

[54] REPLACEABLE BLADE KNIFE

[75] Inventor: Paul A. Braginetz, Staunton, Va.

[73] Assignee: Philip Morris Incorporated, New York, N.Y.

[22] Filed: Apr. 18, 1974

[21] Appl. No.: 461,887

3,593,417 7/1971 West 30/125
3,845,554 11/1974 Joanis et al. 30/125Primary Examiner—Al Lawrence Smith
Assistant Examiner—Robert C. Watson
Attorney, Agent, or Firm—Watson Leavenworth
Kelton & Taggart

[52] U.S. Cl. 30/125; 30/162; 30/164;

30/331

[51] Int. Cl.² B26B 5/00[58] Field of Search 30/2, 125, 151, 155, 156,
30/161, 164, 320, 321, 330, 331; 145/62, 64

[56] References Cited

UNITED STATES PATENTS

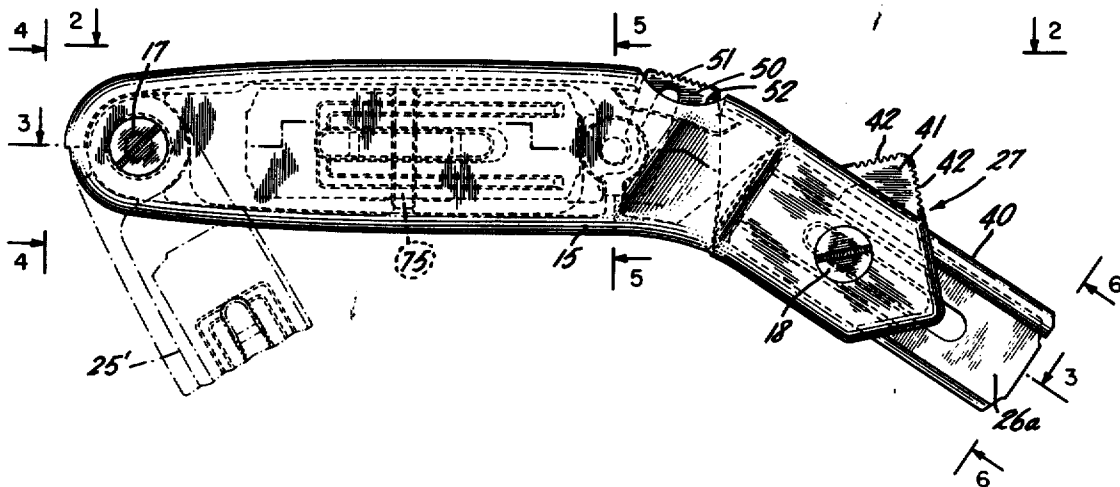
2,094,260	9/1937	Brody	30/162
2,613,438	10/1952	Robinson	30/331
2,632,244	3/1953	Belsky	30/320
2,731,715	1/1956	Reiss	30/2
3,107,426	10/1963	Robinson	30/125
3,323,211	6/1967	Johnson	30/331
3,518,758	7/1970	Bennett	30/321
3,577,637	9/1968	Braginetz	30/162

