

[54] **DOUBLE EDGE BLADE SCALPEL**
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30/357
[51] **Int. Cl.:** B26b 11/00, B26b 9/02
[58] **Field of Search** 7/14.1 A, 14.1 R, 1 B,
7/1 P, 4; 81/43; 30/357, 353, 337, 339, 287,
355

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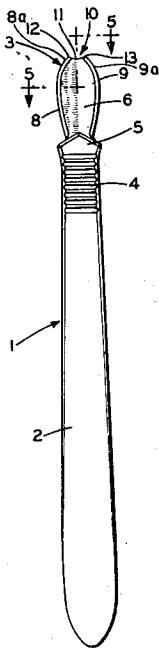
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Primary Examiner—Donald G. Kelly
Assistant Examiner—Howard N. Goldberg

[57] **ABSTRACT**
A surgical scalpel construction having a handle and a blade mounted at one end thereof. The blade has two cutting edges, one on each side edge of the blade. The outer or unattached end of the blade is pointless to prevent stabbing or cutting of the surgeon or assistant during transfer of the scalpel between them while an operation is in progress. The pointless end of the blade may be formed with a concave tip portion, or with a rounded tip portion, or with a V-notch having sharp side edges for cutting sutures. The blade is permanently or disposably attached to the scalpel handle. The handle is provided with a flanged end adjacent to the blade to protect the surgeon's fingers.

