

- [54] **DISPOSABLE SURGICAL SCALPEL**
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- [52] **U.S. Cl.** **30/162; 30/320; 30/335; 30/339**
[51] **Int. Cl.²**... **A61B 17/32; B26B 1/08; B26B 5/00**
[58] **Field of Search** **30/336, 335, 162, 320, 30/293, 151, 163, 164, 337, 338, 339, 329; 128/305**

[56] References Cited

UNITED STATES PATENTS

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[57] ABSTRACT

A disposable surgical scalpel assembly is disclosed which comprises a frangible handle, a cutting blade and a sheath in a single unitary assembly. The sheath is attached to the handle and movable to blade guarding and blade unguarded positions. When the sheath is in a blade unguarded position, with the blade exposed, the sheath serves as a gripping surface for the handle. The sheath component of the assembly may be releasably locked in either position for safe handling.

3 Claims, 4 Drawing Figures

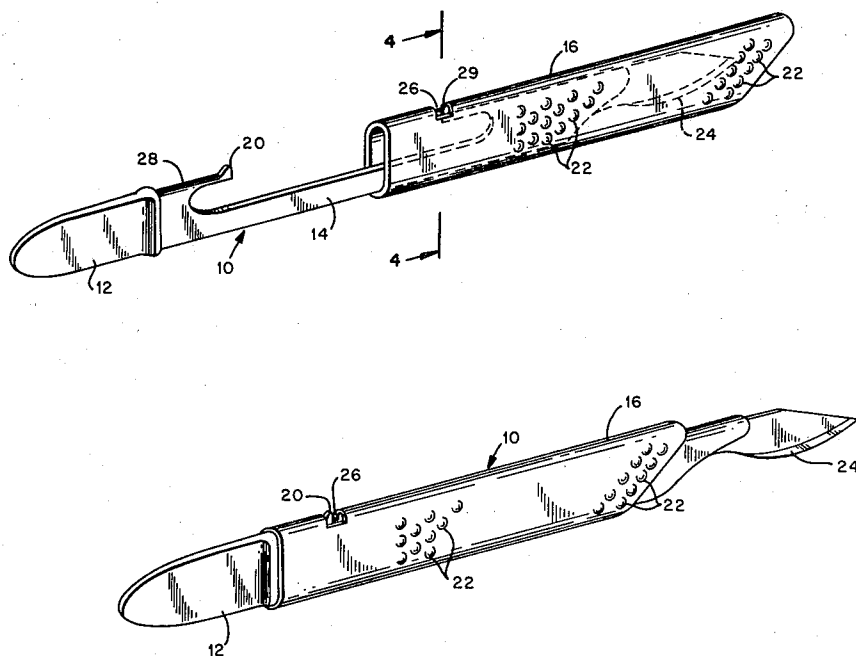


FIG. 1

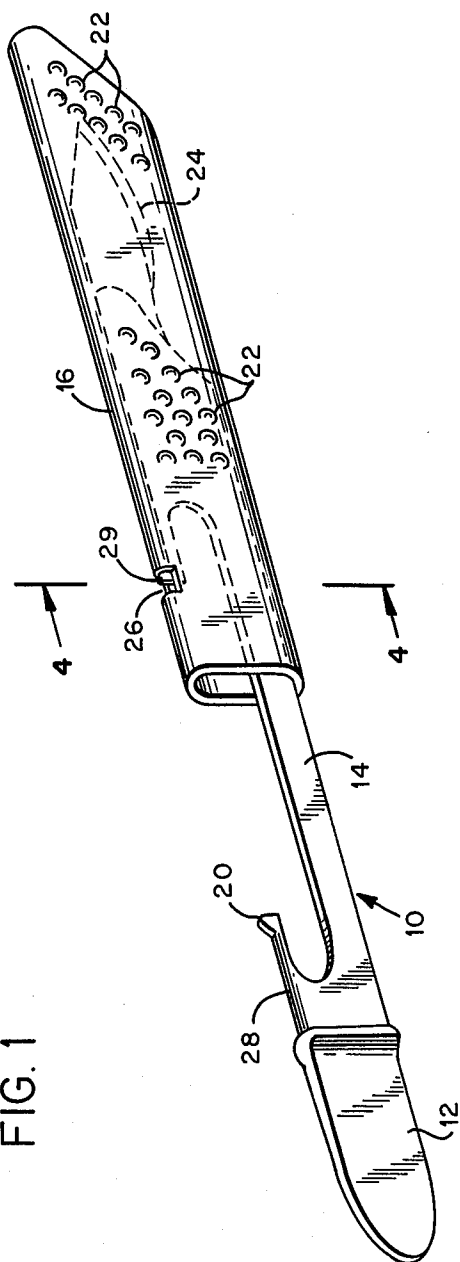
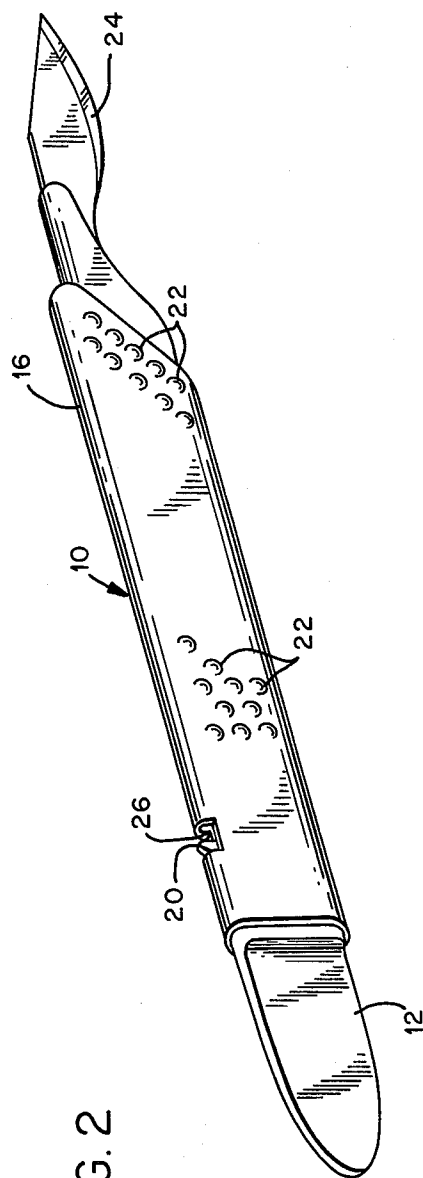
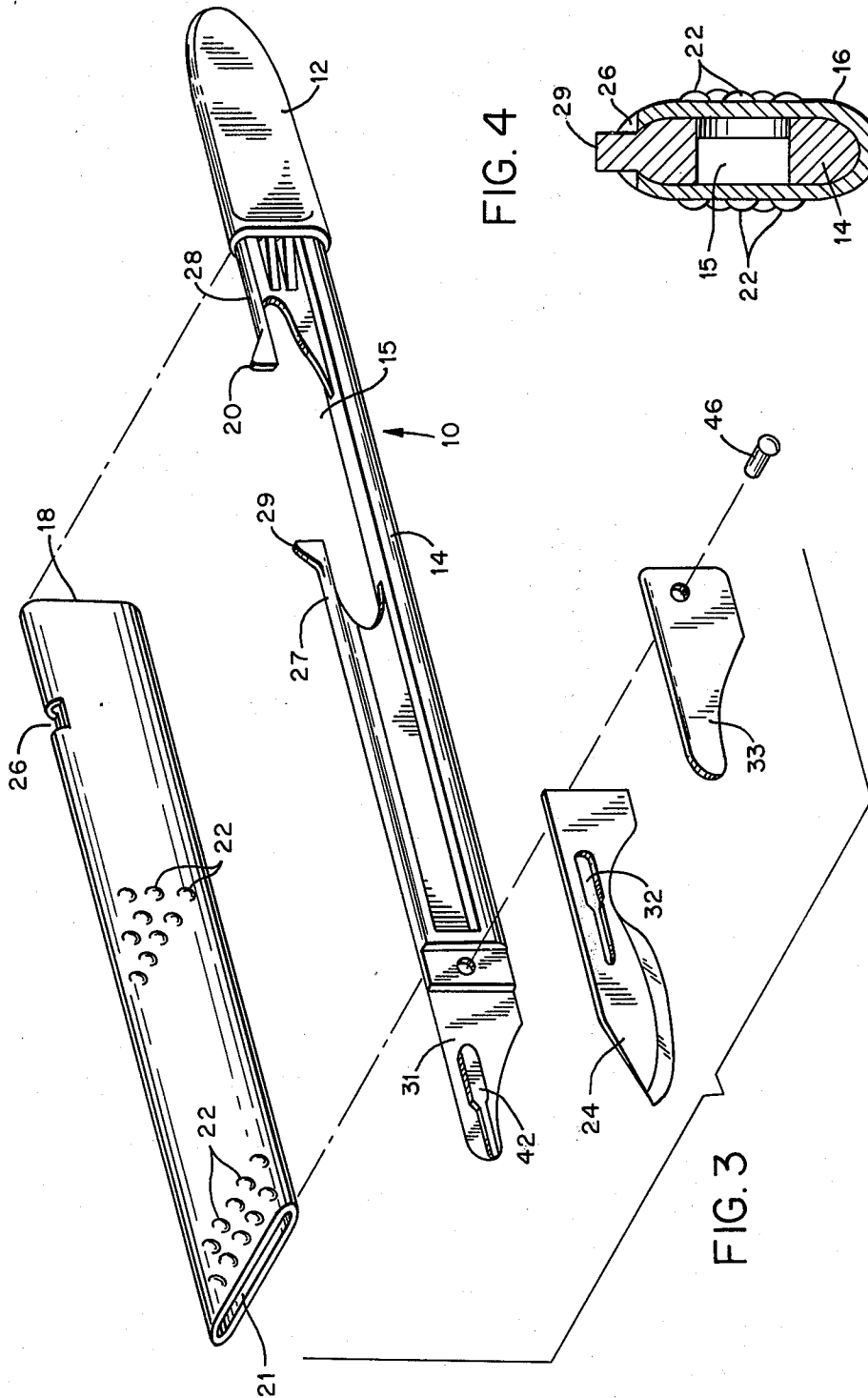