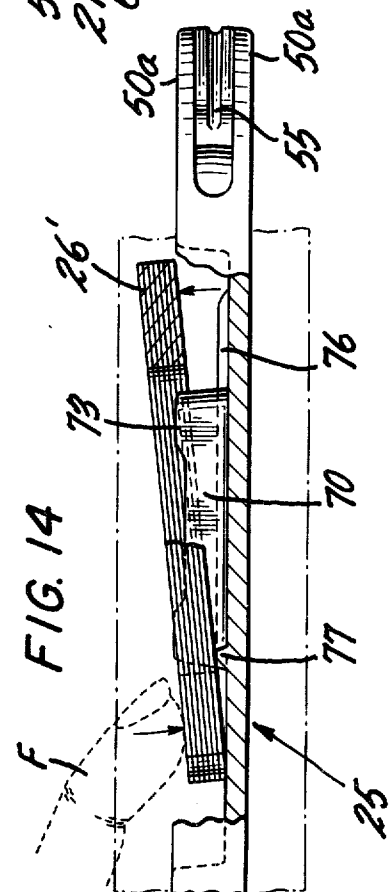
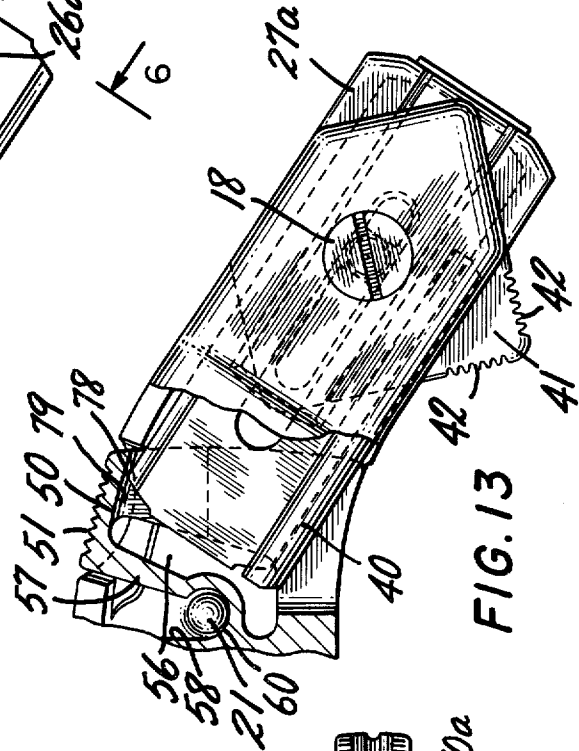
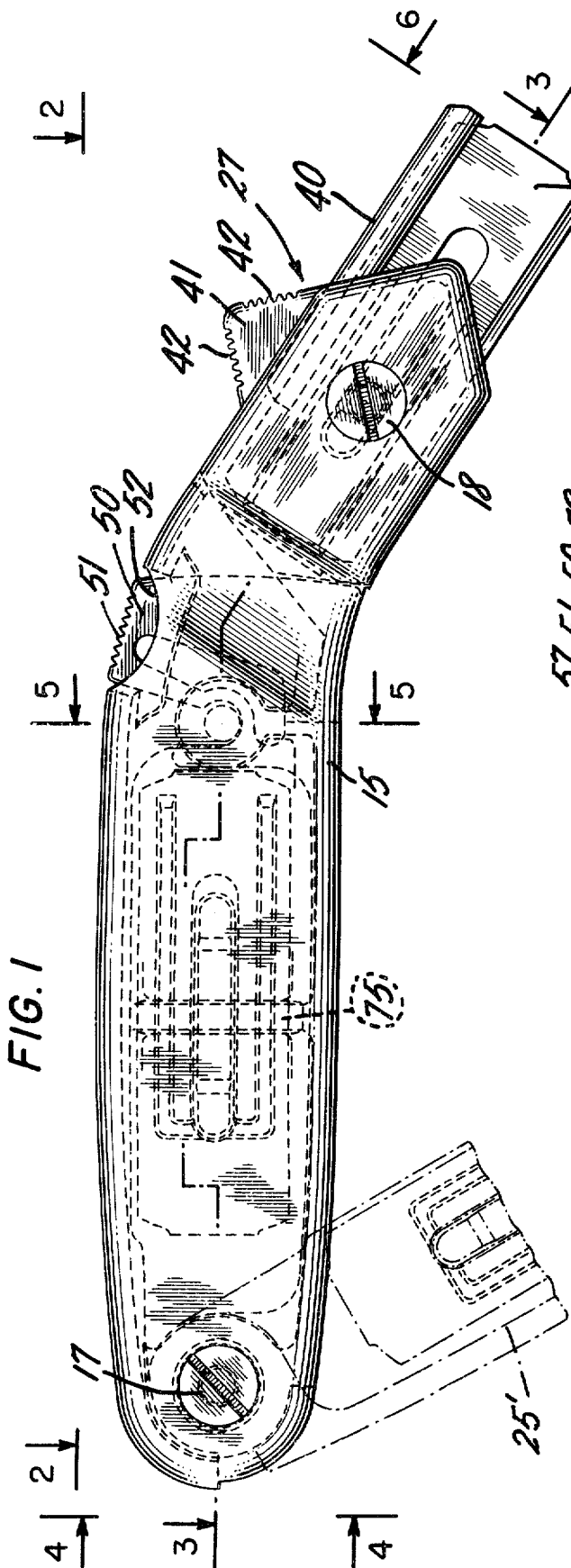
[57]

