United States Patent [19]

Hardwick

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[54] **SURGICAL NEEDLE APPARATUS**

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[52] **U.S. Cl.** **128/339**; 128/339

[51] **Int. Cl.** **A61b 17/06**

[58] **Field of Search** ..... 128/339, 334, 335.5, 340, 128/326, 330; 112/222, 226; 223/102, 103; 339/248 S, 258 RR, 266 R, 273, 276 R; 24/129 W-131 R, 138, 255 R, 255 TZ, 259

[56] **References Cited**

UNITED STATES PATENTS

324,030	8/1885	Kratz	128/339
1,960,117	5/1934	Lydeard	128/339
3,043,902	7/1962	Klein	24/137 R

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Assistant Examiner—Rick Opitz
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[57] **ABSTRACT**

A surgical needle apparatus having an elongated metal body tapered at one end and having a suture material holding means at the opposite end. The opposite end is split with the end of the split formed into gripping jaws for gripping suture material, and the split portions have raised areas between the end of the split so that compressing the non-raised area together will force the raised area in the split to force the gripping jaws to open for inserting and removing suture material.

1 Claim, 6 Drawing Figures

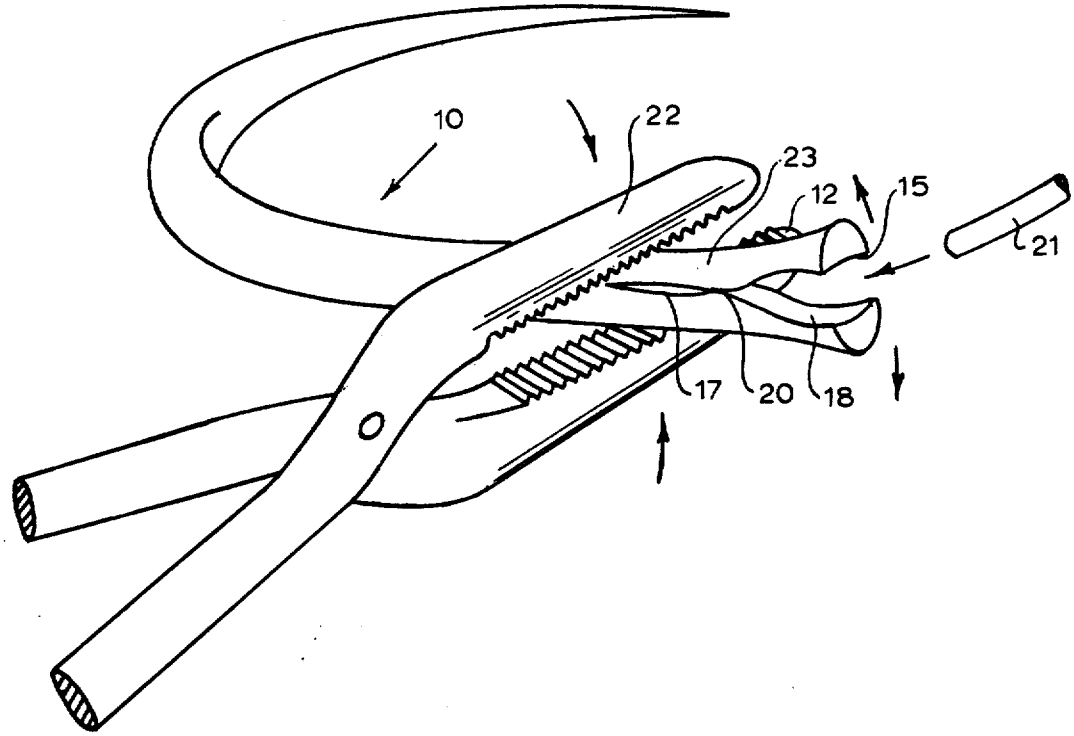


Fig. 1.

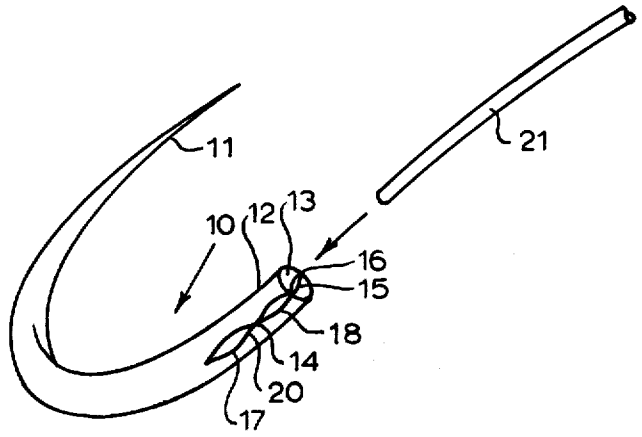


Fig. 2.