FIG. 2





DISPOSABLE SURGICAL SCALPEL

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention concerns medical-surgical instruments and more particularly concerns a disposable surgical scalpel.

2. Description of the Prior Art

Although surgical scalpels have been used for centuries, little has been done in the way of advancing their basic design. In recent years, the commercially important surgical scalpels have been those having disposable blade portions. Illustrative of this type of surgical scalpel is that disclosed in U.S. Pat. No. 3,412,467. In scalpels of the latter type, the blade component is detachable from the handle component and disposed of by deposit in a special container which may thereafter be handled without hazard. It will be appreciated, however, that such disposable surgical scalpels still present a hazard to the individual who must detach and transfer the blade component.

U.S. Pat No. 2,735,176 discloses a veterinary surgical knife which comprises a hollow handle component having a slidably extensible blade. A similar cutting instrument is disclosed in U.S. Pat. No. 2,512,237. In effect, the latter instruments employ the handle component as a sheath for the blade component when not in use. Such sheathable blades are not contemplated for disposal after a single use and are relatively costly in that they generally employ sophisticated locking mechanisms and relatively complex protraction and retraction mechanisms.

The demand on the part of hospital administrators and liability insurance carriers for a disposable scalpel has increased considerably in recent years. The ultimate in desirability is a surgical scalpel which may be disposed of safely with the least potential for reusing the scalpel, and of course the instrument must be simple to operate and economical to produce.

The surgical scalpel of this invention obviates many of the prior art problems. First, the surgical scalpel of this invention includes a means of sheathing the blade component without risking the hazards of blade removal. Second, once sheathed, access to the blade component requires a positive act, thereby assuring that the scalpel is unlikely to be accidentally unsheathed during handling for disposal. Third, the scalpel is unitary in construction, assuring that the sheath component will not become separated from the blade component and thereby lost, yet the means of attachment and dual use of the sheath as part of the gripping surface provides a scalpel which has the desired "balance" or "feel" desired for the surgeon's sensitive touch.

SUMMARY OF THE INVENTION

The invention comprises a unitary, disposable surgical scalpel which comprises: a frangible handle, a cutting blade attached to said handle, a sheath movably attached to said handle, means for releasably locking said sheath in a first position sheathing said blade and means for releasably locking said sheath in a second position exposing the blade.

The term "unitary" as used herein means a single, monoassembly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric drawing of an embodiment of the invention showing a surgical scalpel with sheath assembly. The sheath is shown in the blade sheathing position.

FIG. 2 is an isometric view of the embodiment shown in FIG. 1 but with the sheath in a retracted or operating position exposing the cutting blade.

FIG. 3 is a schematic view showing the assembly of FIG. 1 in disassembly.

FIG. 4 is a cross-sectional view taken along lines 4—4 of FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

The disposable scalpel of the invention is conveniently fabricated by conventional and standard methods for preparing surgical scalpels using conventional and standard materials. For example, the blade component of the surgical scalpel may be the standard surgical steel blade conventionally employed in making surgical scalpels. The handle and sheath components of the scalpel may be fabricated from conventional polymer materials such as, for example, polystyrene, polycarbonate, polyurethane, polyethylene, phenol-formaldehyde resins, polybutylene and like polymeric materials.

