United States Patent

Umholtz

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[45] May 9, 1972

[54] UTILITY KNIFE

[72] Inventor: **Franklyn G. Umholtz,** c/o Russell Harrington Cutlery, Inc., Southbridge, Mass. 01550

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[52] **U.S. Cl.** **30/162,** 30/335

[51] **Int. Cl.** **B26b 29/02**

[58] **Field of Search** 30/40, 162, 335

[56] **References Cited**

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Assistant Examiner—J. C. Peters
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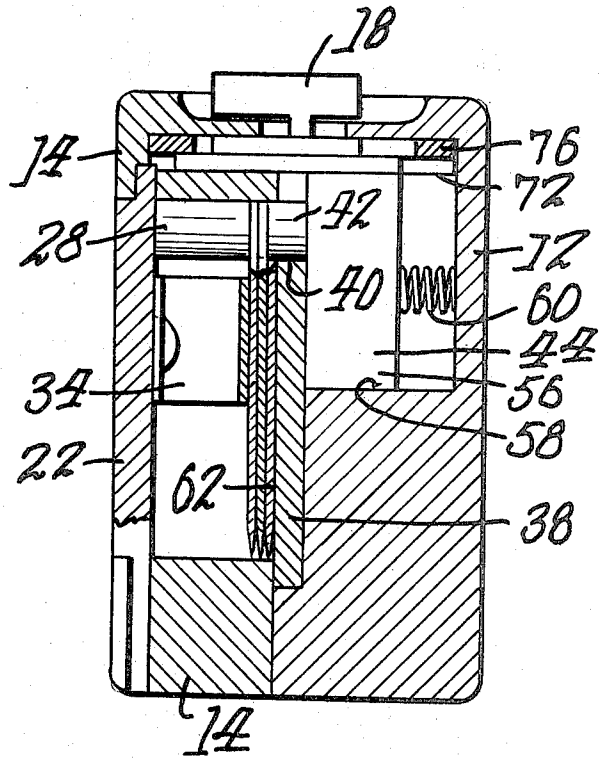
[57] **ABSTRACT**

A utility knife comprising two main parts forming a housing, one of said parts having a side opening therein for receiving blades in a stack and both parts having cooperating guideways for the reception of a sliding manually operated button having a free-ended pin on it for engaging with a complementary notch in an edge of each blade, there being means providing that the free-ended pin is spring-pressed to a position to enter a notch of the first blade only in the stack and being manually retractable therefrom to release the blade.

The slider has two locking positions for the blade, one at either end of the housing; two blade-releasing positions adjacent the locking positions whereby the blade may be abstracted manually from either end of the housing, and centrally of the housing the slider has a change position for changing the extent of the blade from the ends of the housing.