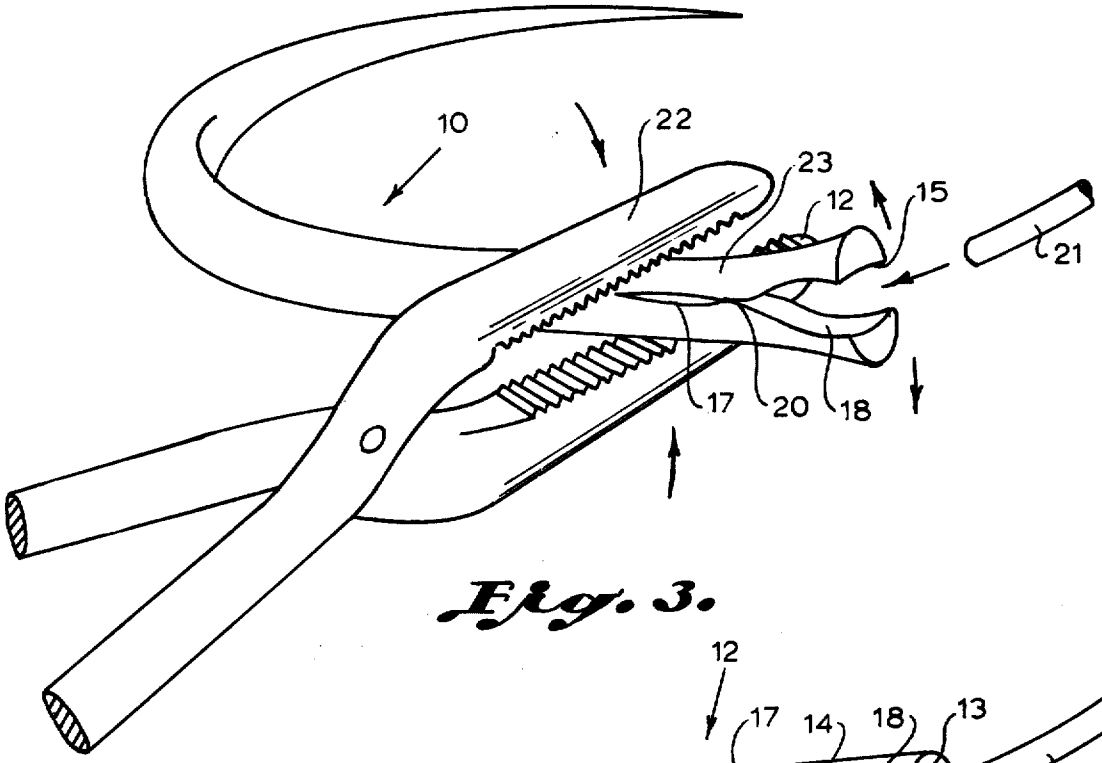


Fig. 3.

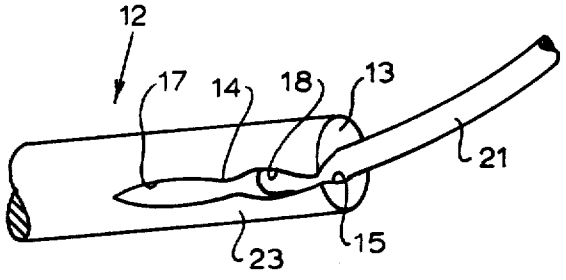


Fig. 4.

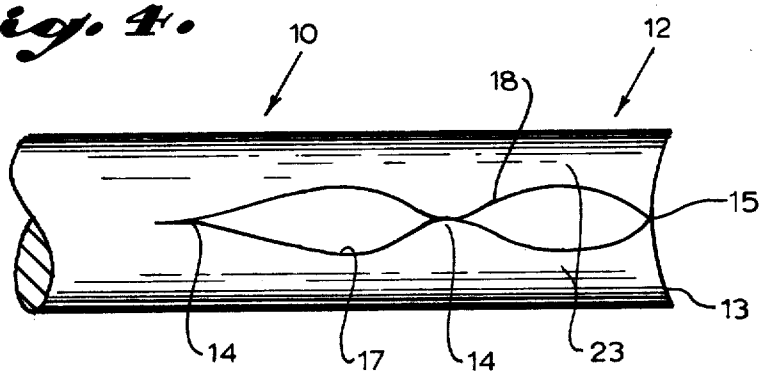


Fig. 5.

