

[54] **SURGICAL KNIFE**

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30/157, 158, 286, 340; 206/63.2 R

[56] **References Cited**

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Primary Examiner—James L. Jones, Jr.

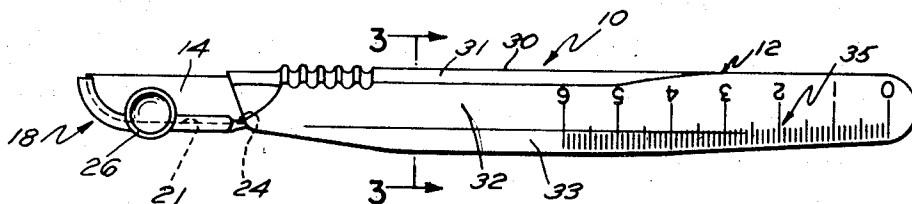
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[57] **ABSTRACT**

A surgical knife having a blade and a handle integrally molded on the blade. The blade has a cutting edge along at least one of its edges and an elongated knife guard having a channel formed along one of its edges mates with the cutting edge on the blade. The knife guard includes a molding runner connecting the handle to the knife guard with the molding runner also having a channel formed along one of its edges that mates with the cutting edge of the blade. Finger seats are formed on the knife guard whereby when it is desired to remove the knife guard from the blade a person may grip the knife handle in one hand and by pressing the thumb and forefinger of the other hand into the oppositely formed finger seats to secure a good grip the knife guard is pulled out of engagement with the cutting edge by a pivotal motion about the point where the molding runner meets the handle.