5 Claims, 12 Drawing Figures



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SHEET 1 OF 2

Fig. 1

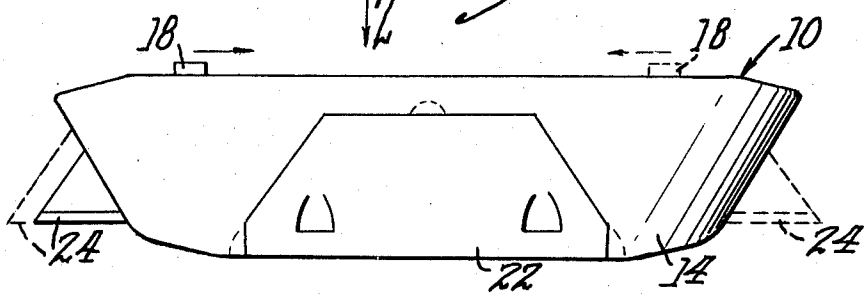


Fig. 2

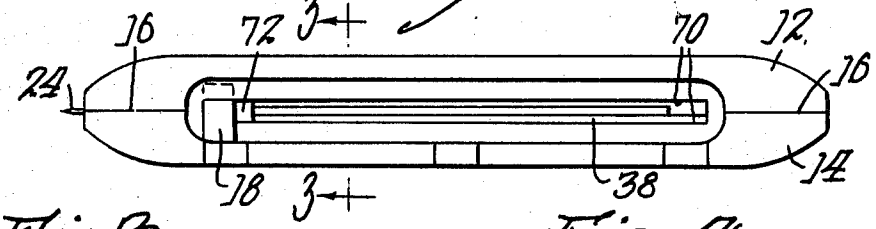


Fig. 3

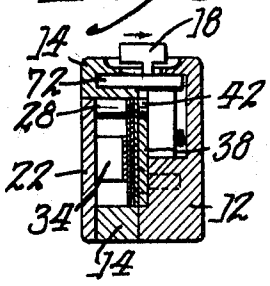
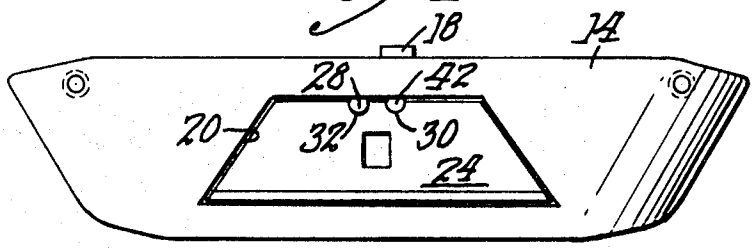