7 Claims, 22 Drawing Figures



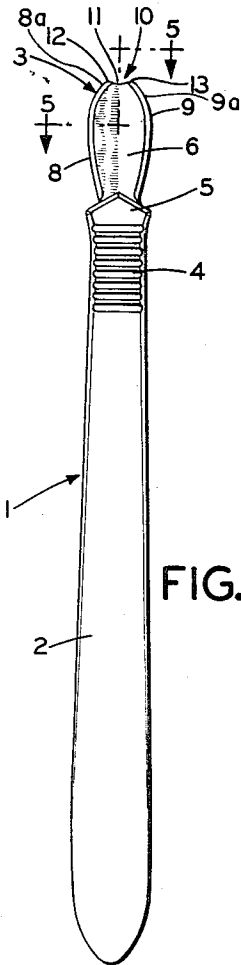


FIG. 1

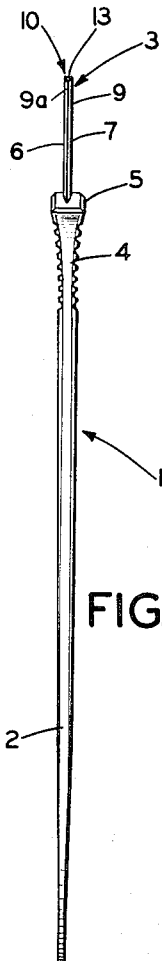


FIG. 2

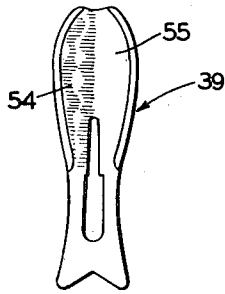


FIG. 19

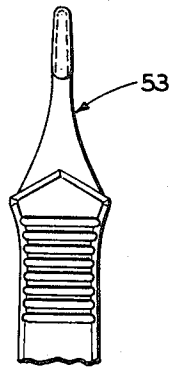


FIG. 20

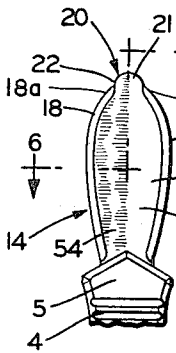


FIG. 3

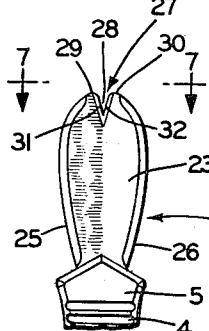


FIG. 4

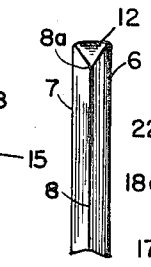


FIG. 2A

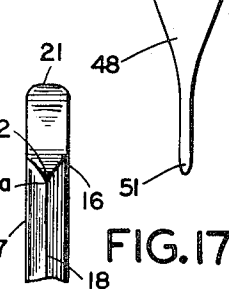


FIG. 3A

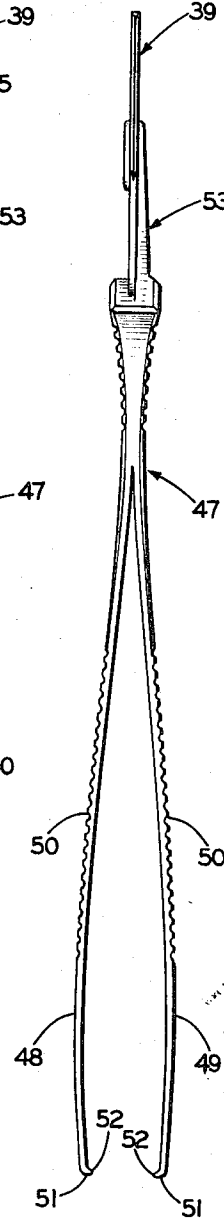


FIG. 17

FIG. 18

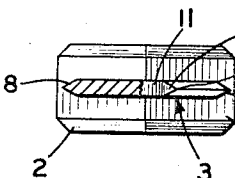


FIG. 5

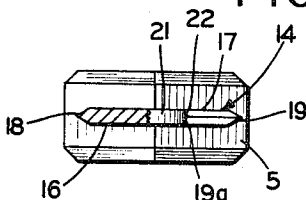


FIG. 6

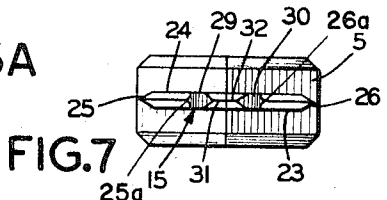
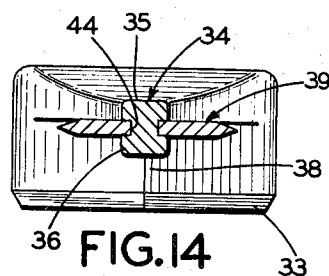
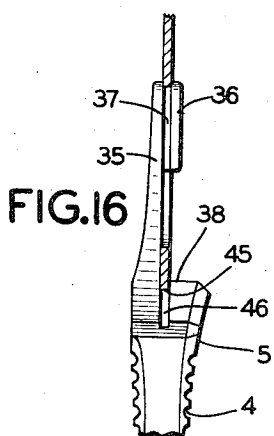
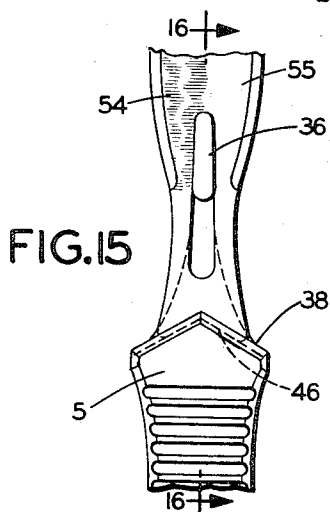
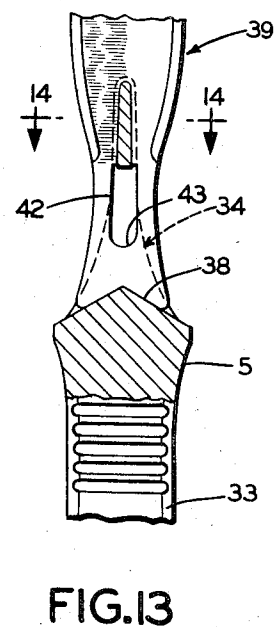
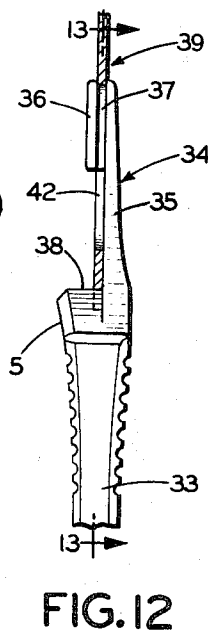
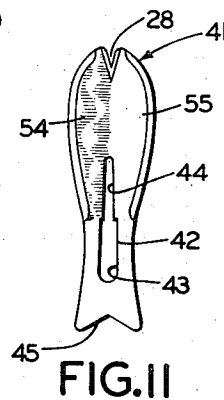
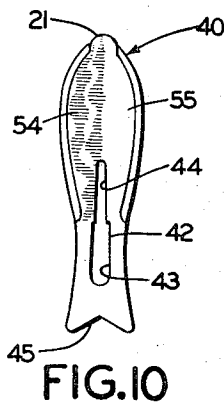
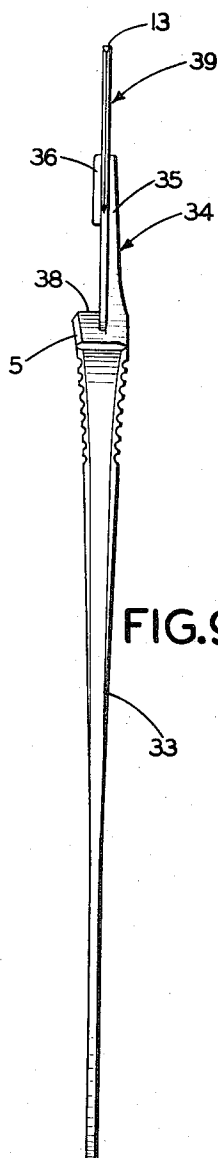
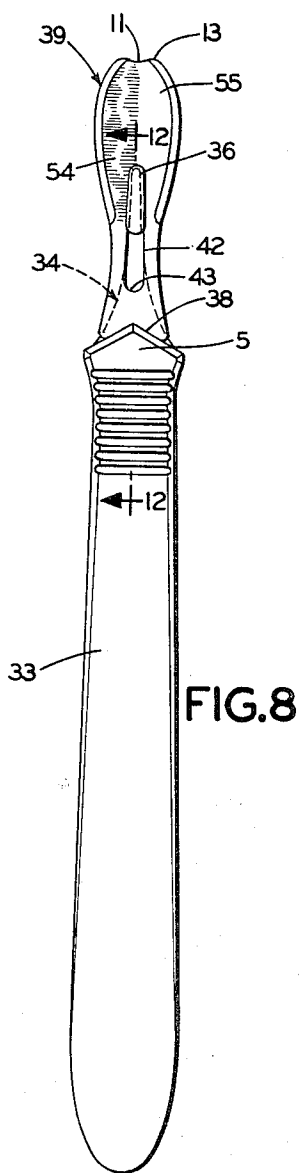


FIG. 7

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DOUBLE EDGE BLADE SCALPEL**BACKGROUND OF THE INVENTION****1. Field of the Invention**

The invention relates to surgical instruments and in particular to surgical scalpels. More particularly, the invention relates to scalpel blades having double cutting edges and pointless ends for performing cutting procedures, so as to reduce frequent changing of instruments during surgical procedures and to prevent accidental cutting and stabbing of the surgeon or assistant during transfer of the scalpel from one to the other.

2. Description of the Prior Art

A surgeon may use several scalpels or other instruments during surgical cutting and suturing procedures. The change of scalpels or other instruments requires additional time and movement which should be avoided.

Double edge glades have been devised and used in the past to conveniently provide two cutting edges as shown in U.S. Pat. Nos. 2,815,125 and 2,049,898 which disclose a variety of double edge scalpel blade shapes.

A surgeon while operating usually has a team of one or more assistants and nurses. These assistants hand to and take from the surgeon, scalpels and other instruments during the course of an operation. Instrument transfer must be made smoothly and quickly. In many situations the surgeon should not direct his eyes away from the operative area in connection with the transfer of instruments.