2 Claims, 5 Drawing Figures



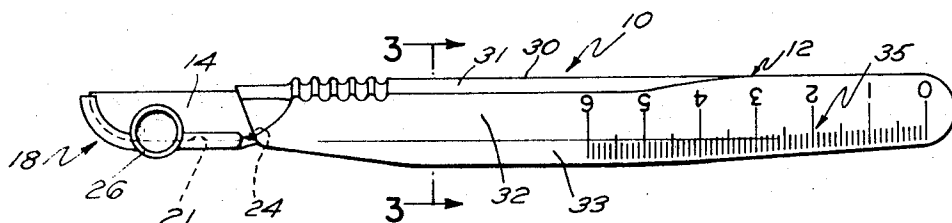


FIG. 1

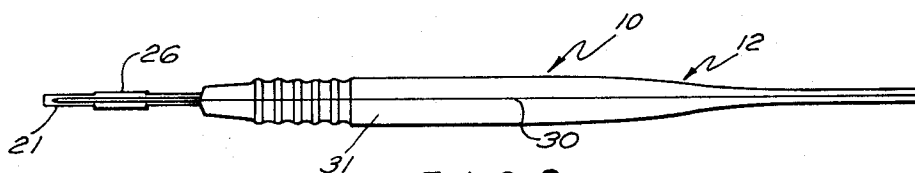


FIG. 2

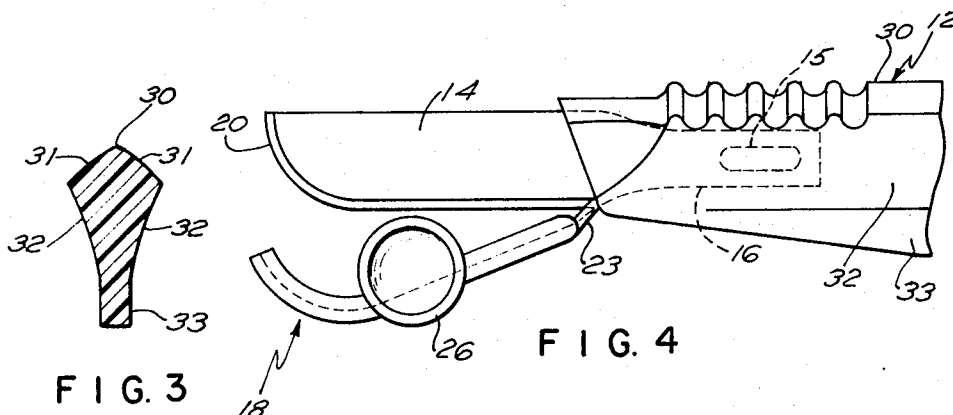


FIG. 3

FIG. 4

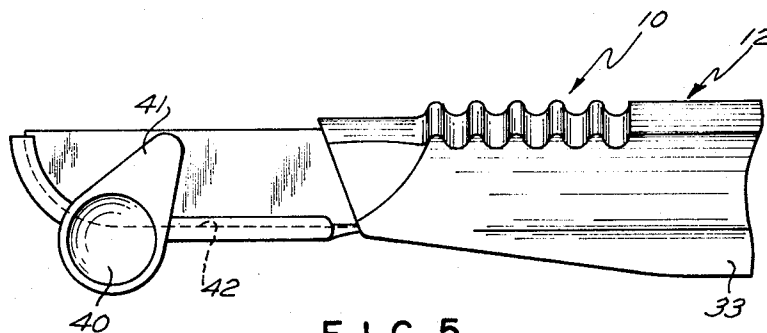


FIG. 5

SURGICAL KNIFE

BACKGROUND OF THE INVENTION

This invention relates to knives and more particularly to a disposable surgical knife. In the past it was normal practice to provide surgical knives, such as scalpels, with replaceable blades. These replacement blades are frequently damaged when being removed from their package or when being sterilized and as a sterilized blade is often held in metal forceps to be inserted into the scalpel handle, the damage often occurs at this stage also. Furthermore due to wear in the handle and a tendency for replacement blades of incorrect size to be used, a blade is often not rigidly held in the handle.

More recently surgical knives have been produced having their handle molded integrally on the shank of the knife blade. Some of these knives have had a blade cover molded over the cutting edge of the blade at the same time the handle has been formed by use of a molding runner which connects the handle and the knife guard. The major drawback to this type of knives has been the fact that the knife cutting edge does not extend all the way back to the body of the handle so that the blunt portion of the knife behind the cutting edge tends to rip the skin of the patient during an incision. It was impossible with the previously designed knife guards to have the cutting edge of the blade extend all the way back to the body of the handle. This was due to the fact that as a practical matter the tolerances of the sharp cutting edges of blades to be assembled vary and since the mold has a fixed dimension for receiving the blade when there is any gap produced between the two the plastic which is injection molded into the knife guard would stream out of the mold all over the place. An additional problem involved in the surgical knives having the integrally formed knife guard is the fact that it is quite difficult to obtain a good grip on the knife guard when attempting to remove it from the cutting edge.

SUMMARY OF THE INVENTION

Applicant's novel surgical knife is manufactured with the handle integrally molded on the shank of the blade. The blade has a cutting edge along at least one of its edges and it extends all the way back to the body of the knife handle. This eliminates any blunt portion on the knife which would tend to rip the skin of a patient during an incision. An elongated knife guard is formed on the knife blade and it has a channel formed along one of its edges that mates with the cutting edge of the blade. The knife guard includes a molding runner which connects the handle to the knife guard and the molding runner has a channel formed along one of its edges that mates with the cutting edge of the blade. Finger seats are formed on the knife guard whereby when it is desired to remove the knife guard from the blade, a person may grip the knife handle in one hand and by pressing the thumb and forefinger of the other hand into the oppositely formed finger seats in order to secure a good grip the knife guard is pulled out of engagement with the cutting edge by a pivotal motion about the point where the molding runner meets the handle. The knife guard molding runner and handle are all integrally formed through an injection molding operation and the molding runner is relieved in cross section where it meets the handle making it readily frangible.