Fig. 4



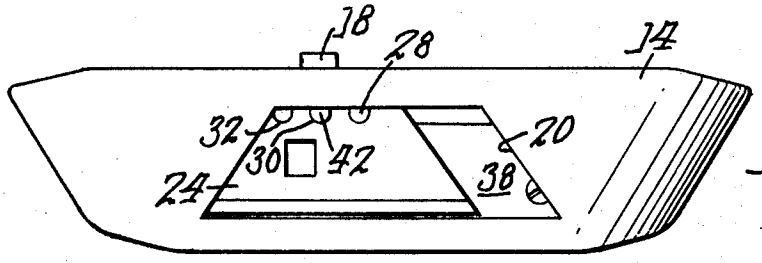


Fig. 5

Fig. 6

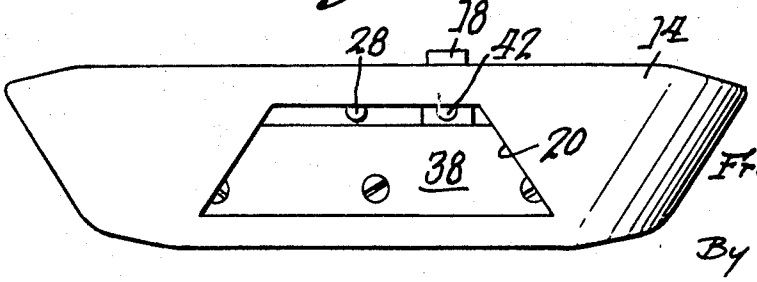


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Fig. 7

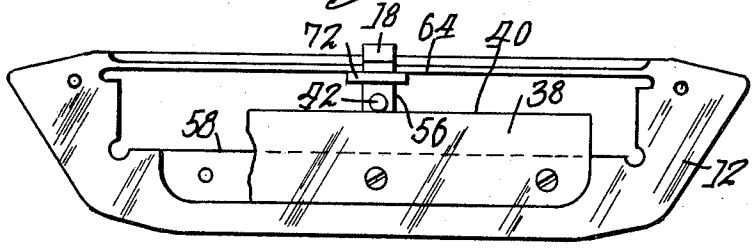


Fig. 8

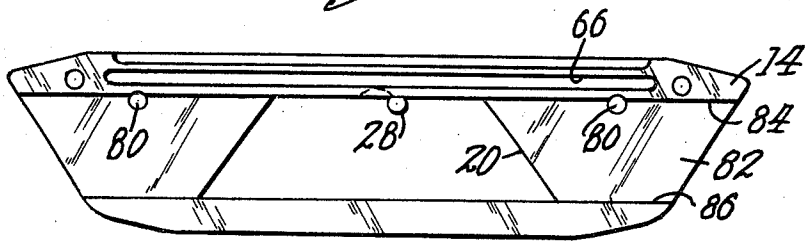


Fig. 9

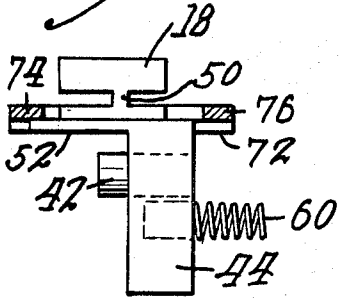


Fig. 10

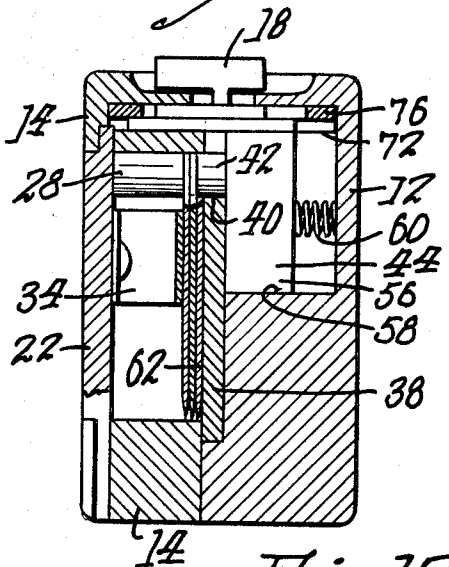


Fig. 11

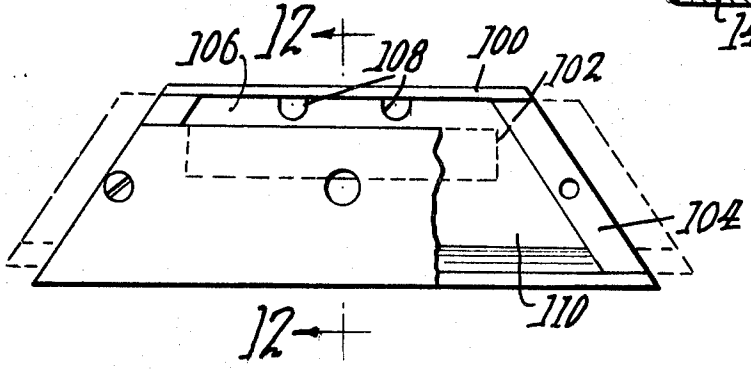
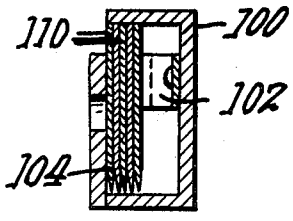


Fig. 12



UTILITY KNIFE

BACKGROUND OF THE INVENTION

There have been many utility knives proposed, usually including a housing and a movable knife blade, these blades being in general thin and inexpensive. Ordinarily means is provided for anchoring the blade in either one of two positions i.e., extended for operation of the knife blade, or safely retracted within the housing In most cases these blades are more or less easily removed and replaced when they become dull, but in many cases only a portion of the blade is extended from the housing for cutting purposes, e.g., by a draw action, and in most cases the blade becomes dull at only a portion of its sharpened edge and is then thrown away, or it may be taken out of the housing and reversed.

In all of these proposed utility knives there are various objections as to safety, ease of removing and replacing the knife blades, reversability of the knife blades, safety, etc., and it is the general object of the present invention to provide a utility knife which receives blades either stack in the housing, or applied by means of a magazine, and which are easily removed and picked up by a slider for positioning the blade either in housed or operating exposed condition.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in elevation illustrating the knife in condition for use;

FIG. 2 is a plan view looking in the direction of arrow 2 in FIG. 1;

FIG. 3 is a section on line 3—3 of FIG. 2 on an enlarged scale;

FIG. 4 is a view similar to FIG. 1 but showing the blade cover removed;

FIG. 5 is a view similar to FIG. 4 showing the slider moving the blade relative to the housing;

FIG. 6 is a view similar to FIG. 5 with the knife empty of blades;

FIG. 7 is a view in elevation illustrating the inside aspect of one of the parts of the knife housing;

FIG. 8 is a view illustrating the inside aspect of the other part of the housing;

FIG. 9 is a view on an enlarged scale showing the slider;

FIG. 10 is a view on an enlarged scale illustrating the action of the slider in the part of the knife housing to which it is attached;

FIG. 11 is a view in elevation with part broken away and in section illustrating a magazine for blades for this knife, and

FIG. 12 is a section on line 12—12 of FIG. 11.

PREFERRED EMBODIMENT OF THE INVENTION

In this case a housing generally indicated at 10 acts as a handle and it comprises two parts of different formation but approximately equal size as indicated at 12 and 14 in FIG. 2, the parting line between the parts being indicated at 16, 16.