Problems have arisen during the transfer of scalpels having double edge blades. Such double edge scalpel blades have had sharp points at the outer or exposed end of the blade. This is a constant source of danger to the surgeon or assistant, either of whom may be stabbed or cut by such sharp points during transfer of instruments when not carefully watched. No prior double edge scalpel blade of which I am aware has avoided this stabbing problem.

Another problem that has arisen in the use of double edge blades is the lack of protection for the surgeon's fingers. Scalpels are usually tapered toward the blade ends in order to form the incision cutting end of a scalpel as small as possible. Cutting pressure is applied at this end of the scalpel by the surgeon. The surgeon's finger may slip along the tapered instrument end because of the taper and contact the edge of the blade, resulting in injury to the surgeon.

This is not a problem with single edge blades, since the scalpel is grasped and the pressure is applied in such a manner that if the surgeon's finger should slip, it will move along the flat, unsharpened edge of a single edge blade. Since both edges of a double edge blade are sharp, the surgeon may easily cut his finger should it slip along the outer end of the scalpel.

SUMMARY OF THE INVENTION

Objectives of the invention include providing a new double edge blade scalpel construction having two cutting edges for use in cutting and suturing procedures to reduce the number of scalpel and instrument changes during an operation thereby saving time and movement; providing a new double edge blade scalpel construction in which the blade end is pointless, to prevent accidental stabbing or cutting of the surgeon or assis-

tant during transfer of the scalpel; providing a double edge blade scalpel construction which has guards formed at the end of the scalpel handle adjacent the blade to reduce the possibility of a surgeon's finger slipping along the scalpel onto the blade; providing a double edge blade scalpel in which the blade is removably mounted on a scalpel handle for easy replacement and disposability; and providing a double edge blade scalpel which avoids difficulties heretofore present in prior double edge blade scalpels, and which is convenient and effective to use, thereby satisfying existing needs in the art.

These objectives and advantages are obtained by the scalpel construction, the general nature of which may be stated as including handle means; blade means secured to one end of the handle means and extending outwardly therefrom; the blade means having generally smooth flat faces terminating in side edges and in outer and lower ends, the lower end being secured to the handle means; at least a portion of the opposite side edges of the flat faces being sharpened to form double cutting edges; the outer ends of the cutting edges terminating adjacent to but spaced from the outer blade end; the outer blade end being pointless with smooth unsharpened areas adjacent the outer ends of the cutting edges whereby accidental stabbing or cutting of a surgeon or assistant is avoided in transferring instruments; the zone of the handle means secured to the blade being flared outwardly to provide guard means for a surgeon's fingers; and the pointless blade end either having a smooth central concave portion located between smooth areas formed adjacent the cutting edge outer ends, or a rounded portion formed between the smooth areas and projecting outwardly beyond the smooth areas, or a central V-shaped notch formed between the smooth areas with the sides of the notch sharpened to form a second pair of cutting edges.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention — illustrative of the best modes in which applicant has contemplated applying the principles — are set in the following description and shown in the drawings and are particularly and distinctly pointed out and set forth in the appended claims.

FIG. 1 is a front view of a scalpel with one of the new double edge blades permanently mounted thereon;

FIG. 2 is an edge view of the scalpel shown in FIG. 1;

FIG. 2A is a greatly enlarged fragmentary edge view of the outer end of the scalpel blade shown in FIG. 1;

FIG. 3 is an enlarged fragmentary front view of a second type of double edge blade permanently mounted on a scalpel handle;

FIG. 3A is a greatly enlarged fragmentary edge view of the outer end of the scalpel blade shown in FIG. 3;

FIG. 4 is a view similar to FIG. 3 showing a third type of double edge scalpel blade;

FIG. 5 is an enlarged sectional view taken on line 5—5, FIG. 1;

FIG. 6 is an enlarged sectional view taken on line 6—6, FIG. 3;

FIG. 7 is an enlarged top plan view looking in the direction of arrows 7—7, FIG. 4;

FIG. 8 is a front view of a scalpel with a disposable double edge blade removably mounted thereon;

FIG. 9 is an edge view of the scalpel shown in FIG. 8;