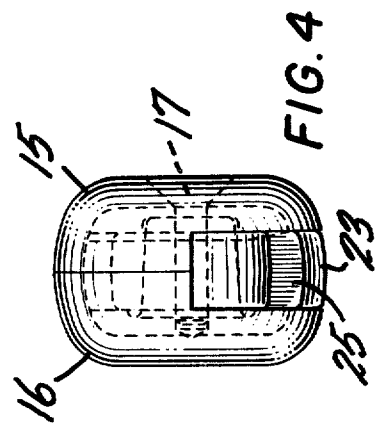
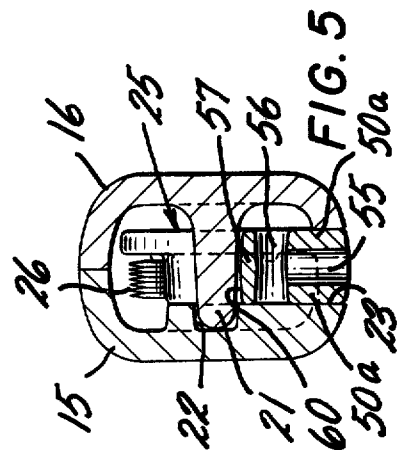
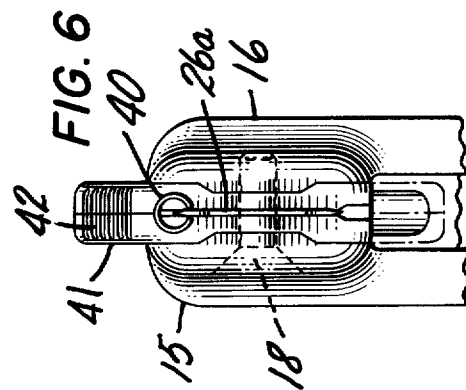
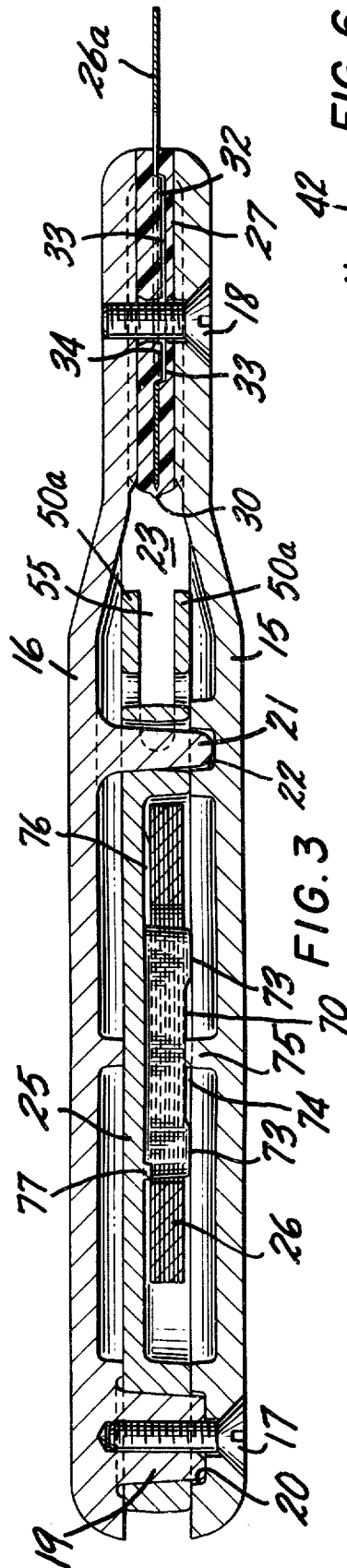
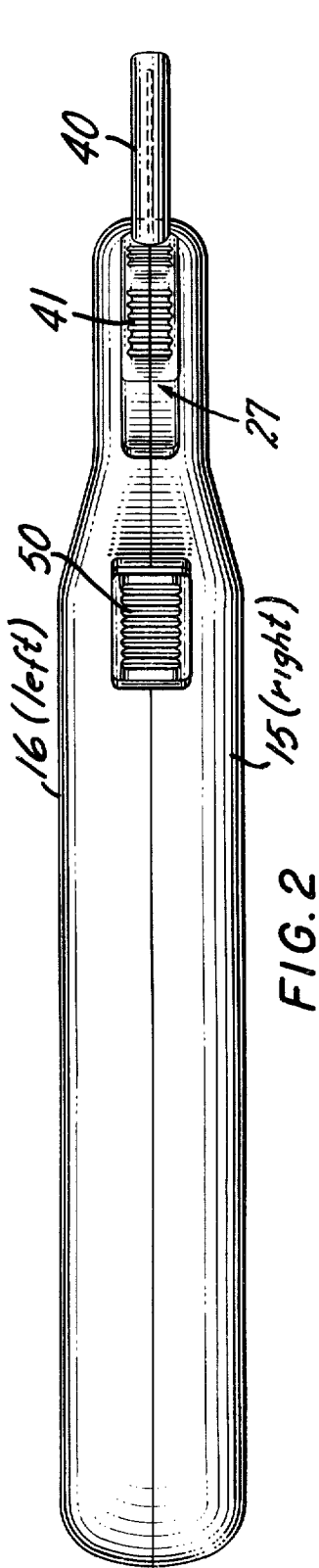
ABSTRACT