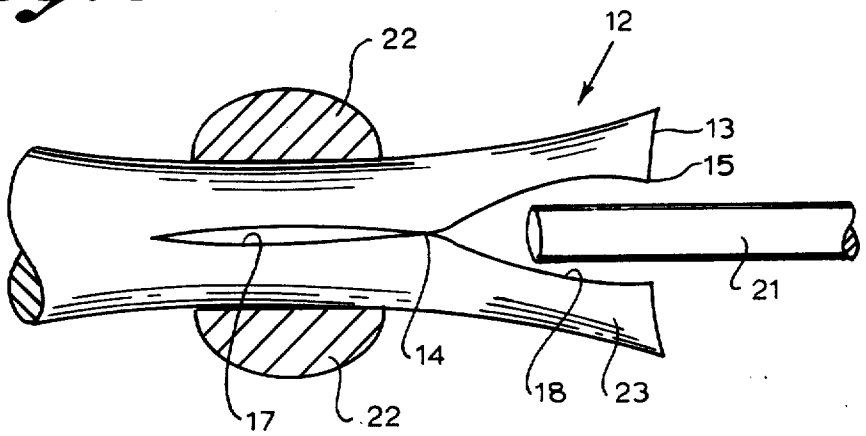
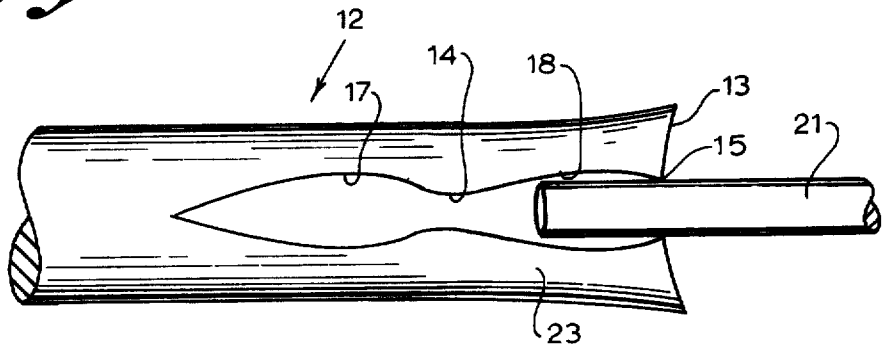


Fig. 6.



SURGICAL NEEDLE APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to a reusable surgical sewing needle and especially to such a needle which may be easily connected and disconnected from suturing material with the use of surgical forceps.

In the past it has been common to provide a great variety of suturing needles, one of the most common types being a non-reusable needle which comes complete with suturing material attached thereto and which is thrown away after the needle has been used. This type of needle is purchased sterilized and has many advantages, but is expensive inasmuch as both suture material and a stainless steel needle are being disposed of. There have also been a great variety of suggestions for providing surgical needles and having means for attaching suture material without leaving a knot or other enlarged areas at the blunt end of the needle to interfere with the passage of the needle and suture material through the tissue being sewn. Typical of the prior art needles considered most pertinent to the present invention are U.S. Pat. No. 2,240,330 for a Surgical Needle adapted to have suture material attached in a variety of ways including clamping of suture material to a connector which is connected to the needle. U.S. Pat. No. 1,981,651 has a threaded attachment which is removed for passing the suture material through and knotting prior to reattaching to the needle. U.S. Pat. No. 2,023,807 has a standard eye passing through the needle which is slotted to the end for twisting suture material into the slotted bore in the end of the needle. U.S. Pat. No. 2,715,486 teaches a Fast-Threading Needle with Trailing Flexible Link which provides means for engaging a looper end onto a needle. U.S. Pat. No. 3,592,196 teaches a Surgical Needle with Suture-Retaining Means, while U.S. Pat. No. 3,074,409 teaches a Surgical Needle for Medical Purposes having a curved slotted area for attaching suture material. The Surgical Needle in U.S. Pat. No. 3,249,104 has a pinned portion for allowing gripping jaws to be lifted and then locked in place with the suture material attached. U.S. Pat. No. 965,219 has a quick threading surgical needle with a pair of slots for engaging the suture material, and the needle in U.S. Pat. No. 1,131,155 has gripping surfaces inside a slotted bore.

The present needle provides a reusable surgical needle in which the suture material can be quickly connected and disconnected to the blunt end of a needle without providing a raised surface such as found in a knotted connection in the usual manner to a needle eye. This present needle facilitates rapid and easy loading of the needle while holding the suture material securely to the needle.