FIG. 10 is an enlarged front view of a disposable double edge scalpel blade of the second type;

FIG. 11 is a view similar to FIG. 10 showing a disposable double edge scalpel blade of the third type;

FIG. 12 is an enlarged fragmentary sectional view taken on line 12—12, FIG. 8;

FIG. 13 is a fragmentary sectional view taken on line 13—13, FIG. 12;

FIG. 14 is an enlarged sectional view taken on line 14—14, FIG. 13;

FIG. 15 is an enlarged fragmentary front view of an alternate construction for removably mounting a double edge blade on a scalpel handle;

FIG. 16 is a fragmentary sectional view taken on line 16—16, FIG. 15;

FIG. 17 is a front view of one of the disposable double edge scalpel blades removably mounted on a surgical instrument having pick-up jaws;

FIG. 18 is an edge view of the surgical instrument shown in FIG. 17;

FIG. 19 is a front view of the first type double edge scalpel blade removed from the surgical instrument; and

FIG. 20 is a fragmentary front view of the blade holding end of a removable blade surgical instrument such as shown in FIGS. 8 and 17.

Similar numerals refer to similar parts throughout the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A scalpel having one form of the new double edge pointless blade construction is shown in FIGS. 1 and 2, and is indicated generally at 1 and includes a handle 2, and blade 3 permanently mounted on the handle 2. Handle 2 preferably is a usual metal scalpel handle having a narrow elongated shape. A plurality of serrations 4 are formed on the outer surface of handle 2 adjacent blade 3. Serrations 4 provide an area that may be firmly grasped by the hand or fingers of a surgeon to provide a secure grip during cutting procedures.

The blade end of handle 2 is flared or tapered outwardly at 5 at the junction with blade 3. The flared end portion 5 provides a guard against which the surgeon's fingers may press in order to apply cutting pressure to blade 3 and which is intended to prevent his fingers from slipping off handle 2 and onto and along a cutting edge of blade 3.

In accordance with the invention, blade 3 is provided with smooth flat faces 6 and 7, the edges of which are sharpened to form double cutting edges 8 and 9 which terminate in outer ends 8a and 9a, respectively, FIGS. 2A and 5. The outer or unattached end 10 of blade 3 is formed with a smooth central concave portion 11 which terminates in smooth, convexly shaped non-sharp or pointless corners 12 and 13 which extends longitudinally, axially beyond the outer ends of cutting edges 8 and 9 (FIGS. 1 and 5).

Thus, outer blade end 10 is pointless and devoid of sharp, cutting edges which could cut or stab a person during transfer of scalpel 1 in the course of an operation, should end 10 come into direct contact with the hand, finger, etc. of a surgeon or any of his assistants.

Pointless end 10, however, does not impair or lessen the cutting function of sharpened edges 8 and 9.

Two other double edge, pointless blade configurations 14 and 15 are shown in FIGS. 3 and 4, respectively, permanently attached to the end of handles 2, only a portion of which are shown.

Blade 14 (FIGS. 3 and 6) has flat faces 16 and 17, the edges of which are sharpened to form double cutting edges 18 and 19. Cutting edges 18 and 19 which terminate in outer ends 18a and 19a, respectively, are convexly shaped, similar to edges 8 and 9, and their inner ends terminate at the flared end 5 of handle 2. The outer end 20 of blade 14 terminates in a rounded convex edge portion 21 which projects outwardly beyond outer ends 18a and 19a of cutting edges 18 and 19. Rounded portion 21 merges with the upper ends of the cutting edges 18 and 19 at smooth, non-sharp or pointless areas 22. Areas 22 also extend axially beyond the outer ends of cutting edges 18 and 19 in a similar manner as corners 12 and 13 of blade 3.

Rounded portion 21 is pointless and provides a safe outer end for blade 14 which helps prevent accidental stabbing or cutting of a surgeon or assistant, in a manner similar to that described concerning pointless end 10 of blade 3.

