with a toothed edge for sawing. Where a collection of blades is accumulated for use with a single handle, all blades may be sharpened at the same time and a material saving in costs of servicing thus effected.

The handle is simple to assemble. With one handle half held as in FIG. 1, rod 16 is disposed in groove 22 thereof, the rearward end of spring 48 is urged slightly

forwardly until the entire spring is seated in counterbore 24. With the spring thus slightly compressed the other half is moved into registering contact with the first half and screws 38 are inserted and threaded down until the two halves are in unitary contact. Disassembly of the handle for repairs or servicing is equally easy.

Terms such as "vertical", "horizontal", "laterally", etc. as used in the specification and claims, refer to the positions of the parts as shown in the drawing and are not to be interpreted as limiting use of the instrument to any particular position.

As numerous changes in shape, size and relation of component parts will be obvious to those skilled in the art after a study of the foregoing disclosure, the disclosure is to be taken in an illustrative rather than a limiting sense.

I claim:

1. A handle for releasably holding a flat blade and comprising two essentially similar halves secured together at an essentially planar interface and conjointly defining a central longitudinal passageway and a blade-receiving slot forwardly of the passageway, a rod axially slidable in and along said passageway, said rod extending rearwardly to protrude slightly from the end of the handle, a nose fixed with the forward end of said rod and axially movable with the same from a first forward position engageable with a blade fitting said slot, to a second retracted position free of the blade, a knob fixed to said protruding end and operable to move said rod and nose between first and second positions, and lug means carried by said knob to engage said handle and hold said rod in second and retracted position when said rod, nose and knob are retracted and rotated as a unit through a predetermined angle.

2. The handle of claim 1, said passageway being counterbored from its forward end to form an annular shoulder, and a coil spring surrounding said rod and fitting said counterbore to engage at its respective ends with a flange fixed with said rod and with said shoulder to thereby urge said nose, rod and knob into said first and blade-holding position.

3. The handle of claim 2, said lug means when said knob is in first position, engaging in recess means in said handle to releasably lock the knob against rotation.

4. The combination with a handle for releasably holding a flat blade and having a central longitudinal passageway and a blade-receiving slot forwardly of the passageway, a rod axially slidable in said passageway, a nose fixed with the forward end of said rod and axially movable with the same, from a first forward position engageable with a blade fitting said slot, to a second retracted position free of the blade, manually operable means fixed with the rearward end of said rod for moving the same to and retaining it in second position, of a blade fitting said slot, a pin fixed in said handle and extending across said slot transversely thereof, and through a first notch in the upper edge of said blade, there being a second notch in the rearward edge of said blade in which said nose engages only when said nose and rod are in first and forward position, said nose being retracted free of said second notch when in second position.

5. The combination of claim 4, said handle having a forward projection extending over, along and in contact with the contiguous upper edge of the blade, said pin being located forwardly in said extension.

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