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Hiebert

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[54] **SURGICAL NEEDLE CAPTURING DEVICE**

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[52] **U.S. Cl.** ..... **128/334 R**; 128/340

[51] **Int. Cl.** **A61b 17/04**

[58] **Field of Search** ..... 112/28, 121.13; 223/109 R, 223/101, 102, 100, 1, 105; 128/334 R, 339, 340, 329, 330, 215, 303

[56] **References Cited**

UNITED STATES PATENTS

2,413,142	12/1946	Jones et al.	128/339
2,897,820	8/1959	Tauber	128/340
3,500,829	3/1970	Abramowitz	128/329
3,511,242	5/1970	Agnone	128/334

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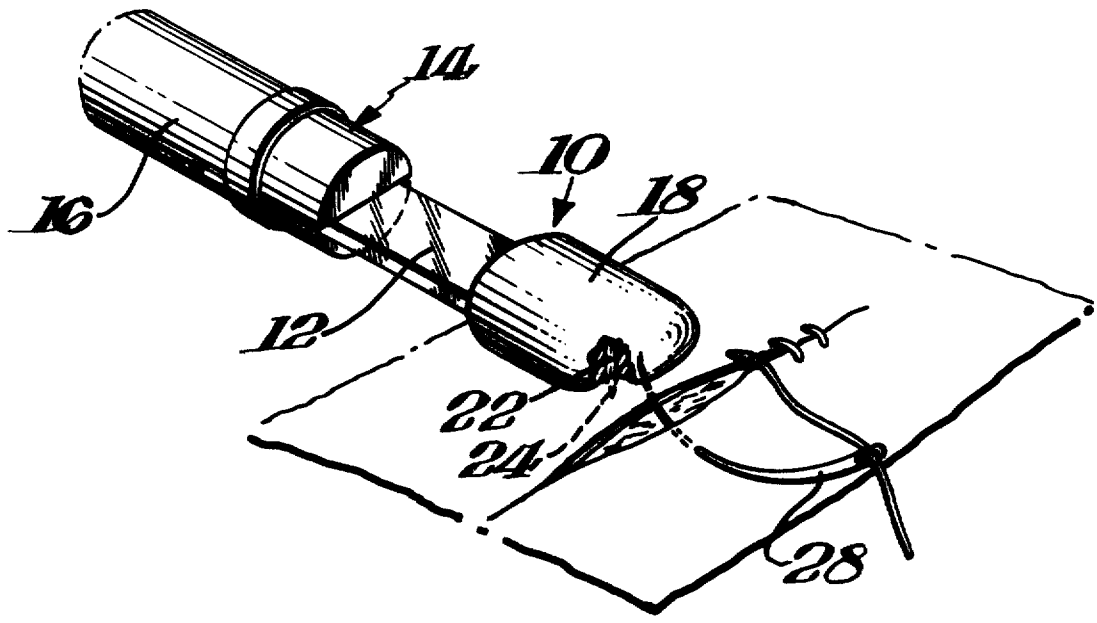
Assistant Examiner—Rick Opitz
Attorney, Agent, or Firm—Connolly and Hutz

[57] **ABSTRACT**

A surgical needle capturing device includes a handle member having a tip at one end thereof in the form of a solid block which may be penetrated by a surgical needle whereby manipulation of the handle member permits manipulation of the needle.

11 Claims, 5 Drawing Figures



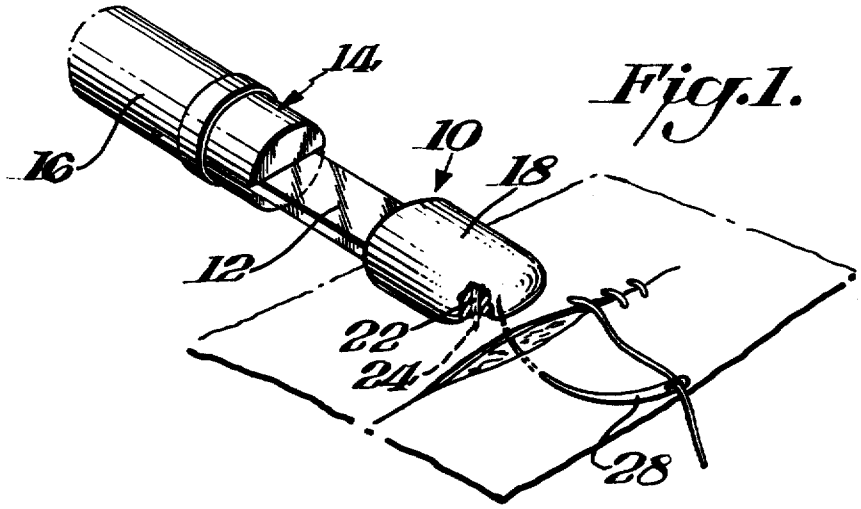


Fig. 1.

Fig. 2.

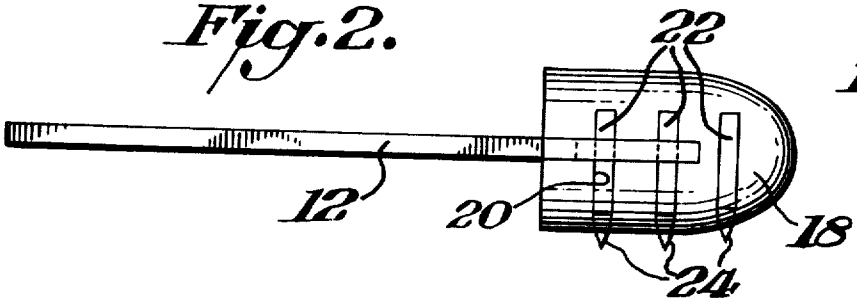
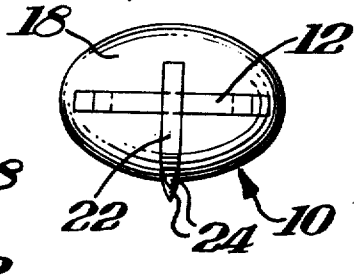


Fig. 4.