Blade 15 (FIGS. 4 and 7) has flat faces 23 and 24 with edges sharpened to form double cutting edges 25 and 26 which terminate in outer ends 25a and 26a, respectively. Edges 25 and 26 are convexly-shaped similar to edges 8 and 9, and edges 18 and 19 of blades 3 and 14, respectively. The inner end of blade 15 may be permanently mounted on handle 2 in the same manner as blades 3 and 14, adjacent flared end 5.

The outer end 27 of blade 15 is provided with a centrally located, V-shaped notch 28 and smooth, rounded outer edges 29 and 30 between notch 28 and the outer ends of cutting edges 25 and 26, respectively. The sides of notch 28 are sharpened to form cutting edges 31 and 32 to cut sutures in narrow, inaccessible portions of a wound. V-shaped notch 28 is symmetrical with respect to cutting edges 25 and 26 in that edges 31 and 32 of notch 28 are straight and are equal in length, and extend inwardly toward the longitudinal axis of blade 15 from rounded outer edges 29 and 30, as shown in FIGS. 4 and 7.

Rounded edges 29 and 30 extend axially beyond the outer ends of cutting edges 25 and 26 and provide blade 15 with a pointless, non-sharp end 27, similar to the pointless ends 10 and 20 of blades 3 and 14.

The improved double edge, pointless blades 3, 14 and 15 need not be permanently mounted on handle 2 but may be removable or disposable type blades provided with means to removably mount them on a scalpel handle 33, as shown in FIGS. 8 through 14.

Handle 33 preferably is similar in shape to handle 2 except that at its end where the blade is mounted, handle 33 is formed with a blade holder 34 having an elongated, tapered backing member 35 and a projecting ear 36 formed with recessed sides 37 (FIGS. 12 and 13). The top end of flared handle portion 5 is formed with a triangularly shaped shoulder 38 at the base of backing member 35.

Replaceable blades 39, 40 and 41 (FIGS. 8, 10 and 11) are identical to the above described double edged, pointless blades 3, 14 and 15, respectively, except for the mounting thereof on a handle. Blades 39-41 each have a keyhole-like slot 42 formed therein with an en-

larged portion 43 and a reduced portion 44. Enlarged portion 43 has a contour adapted to slip over a portion of projecting ear 36. The lower edges 45 of blades 39-41 are indented triangularly or fish-tailed, and have a shape complementary to that of handle shoulder 38.

Blades 39-41 are slipped downwardly over their respective blade holders 34 to engage the reduced slot portion 44 in the recess 37 of blade holders 34. Blades 39-41 are held securely and rigidly in fixed position, as shown, with their bottom edges 45 abutting shoulders 38 preventing wobbling of the blades on the handles when the instruments are used in cutting procedures.

A modified form of removable blade mounting means is shown in FIGS. 15 and 16. Lower edge 45 of each blade 39-41 is seated in a triangularly-shaped recess 46 which is formed in blade holder shoulder 38 adjacent backing member 35 to more rigidly and securely hold the blade in mounted position on the blade holder or handle.

The improved double edge, pointless scalpel blades also may be removably mounted on one end of an improved surgical instrument, indicated at 47 (FIGS. 17 and 18). Instrument 47 may be similar to that described in my copending application, Ser. No. 102,845, filed Dec. 30, 1970.

Instrument 47 has usual pickup jaws or fingers 48 and 49 formed of spring metal material normally biased to the position illustrated in FIG. 18. Jaws 48 and 49 usually have an outer serrated surface 50 and terminate in generally pointed ends 51. Ends 51 may be formed with slight inturned projections 52 for engaging and lifting flesh in an area where a stitch is to be made.

The upper ends of jaws 48 and 49 have a blade holder 53 (FIG. 20) mounted thereon similar to blade holder 34. Replaceable blade 39 (FIG. 19) is shown removably mounted on blade holder 53 (FIGS. 17 and 18). Likewise, blades 40 and 41 also may be mounted on blade holder 53.

One-half of both sides of blades 3, 14, 15, 39, 40 and 41 preferably are highly polished as indicated at 54, and the remaining one-half of the blades on both sides preferably have a dull finish, indicated at 55. This permits the surgeon to know which cutting side of the blade he is using. When that cutting side becomes dull from use, the blade need not be changed by a nurse or assistant. The scalpel is quickly turned over in the surgeon's hand and the cutting edge of the other side is used, saving considerable time and movement by the surgeon.