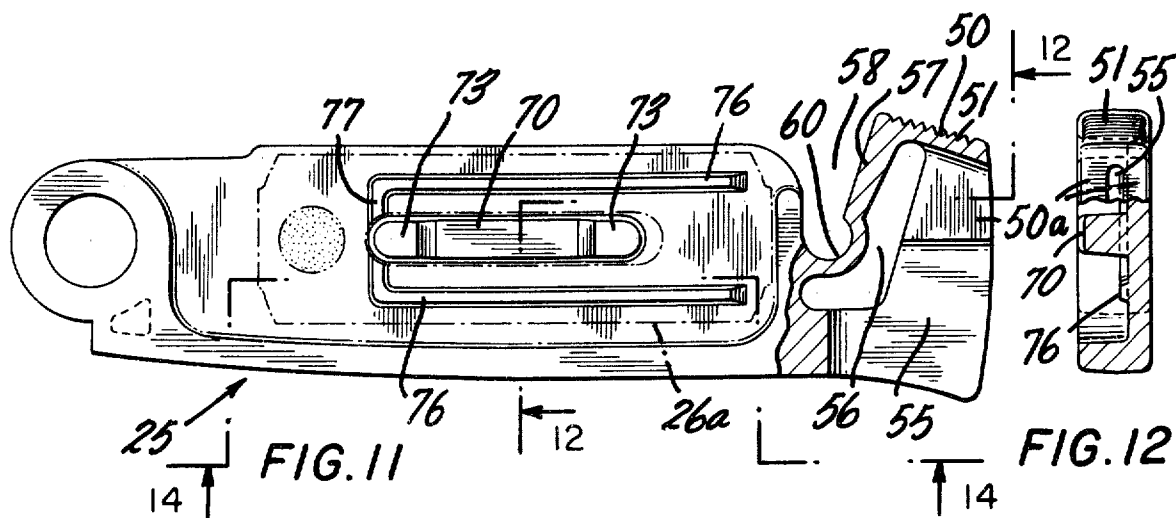
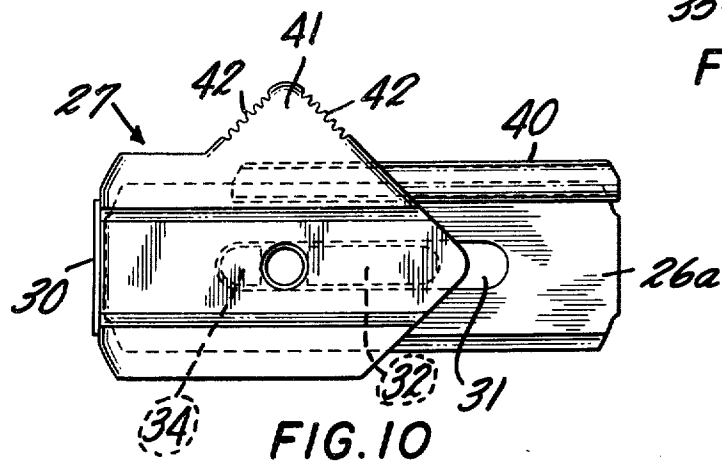
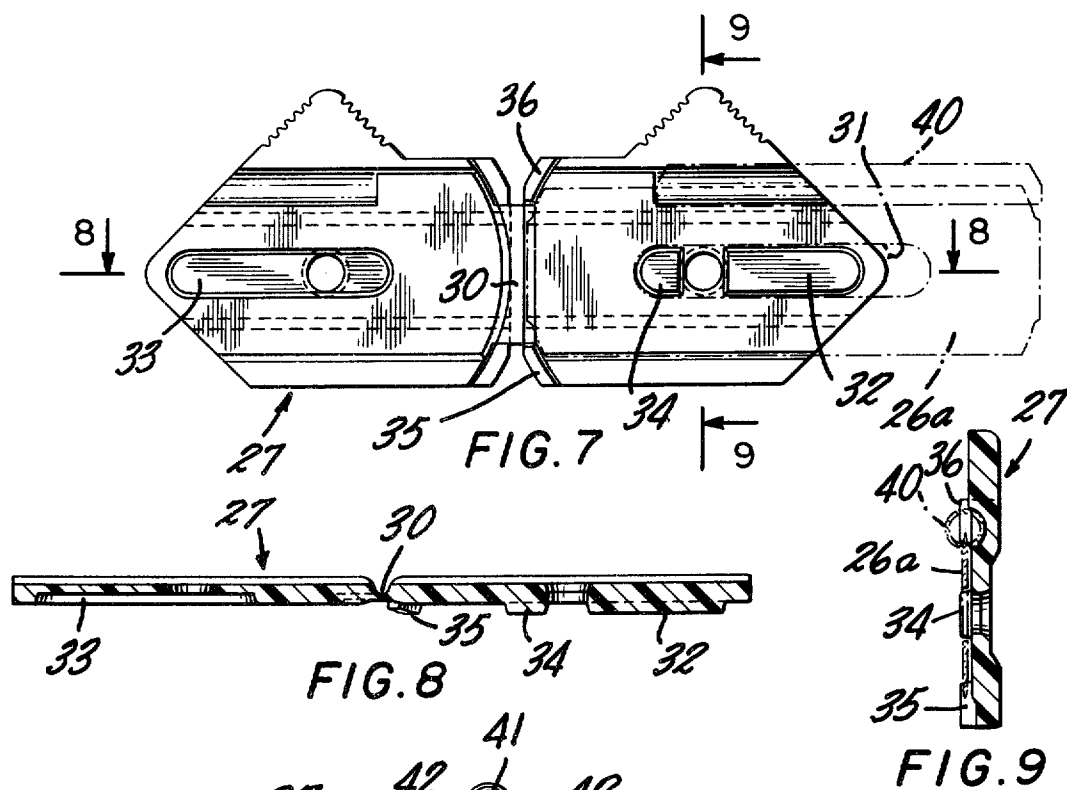
A knife with replaceable blades embodying a handle in which a working blade is clamped in a holder which in turn is releasably clamped in an outer end of the handle, the handle having a cavity in which is pivotally mounted a tray for new blades, which are supported therein in a manner rendering the individual blades readily removable, the blade holder being mounted on a clamping screw threaded pivot bolt enabling the holder and its blade upon release of the clamping bolt to be rotated when not in use into a blade protected position within the handle and being arranged in such position to lock the blade tray from being moved from within the handle.