The disposable scalpels of the invention are conveniently described and exemplified by reference to the various specific embodiments set forth in the drawings attached hereto.

FIG. 1 is an overall view of an embodiment of the invention. The disposable surgical scalpel embodiment shown comprises a handle 10 which comprises a butt 12 and a shank 14 which is reduced in thickness and over which sheath 16 may slide. Sheath 16 is shown in a position covering the blade component of the surgical scalpel. The sheath position illustrated in FIG. 1 is for covering and protecting the blade component prior to use. It will be seen from FIG. 1 that the sheath has an aperture 26 for receiving lug 29 which is an integral part of the underlying shank 14 being mounted on a resilient bar portion of shank 14 (not seen under sheath 16). Lug 29 when inserted through aperture 26 blocks movement of the sheath in forward or rearward movement. At the butt 12 end of shank 14 there is seen a second lug 20 on the end of resilient bar 28, which is an integral part of shank 14. By pressing lug 29 downwardly to disengage it from engagement with aperture 26, and retracting sheath 16 over lug 20, lug 20 will engage aperture 26 to lock sheath 16 in a blade 24 exposing position as seen best in FIG. 2. In this position, sheath 16 serves as a gripping surface when using the scalpel. In a preferred embodiment, sheath 16 has raised surfaces 22 to provide a frictional surface for grasping. To cover the blade 24, the operator need only depress lug 20 on resilient bar 28 and move the sheath 16 forward until lug 29 again engages aperture 26 of sheath 16. When desired, the scalpel with blade covered as shown in FIG. 1 may be safely discarded by breaking frangible shank 14 (facilitated by its reduced width) and depositing the broken parts in an appropriate receptacle. With the blade covered, no hazard is presented to handlers of the discarded pieces.

The features hidden from view in FIGS. 1 and 2 are seen with greater clarity by reference to FIG. 3, where the various components making up the disposable sur-

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gical scalpel of FIGS. 1 and 2 are readily observed disassembled. Thus, sheath 16 comprises an elongate sheath open at both ends 18 and 21 and has frictional surfaces 22. At the top of sheath 16 is aperture 26. The handle 10 comprises a butt end 12 and a shank 14 having a cut-out portion 15. Shank 14 is frangible, having a weakened area of reduced thickness. This weakened area is easily fractured when the sheath 16 is in a blade protecting position. This provides an easy method of breaking the handle 10 prior to disposal of the surgical scalpel. With the handle 10 broken, a reuse of the discarded blade is discouraged, particularly since access to the blade component is not easily obtained without the aid of a whole handle 10. The weakened portion of the shank 14 in no way impairs the use of the scalpel by a surgeon since when the sheath 16 component of the assembly is in a retracted position for operating use, the sheath 16 serves to strengthen and protect the handle 10, thereby obviating the likelihood that the thin portion of shank 14 would fracture while the scalpel is being employed.

FIG. 3 also shows the mounting of blade 24 on blade support 31 where it is held in place by bayonet lock 42 and covered by blade mounting piece 33. As shown in FIG. 3, the blade 24 is fixedly attached by a bolt 46. However, in a preferred embodiment, blade 24 is permanently attached by ultrasonic welding of blade support 31 to blade mounting piece 33 with the blade 24 interposed.

FIG. 3 also shows the lug 29 mounted on resilient bar 27 which is an integral part of shank 14. Bar 27 is sufficiently resilient to permit lug 29 to be depressed out of engagement with aperture 26 of sheath 16 when the

scalpel is assembled in the blade covered position.

FIG. 4 is a cross-sectional view taken along lines 4—4 of FIG. 1 and more clearly shows the relationship of lug 29, sheath 16 and shank 14.

What is claimed is:

1. A unitary, disposable surgical scalpel which comprises,

a frangible handle;

a cutting blade attached to said handle;

a sheath movably attached to said handle;

means for releasably locking said sheath in a first position sheathing said blade; and

means for releasably locking said sheath in a second position exposing the blade.

2. A scalpel of claim 1 wherein said sheath forms a gripping surface for said handle when said blade is unsheathed.

3. A disposable surgical scalpel with sheath assembly which comprises:

a frangible handle;

a cutting blade affixed to one end of said handle;

a sheath movably attached to said handle and which when moved to a first position is releasably locked by a depressible lug attached to said handle which engages a lug receiving slot in said sheath, in a blade sheathing position; and which when moved to a second position is releasably locked by a depressible lug attached to said handle which engages a lug receiving slot in said sheath, in a blade exposing position; said sheath forming a gripping surface for holding the scalpel, when the sheath is in a blade exposing position.

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