The replaceability of disposability of the improved double edge, pointless blades is desirable from the standpoint of sterilization and the ability always to have an extremely sharp blade.

The widest width of the various blade surfaces 6 and 7, 16 and 17, and 23 and 24 preferably are only slightly wider than a usual single edge blade and are no wider than the narrowest part of their respective scalpel handles 2, 33 and 48-49, as shown in FIGS. 1, 8 and 17.

The various double edge blades 3, 14, 15, 39, 40 and 41 are formed each with a pointless upper end having smooth areas 12, 13, 22, 29 and 30 at the uppermost ends of the cutting edges which extend axially beyond the uppermost ends of said cutting edges as shown, in particular in FIGS. 1-7, — so that the improved scalpels present pointless ends as to any object that comes

into direct contact therewith. Thus, such pointless ends reduce the likelihood of accidental stabbing or cutting of personnel handling the scalpels without impairing the cutting ability of the two cutting edges.

Accordingly, the double edge, pointless blade scalpel construction is very simple in construction, utilizes standard components which are integrated to achieve the new results, and provides for the rapid discharge of surgical procedures which heretofore have been more time consuming because of the necessity of repeatedly changing instruments to carry out surgical procedures. Accordingly, the improved scalpel construction achieves the objectives indicated and solves problems in the art.

In the foregoing description, certain terms have been used for brevity, clearness and understanding; but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such terms are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the description and illustration of the invention is by way of example, and the scope of the invention is not limited to the exact details shown or described since the features of the invention may be applied to other constructions characterized by the new concept.

Having now described the features, discoveries and principles of the invention, the manner in which the improved double edge blade scalpel construction is made, the characteristics of the new construction, the new uses achieved, and the advantageous results obtained, the new and useful structures, devices, elements, arrangements, parts and combinations are set forth in the appended claims.

I claim:

1. Double edge blade scalpel construction including handle means; blade means mounted on one end of the handle means and extending outwardly therefrom; the blade means having generally smooth flat faces terminating in a pair of opposite edges and in outer and inner ends, the inner blade end being secured to the handle means; at least a portion of said opposite edges of the flat faces being sharpened to form a pair of cutting edges; said cutting edges terminating in inner and outer ends; the outer ends of the cutting edges terminating adjacent the outer blade end; and the outer blade end having a pointless formation with smooth, rounded, convexly shaped areas adjacent the cutting edge outer ends and projecting longitudinally outwardly beyond said cutting edge outer ends, whereby accidental stabbing or cutting of a surgeon or assistant is reduced when the scalpel is transferred therebetween.

2. The scalpel construction defined in claim 1 in which the end of the handle means on which the blade means is mounted is formed with a flared portion; in which said flared portion is integral with the handle means; and in which said flared portion completely surrounds said handle means attachment end to provide a guard for a surgeon's fingers.

3. The scalpel construction defined in claim 1 in which the pointless outer blade end is formed with a smooth central concave portion; and in which said concave portion is located between the convexly-shaped smooth areas formed adjacent the cutting edge outer ends.

4. The scalpel construction defined in claim 1 in which the pointless outer blade end is formed with a

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convex rounded portion; in which said rounded portion is located between the convexly-shaped smooth areas; and in which said rounded portion projects longitudinally outwardly beyond said smooth areas.

5. The scalpel construction defined in claim 1 in which the pointless outer blade end is formed with a symmetrical V-shaped notch; in which said notch is located between the smooth areas; in which the edges of said notch are straight and equal in length; and in which said notch edges are sharpened to form a second pair of cutting edges.

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6. The scalpel construction defined in claim 1 in which the blade means is removably mounted on the handle means.

7. The scalpel construction defined in claim 1 in which the handle means includes spring-like pickup jaws with sharpened ends normally biased to open position; in which a replaceable blade holder extends from the other end of said pickup jaws; and in which the blade means is removably mounted on said blade holder.

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