8 Claims, 14 Drawing Figures









REPLACEABLE BLADE KNIFE

BACKGROUND OF THE INVENTION

The invention is concerned with a type of knife adapted for such purposes as cutting carpets or linoleum or many other uses, the knife comprising a handle adapted to hold a blade replaceable by a new blade when through use or other conditions the blade becomes worn or damaged. Many varied designs for this general type of knife have heretofore been used or proposed such as that which is the subject of U.S. Pat. No. 3,577,637 of the present inventor; and reference may be made also to the U.S. Pat. No. 3,593,417. Commonly the handle has a cavity for storing a supply of new blades. In some cases access to the new blades is through separation of the handle halves but in the case of the above noted patents the individual blades are removable through means of a pivoted tray. In the case of the U.S. Pat. No. 3,577,637 the tray is adapted to remove a single blade from the stack and in the case of the U.S. Pat. No. 3,593,417 the entire stack of blades is mounted on the tray and is adapted to be swung outwardly for removal of a blade. Detent means are provided in each case for releasably holding the tray within the handle.

The blade in the general type of knife here concerned is held at the outer end of the handle when the knife is in use but commonly means are provided for moving the blade into a retracted protected position. Many and varied holding means are provided for positioning the blade in either its operative location or retracted protected location a common form comprising a slidable carrier on which the blade is mounted.

THE PRESENT INVENTION

The main features and physical elements of the present invention comprise an elongated handle with the working blade rigidly clamped in a holder positioned at the outer end of the handle, the holder having a pair of halves in which the blade is clamped with an exposed cutting edge. A single screw threaded bolt rigidly clamps the holder in a slot between fingers at the outer end of the handle. The blades are double edge for economy and mounted in the holder and extending over the inoperative edge is a protective shield which likewise is clamped in the blade holder by the single screw part just mentioned. By loosening the screw the blade holder may be rotated to position the normally exposed cutting edge in a protected location interiorly of the handle.

The means for maintaining a supply of new blades embodies a blade tray pivotably mounted within a cavity in the handle, and associated with the tray is a detent means positioned entirely interiorly of the handle when the tray is in closed position, the detent means being releasable by engagement of a finger piece adjacent the detent but exposed exteriorly of the handle. The stack of blades which are of the type having a longitudinal central slot are positioned over a rib on the tray and associated therewith is an arrangement whereby the blades are maintained below a certain level so as not to interfere with the movement of the tray to its outer exposed position for removal of the top blade.

Other physical elements and features comprising the combination will be made apparent by consideration of a representative embodiment of the invention. Accord-

ingly, in connection with the description reference should be made to the accompanying drawings in which:

FIG. 1 is a top plan view of the assembled knife showing in broken lines the blade tray swung to an outer exposed position.

FIG. 2 is an edge plan view of the assembled razor.

FIG. 3 is a cross-sectional view taken on the plane 3—3 of FIG. 1, the knife accordingly being inverted from the normal position shown in FIG. 1.

FIG. 4 is an end view taken from the position indicated by the arrows 4—4 in FIG. 1.

FIG. 5 is a cross-sectional view taken on the plane 5—5 of FIG. 1.

FIG. 6 is an end view taken from the position indicated by the arrows 6—6 in FIG. 1.

FIG. 7 is a plan view of the blade holder as initially formed in open position.

FIG. 8 is a cross-sectional view taken on the plane 8—8 of FIG. 7.

FIG. 9 is a cross-sectional view taken on the plane 9—9 of FIG. 7.

FIG. 10 is a plan view of the blade holder of FIG. 8 to 9 with the halves of the holder folded over and a blade positioned between the halves.

FIG. 11 is a plan view of the blade tray.

FIG. 12 is a cross-sectional view taken on the irregular section indicated by 12—12 in FIG. 11.

FIG. 13 is a fragmentary view corresponding to FIG. 1 but with the blade holder rotated to its blade protective position.

FIG. 14 is a fragmentary cross-sectional view taken on the plane 14—14 of FIG. 11 but illustrating the blade stack tipped by finger pressure to render the individual blades readily removable.