The handle of the knife has a longitudinally extending top ridge and a longitudinally extending bottom spine and in cross section the body of the handle is formed by top walls that extend downwardly and outwardly from the top ridge and by concave walls that extend upwardly from the spine. These concave walls thus form hollowed finger gripping surfaces on the handle to provide a more positive and also more comfortable grip. Additionally a measuring scale is formed integrally on the surface of the handle for quickly determining the length of the incision to be made or that which has already been made.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation view of applicant's novel surgical knife;

FIG. 2 is a top plan view of applicant's novel surgical knife;

FIG. 3 is a cross section taken along lines 3—3 of FIG. 1;

FIG. 4 is a partial elevation view illustrating the knife guard after it has been pivoted away from the sharp cutting edge of the blade;

FIG. 5 is a partial side elevation view illustrating an alternative structure for the finger seat on the knife guard.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 thru 4 applicant's novel surgical knife will be described. Numeral 10 is used to generally describe the surgical knife. It is comprised of a handle 12 formed of a thermoplastic material which has been molded onto the blade 14 in an injection molding process during which the plastic material fills perforation 15 in the shank 16 thereby locking the blade within the handle. Knife guard 18 is molded over the sharp cutting edge 20 of the blade in the same operation during which the handle is molded. The knife guard is thus formed with a channel 21 whose opposite sides extend along the length of the sharp cutting edge of the blade. Molding runner 23 which is relieved in cross section connects the knife guard to the handle and itself has a channel 24 formed therein which mates with the sharp cutting edge of the blade. Formed toward the central portion of the knife guard are finger seat members 26 which extend upwardly on opposite sides of the blade and provide a gripping structure for detaching the knife guard. The finger seats 26 are shaped in the form of a depression into which the tip of a person's finger may be seated. The operation to remove the knife guard is generally accomplished by the person first gripping the knife handle in one hand. Next the thumb and forefinger of the other hand are pressed into the oppositely formed finger seats to secure a good grip and the knife guard is pulled out of engagement with the cutting edges by a pivotal motion of the molding runner about its end where it meets the handle. Since the molding runner has been relieved in cross section it is readily frangible and the scalpel is quickly made ready for use.

The cross section of the handle has also been formed to provide a sure grip by the user and also a more comfortable grip. This structure is best seen in FIG. 3 where the cross section shows the handle having a top ridge 30 with top walls 31 extending downwardly and outwardly therefrom. These walls are intercepted by con-

cave walls 32 which extend upwardly from spine 33. The concave walls 32 thus provide a positive and comfortable gripping area on the handle of the knife. Additionally a measuring scale 35 is integrally molded into the handle to provide a readily accessible means for measuring the length of an incision to be made or one which has already been made.

In FIG. 5 an alternative embodiment is illustrated showing the finger seat 40 having additional structure in the form of flanges 41 extending upwardly therefrom. The manner of removing the knife guard from the blade illustrated in FIG. 5 would be the same as that previously described. The use of flanges 41 allows the finger seat to be positioned further outwardly from the sharp cutting edges of the blade, thus providing additional gripping surface for the fingers. Additionally since the centers of the finger seats 40 are positioned outwardly from knife guard channel 42 there is less tendency to squeeze the finger seats against the knife blade when attempting to remove the knife guard.

I claim:

1. A knife comprising a blade, a handle integrally molded on said blade,

said blade having a cutting edge along at least one of its edges that extends all the way back to the body of the knife handle,

an elongated knife guard having a channel formed along one of its edges that mates with the cutting

edge on said blade,
said knife guard including a molding runner connecting said handle to said knife guard,
said molding runner having a channel formed along one of its edges that mates with the cutting edge on said blade and said molding runner covering that portion of the cutting edge of said blade lying between said knife guard and the body of said handle, said handle and said guard being integrally molded from the same material, finger seats formed on said knife guard whereby when it is desired to remove the knife guard from the blade a person may grip the knife handle in one hand and by pressing the thumb and forefinger of the other hand into the oppositely formed finger seats to secure a good grip when the knife guard is pulled out of engagement with the cutting edge by a pivotal motion about the point where the molding runner meets the handle.

2. A knife as recited in claim 1 wherein the handle has a longitudinally extending top ridge and a longitudinally extending bottom spine and in cross section the body of the handle is formed by top walls that extend downwardly and outwardly from the top ridge and by concave walls that extend upward from said spine, the concave walls thus form hollowed finger gripping surfaces on the handle to provide a more positive and also more comfortable grip.

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