A slider 18 is provided, this slider having a motion almost from end to end of the housing as indicated in solid and dotted lines in FIG. 1. Also there is an open trapezoidal-shaped blade receptacle 20 in part 14 closed in FIG. 1 by a snap-in cover 22.

This cover has been removed in FIGS. 4, 5 and 6 to show a stack of blades for instance generally indicated at 24 in FIG. 4.

The blades 24 just about fit into the trapezoidal opening 20, the upper edge of which is provided with a fixed pin or plug 28. Each of the blades is provided with a pair of notches which are indicated at 30 and 32 and when the blades are placed in the opening 20 one of the notches engages the fixed plug 28 guiding the blades into an aligned stack. This plug also prevents any tendency for the blades to cook or jam, during sliding action of a blade under influence of the slider.

The cover 22 is provided with an appropriate spring 34 preferably of a free-ended leaf type so that when the cover 22 is snapped into the opening 20, the spring rests on the uppermost blade, maintaining the stack in position to slide against a flat wall member 38, perhaps best seen in FIG. 7, this member

38 having an upper edge 40 adjacent to which slides a free-ended pin 42 extending laterally from an extension 44 which is a part of the slider 18, see FIGS. 3, 9, and 10.

The plug 28 is fixed in position and it terminates inwardly in a position to release only the first blade in the stack, so that the latter is slidable left to right as indicated by the arrows in the drawings from one end of the housing 10 to the other under influence of slider 18 with its free-ended pin 42 engaged in either notch 30 or notch 32 in a blade 24.

The slider 18 has a downwardly extending small stud 50 connected to a plate 42, FIG. 10, in turn connected to an upright 54, the lower end of which as at 56 is located behind the wall 38 and slides on a horizontal surface 58 which is a part of the part 12. A spring 60 tends to move the slider to the left in FIG. 10, but by manually pushing slider 18 to the right, the free-ended pin 42 becomes detached from the notch of the blade in which it is located. On the other hand, when the slider is released it tends to return to blade-engaging position beyond the surface 62 of the wall member 38.

The parts 12 and 14 are each provided with relatively deep horizontal and longitudinal guides, these being indicated as formed by a web at 64 in part 12 and a groove at 66 in part 14. These grooves 64 and 66 together form a longitudinal guideway generally indicated at 70, see FIG. 2, for the slider 18.

The plate 52 forming part of slider 18 is laterally slidable in a guideplate 72, the latter having end portions at 74 and 76 which are slidably received and thereby longitudinally guided in guideway 70.

It is to be noted that the slider is primarily mounted on the part 12 having only a sliding connection with the groove 66 in the part 14 but on the other hand the part 14 is provided with the blade-receiving opening 20, the fixed plug or the like 28, and also a pair of recesses as at 80, 80, see FIG. 8. These recesses are for the locking reception of the free end of the pin 42 under influence of spring 60, when the slider is in the "lock" positions, see FIG. 2, and thereby locking the blade in position as shown in FIGS. 1 and 2, so that there can be no retraction or further projection of the blade from this position without unlocking action of the slider.

Each blade is trapezoidal in shape conforming to the opening 20 and is provided with one notch or the two notches 30 and 32, or with more notches as desired. Originally when the blades are stacked in the opening 20 in the part 14, the leading blade coming to rest against wall 38 under influence of the spring 34 when the cover 22 is in position, one of its notches 30 or 32 will be engaged with plug 28 which causes the blades to become stacked in alignment.

Assuming that the slider pin 42 is not engaged with the first blade, it is moved laterally to the dotted line position thereof, see FIGS. 2 and 10. It is then slid along guideway 70 to the right until the free-ended pin 42 snaps into a notch 30 or 32 not occupied by the plug 28. The slider is now engaged with the first blade only and can move it in either direction as far as the recesses 80 which automatically lock the blade in the positions as described.

However, if it is desired to have the blade extend for instance as shown in dotted lines in FIG. 1 which is a part-way position rather than a full position shown in solid lines in FIG. 1, it is only necessary to release free-ended pin 42 from its respective recess 80, and slide the slider to a "change" position centrally located as indicated in FIG. 2. It should be remembered that at this point the first blade is free of plug 28 which terminates inwardly to positively engage the remainder of the stack, but not the first blade.