The knife embodies a main casing having two side walls comprising opposed complementary handle halves, one of which will be referred to as the right half 15 and the other as left half 16. As shown clearly in the cross-sectional view of FIG. 3 the halves are held together by a pair of screws 17 and 18, the screw 17 being threaded into a boss 19 extending from the left half 16 into the depression 20 in the right half 15, the left half also has a blank stud or post 21 projecting into a recess 22 in the right half. The opposed faces of the handle halves are hollowed out to form a slot or cavity with an edge access opening 23 as indicated in FIGS. 4 and 5. Pivotably mounted on the boss 19 is a blade tray 25 in which is positioned normally a stack of blades 26. Normally clamped between the outer end of the handle is a blade holder or retainer 27 in which is releasably clamped a blade 26a. The blade holder, as initially formed is shown in the plan view of FIG. 7 and in cross-section in FIGS. 8 and 9. The holder is composed of a suitable plastic material such as polypropylene and is cast in extended condition as shown in FIGS. 7 and 8 with the halves connected by a portion 30 of reduced thickness and flexible to form what is sometimes referred to as a living hinge. When folded into the form shown in, for example, FIG. 10 with an intervening blade 26a, lugs on one half project through the blade into recesses in the opposed half, the blade in the present case having a central slot 31 through which the lugs extend. The lugs comprise an elongated rib 32 extending through the blade slot 31 into a recess 33 in the opposed half and similarly a lug 34 extending into a recess 33 in the opposed holder half, the lugs determining the transverse position of the blade and the lug 34 acting as a

blade stop in the direction toward the right and shoulders 35 and 36 limiting opposite movement of the blade toward the left. The blade retainer is clamped between the two handle halves by the screw bolt 18 as shown in FIG. 3 which also serves to clamp the blade 26a in the retainer. The screw bolt in the present case comprises a screw countersunk in the handle half 15 and threaded into the other handle half 16. A split tube 40 serves as a shield extending over the upper edge of the blade and preferably slightly beyond the outer end. The protective sleeve is clamped between the two halves of the blade retainer 27 by the screw 18. In normal use the operator engages a thumb against an upper finger piece comprising a projection 41 of the blade retainer which is preferably serrated as indicated at 42 and the shield 40 protects the operator in the event his hand or a finger should accidentally extend beyond the finger piece 41.

The blade tray 25, pivoted on the boss 19, has an outer forked end 50 including spaced fingers 50a. It has a serrated upper edge 51 for engagement normally by the thumb of the operator. The handle halves 15 and 16 have an arc-shaped depression 52 to allow the finger piece 50 to be positioned below the upper edge of the handle but readily engageable by the thumb or finger of the operator. As viewed from the right end in the drawings, the outer end of the tray has the shape of an inverted U formed by the pair of spaced fingers 50a with an intervening slot 55. Each of the fingers has a slot 56 therein as shown particularly in FIG. 13 which slots register with each other. The tray is composed of a material such as preferably a plastic and the slots 56 result in a flexible wall portion 57. Between the flexible portion 57 and the main body of the tray there is formed a tapered notch 58 as shown particularly in FIG. 11 and when the tray is swung into the closed position as shown in the upper part of FIG. 1 the notch 58 engages over the post 21 of the handle half 16 as shown particularly in FIG. 13. The flexible strip portion 57 has an arc-shaped depression 60 in which the post 21 engages resulting in a releasable detent enabling the tray to be moved to a released position by pressure on the finger piece 50 a distance sufficient where the tray can be grasped directly and moved to a fully open position such as indicated at 25' in FIG. 1.

The tray 25 provides a platform with the stack of blades normally threaded over a longitudinally extending rib 70 thereon, the rib extending up through the blade slots 31. Normally in removing a blade from the stack in the handle the knife is held in the left hand and positioned horizontally as shown in FIG. 1 with the tray and blade stack facing upwardly as indicated in FIG. 14 which is reversed from the position shown in cross-sectional FIG. 3. The rib 70 has a lug 73 projection extending upwardly at each end with an intervening depression 74 and the right half 15 of the handle has a fixed cross rib 75 extending into the depression 74 (FIG. 3). Accordingly the top of the blade stack is maintained below the tops of the lugs 73 and, bearing in mind that in removing a blade the tray and related elements will be reversed from that shown in FIG. 3, the arrangement ensures against any interference in opening the tray.