SUMMARY OF THE INVENTION

The present invention relates to a surgical needle having an elongated metal or stainless steel body having a tapered end portion and a blunt end portion or suture material holding end. The suture material holding end has been split a portion of the way into the needle, and each side of the split being shaped with matching pairs of concave surfaces joined by a pair of convex surfaces therebetween with the tip of the blunt end having a pair of gripping jaws for gripping the end of suture material. Thus, a pair of forceps can be used to compress the split portion of the needle having concave surfaces forcing the convex surfaces therebetween together and lifting the gripping jaws of the needle as well as the area between the remaining concave surfaces for inserting or removing suture material.

BRIEF DESCRIPTION OF THE DRAWING

Other objects, features and advantages of this invention will be apparent from a study of the written description and the drawings in which:

FIG. 1 shows a perspective view of a needle in accordance with the present invention with a piece of suturing material ready for insertion;

FIG. 2 is a perspective view of the blunt end of the needle prior to inserting the suture material;

FIG. 3 is a perspective view of a portion of the needle having the suture material attached;

FIG. 4 is a side sectional view of the suture material attaching portion of the needle;

FIG. 5 is a side sectional view as shown in FIG. 4 but held by needle clamp during insertion of a piece of suture material; and

FIG. 6 is a side sectional view of the suture material securing portion of the needle engaging a piece of suturing material.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, FIG. 1 illustrates an arcuate surgical needle **10** in accordance with the present invention having a tapered end **11** and a piece of suture material holding end **12** having a blunt tip **13.** The end **12** has a split **14** running from the blunt end **12** into the needle body **10** and includes a pair of curved suture material gripping jaws **15** which touch at either side **16.** Gripping surface **15** may be a sharp surface for engaging suture material being inserted, but could also be ridged or other surfaces for engaging different types of suturing material. The split area **14** has a pair of concave surfaces **17** and a second pair of concave surfaces **18** connected by a pair of convex surfaces **20.** That is the split portion **14** has portions removed at **17** and **18** or alternatively a raised portion **20** and a piece of suturing material **21** is illustrated ready for insertion into the needle. It should be noted that in curved needles, the split runs perpendicular to the curvature of the needles to prevent disengagement of the suture material during use since forceps are used during the suturing operation with the needle being gripped between the concave and convex sides thereof.

Turning to FIGS. **2** and **3,** the operation of the needle **10** is more clearly illustrated with a pair of needle clamps or surgical forceps **22** compressing split portions **23** of the blunt end portion **12** together directly over concave surfaces **17,** thus driving the convex surfaces **20** together and forcing the jaws **15** to separate along with separating the concave surfaces **18,** thus allowing the suturing material **21** to be inserted into the jaws **15** and the forceps **22** released so that the jaws clamp down on the suturing material and hold it in place as illustrated in FIG. **3.** This type of suture material can be utilized equally well with a curved or arcuate needle as illustrated in FIGS. **1–3** or with a straight needle as more clearly illustrated in FIGS. **4** through **6** in which the blunt end **12** of the suturing needle **10** has the same curved surfaces **17** from the removal of material in a split **14** which forms a pair of split portions **23**

in the raised area or convex surfaces **14** flowing into a second pair of concave or arcuate surfaces **18** which have had material removed from the portion **23** which in turn end in a pair of gripping jaws **15** at the blunt end **13** of the needle **10** so that the forceps **22** of FIG. **2** can open the jaws by the compression over the open area formed by the surfaces **17** which allows the force to be applied to the raised areas **14** to lift the jaws **15**. The suture material **21** is then held by the spring action of the portions **23** and separates the raised portions **14** from each other. The suture material is released in a similar manner upon the completion of the sewing operation.

It should be clear at this point that a reusable surgical needle has been provided which may be made of stainless steel and may be used with a great variety of suture materials including stainless steel, silk, cottons, or synthetics as desired, and that the concave and convex surfaces can be varied in shape as can be gripping jaws without departing from the spirit and scope of the invention. Accordingly, this invention is not to be construed as limited to the particular forms disclosed herein since these are to be regarded as illustrative rather than restrictive.

I claim:

1. A surgical needle comprising an elongated arcuate stainless steel body having a tapered end portion and a flat blunt end portion; said blunt end having an elongated split extending axially from the flat tip thereof, each side of said split being shaped with matching pairs of concave surfaces joined by a convex surface therebetween and gripping jaws adjacent the tip of the blunt end and adjacent to and intersecting one pair of concave surfaces for holding suture material, said elongated split being perpendicular to the concave and convex curvature of said needle body, whereby compressing one pair of concave surfaces towards each other will compress convex surfaces together along their curvature and open said gripping jaws to engage or release suture material, and said gripping jaws having sharpened curved edges arced between edges of each said side of said blunt end split opening for biting and holding stainless steel suture material.

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