The slider may then be manually manipulated laterally to disengage the pin 42 from the blade and then it may be slid to the other blade notch (30 or 32) and this controls the degree of extent of the blade, either the full extent shown in solid lines in FIG. 1 or the restricted extent in dotted lines thereof, at either end of the housing.

The slider 18 is capable of a slight motion relative to the guideplate 72 in order to allow the retraction in the direction

to the right in FIG. 10 for releasing free-ended pin 42 not only to a part-way position to free it from recesses 80, but also to a fully retracted position to release it from the blade.

The pin 42 can be released from the blade at any point between the recesses 80. The blade being free, can be removed from the housing by the fingers, whereupon the slider is returned to its original position in a lateral direction, and slid longitudinally to a position wherein the free-ended pin 42 will engage a notch 30 or 32 of the next blade, which is now free of plug 28.

At least one of the parts as for instance part 14 is provided with an undercut area at 82 formed by a longitudinal shoulder 84 and another longitudinal shoulder 86 and this forms a guideway for slidably moving the first blade in the stack.

If desired, a magazine such as shown at 100 in FIGS. 11 and 12 may be utilized rather than a loose stack of blades. This magazine is formed by a trapezoidal shaped box having a leaf spring 102 similar to that at 34 therein and a guideway 104 to allow the blades to be abstracted. This box has an opening which is indicated at 106 and this side of the magazine is placed first or foremost into the opening 20 so that the notches which appear at 108 in a blade 110 similar to that at 26 may be engaged by the free-ended pin 42 on the slider 18.

I claim:

1. A utility knife comprising a handle, a recess in the handle for accepting a stack of knife blades, means in the handle providing a knife blade guideway from the stack to an end of the handle,

a slider, interengaging means between the handle and the slider whereby the slider is slidable from the area of the stack to said end of the housing, means on the slider for engaging the initial blade of the stack of blades and moving the same from the stack to said end of the housing, and means locking said blade engaging means on the slider adjacent the said end of the housing with the blade held in fixed position with an end of the blade exposed, and means for releasing said blade engaging means on the slider from the blade so that the blade may be manually removed from the housing,

a removable cover for the recess which receives the stack of blades, means holding the cover in removable position, and resilient means on said cover engaging the stack of blades and pressing the stack of blades toward the said slider, and a barrier wall against which the resilient means on the cover presses the blades, the slider being mounted at the opposite side of said wall from the stack of blades.

2. The knife of claim 1 wherein said interengaging means between the slider and the blade comprises a free-ended pin, said slider together with said pin being manually retractable out of engagement with said blade, and resilient means normally holding the slider in blade engaging position, said blade having a sharpened edge and a notched edge, said pin being adapted to extend into a notch in said edge to a limited degree in order to provide motion of the blade by means of the slider, there being a plurality of notches in the notched edge of the blade, said pin being enterable into any of said notches varying the longitudinal position of the blade relative to the slider.

3. The knife of claim 1 including a fixed plug arranged in the recess for the stack of blades and receiving said blades by means of notches in the blades, maintaining the blades in a stack and against canting of succeeding blades when an initial blade is moved back and forth in the housing by the slider.

4. The knife of claim 1 wherein the handle is elongated and comprises two parts secured together, the knife blade guideway being located between the two parts, and the recess for the stack of blades extending completely through one only of the handle parts, the initial blade in the stack abutting the other handle part.

5. A utility knife comprising a handle, a recess in the handle for accepting a stack of knife blades, means in the handle providing a knife blade guideway from the stack to an end of the handle,

a slider, interengaging means between the handle and the slider whereby the slider is slidable from the area of the stack to said end of the housing, means on the slider for engaging the initial blade of the stack of blades and moving the same from the stack to said end of the housing, and means locking said blade engaging means on the slider adjacent the said end of the housing with the blade held in fixed position with an end of the blade exposed, and means for releasing said blade engaging means on the slider from the blade so that the blade may be manually removed from the housing,

said blade engaging means includes a pin on the slider and said locking means comprises a recess in the housing in the path of movement of the pin, said locking recess being located at the opposite side of the blade from the slider, and the pin extending into the locking recess for locking the blade at said position, and being retractable to free it from the locking recess and from the blade.

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