The tray embodies structural means of advantage in removing individual blades and particularly the last blade of the stack which on a flat tray surface would be subject to cohesion thereto. The top surface of the tray as seen in FIGS. 11 and 14 has a pair of raised but low rails 76 extending longitudinally of the tray with a con-

necting cross rail 77 on which the blade stack normally rests. To select a new blade the tray is swung to a position such as that indicated at 25' in FIG. 1 and the operator then applies finger pressure, usually through the thumb, to the top of the stack nearest to the pivot point 17 as indicated at F in FIG. 14 which by cantilever action about the cross rail 77 as a fulcrum elevates the outer end of the stack to the position indicated at 26' in FIG. 14 where it is freely exposed for easy removal of the top blade. The arrangement is of particular advantage when the last blade in the stack is reached. The rails maintain the last or bottom blade elevated from the tray surface and avoid cohesion to an overall flat surface and the finger pressure elevates the outer end of the blade where it is readily peeled off by the fingers of the operator's other hand. It should be understood that when reference is made herein including the claims the term "stack" is intended to apply where there is one or more blades positioned on the tray.

When the knife is not in use the blade holder 27 and its blade may be rotated into the position shown in FIG. 13 where the normally working edge of the blade and the protective sleeve 40 are positioned within the handle between the fingers 50a of the tray member 25 and the then outer end of the blade is locked within the halves of the blade retainer as indicated at 27a in FIG. 13. Also in this position the blade tray is locked against outward movement since the corner 78 of the blade lies in the path of the inner surface 79 of the part connecting the spaced fingers 50a at the outer end of the tray 25. The blade holder and its blade may be readily clamped into the blade edge protective position by tightening the screw 18.

The blade 26a may be easily removed from the handle by removing screw 18 and sliding out the retainer which is easily opened to release a blade and a new blade inserted. The cutting position of the knife may be reversed from that shown in FIG. 1 by removing the blade holder and turning it over and clamping it in the reversed position.

Various modifications and changes may be made in the handle and the operating parts comprising different embodiments of the principles of the invention. Accordingly it is intended that all matter contained herein shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A knife having an elongated handle with opposed side walls and a cavity therebetween and a blade removably mounted at one end of the handle for replacement by a new blade, a tray for new blades normally positioned within said cavity and mounted for movement into a closed position within said cavity and outwardly thereof through an opening in an edge of the handle for removal of a blade, said tray having a supporting platform for a stack of blades, a rib extending upwardly from said surface transversely of the direction of said movement adapted to receive thereover the slots of a stack of slotted blades, said rib having end lug portions extending above the stack of blades with a depression between the lugs, and the corresponding handle wall having a downwardly projecting fixed rib extending into said depression in closed position of the tray transversely of said tray rib to maintain the top blade below the top of said lug portions.

2. A knife in accordance with claim 1 in which the tray is elongated and pivoted at one end and said tray

5

rib extends longitudinally thereof and said fixed rib extends transversely thereof in said depression in closed position of the tray.

3. A knife in accordance with claim 1 in which there is a detent means spaced from said pivotal end of the tray for releasably holding the tray in closed position.

4. A knife comprising a handle, a blade holder, a tray for new blades, said tray having a pivotal mounting within the handle about which it may be swung outwardly for exposure of the blades, means for mounting the blade holder in an outer end of the handle, said holder being selectively movable on said mounting means to an outer working position, or to an inner blade edge protective position within the handle, and interlocking means between the holder in its inner position and the blade tray to prevent the tray from being swung outwardly from its position in the handle.

5. A knife in accordance with claim 4 in which the mounting means for said blade holder comprises a pivot about which the blade holder is rotatable to its different positions.

6

6. A knife in accordance with claim 5 in which said pivot comprises a screw threaded bolt means adjustable to clamp the blade holder in its selected positions.

7. A knife in accordance with claim 6 in which the blade holder comprises a pair of opposed halves between which the blade is located and clamped in place by the clamping of the holder in the handle.

8. In a replaceable blade knife having a handle and a tray for supporting a stack of new blades, means for mounting the tray in a cavity in the handle for movement outwardly from the cavity to expose the blades, said tray having a top surface with raised rails for supporting thereon the stack of blades elevated from the tray surface, said rails including a longitudinally extending rail section and a cross rail section, the latter spaced inwardly from an end of the blade stack about which one or more blades comprising the stack may be rocked by cantilever action by finger pressure on said end.

* * * * *

25

30

35

40

45

50

55

60

65