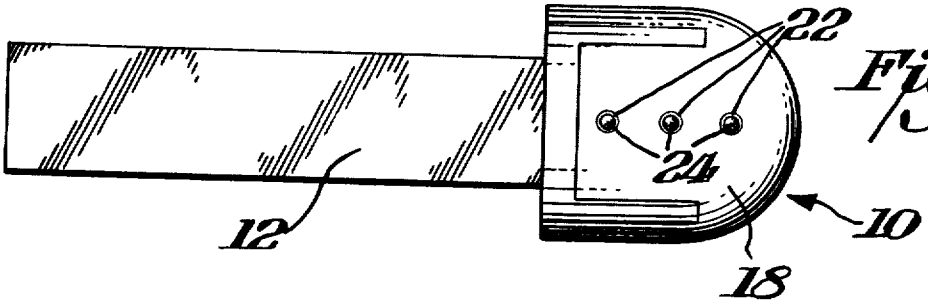
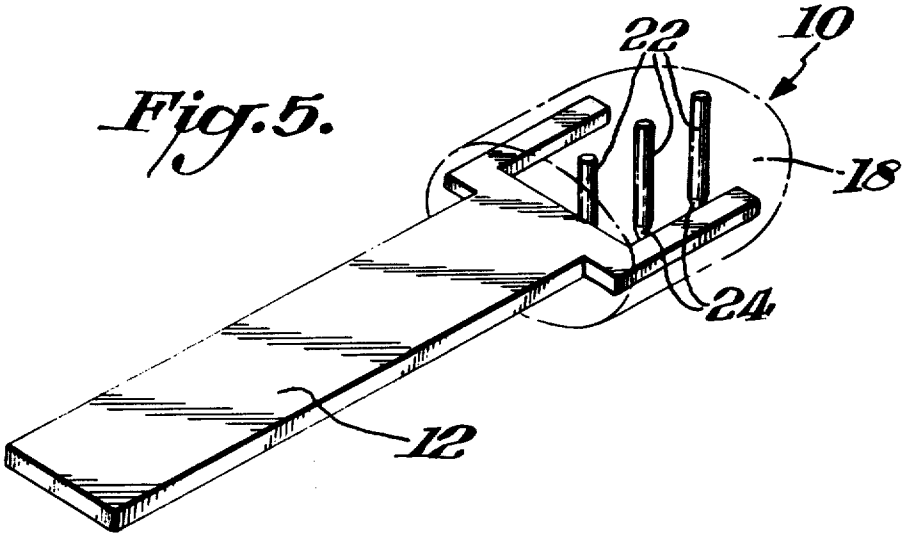


Fig. 3.

Fig. 5.



SURGICAL NEEDLE CAPTURING DEVICE

BACKGROUND OF THE INVENTION

Cutting and sewing are two particularly important aspects of surgery. Ideally each should be done effortlessly with accuracy and economy of movement. With respect to sewing, a vast array of needle and suture devices are available. These devices, however, have been basically unchanged since the introduction of the modern needle holder and curved needle. Six stitch movements are involved in sewing, namely, pushing the needle partly through the tissue, releasing the needle holder, gripping the point, pulling the needle and suture through the tissue, supporting the needle with the left hand fingers or forceps and regripping the shank of the needle with the needle holder. Attempts have been made to provide a surgical needle capturing device such as exemplified in U.S. Pat. No. 3,511,242. Other patents of interest are U.S. Pat. Nos. 2,589,499 and 562,730.

SUMMARY OF THE INVENTION

An object of this invention is to provide a needle capturing device which readily lends itself to surgical practice.

A further object of this invention is to provide such a surgical needle capturing device which insures holding the needle and then permitting it to be manipulated by movement of a handle member.

In accordance with this invention the surgical needle capturing device includes a handle member having a tip at one end which may be penetrated by the needle and once penetrated may be manipulated by manipulation of the handle member. In the preferred form of this invention, the tip is a body member in the form of a solid block adapted to rest against a vessel wall and having sufficient resistance to permit penetration thereof by a surgical needle and then to grip the needle so that it may be manipulated.

THE DRAWINGS

FIG. **1** is a perspective view partly broken away showing a surgical needle capturing device in accordance with this invention;

FIG. **2** is a side view in elevation partly in section of the device shown in FIG. **1**;

FIG. **3** is a bottom plan view of the device shown in FIGS. **1–2**;

FIG. **4** is an end view in elevation of the device shown in FIGS. **1–3**; and

FIG. **5** is a perspective view of the device shown in FIGS. **1–4**.

DETAILED DESCRIPTION

As illustrated in the drawings, the surgical needle capturing device **10** includes a handle member or wand **12** which is in the form of a flat plate-like member adapted to be received in the chuck **14** of a conventional manipulating tool **16.** Since the details of the manipulating tool and its chuck may take various forms including conventionally available forms a detailed description thereof is not necessary. At the remote end of the handle **12** is a tip or body member **18** formed, for example, of any suitable material such as silicone rubber. In the illustrated embodiment the tip is a solid block of generally elliptical shape in cross-section. It is

to be understood that other geometric shapes may be utilized. Additionally, the term solid block is not meant to preclude the use of a body member having hollow portions provided there is sufficient solid material to grip a needle which penetrates the body member. In the illustrated embodiment the solid block includes a series of three passages **20** extending a substantial distance into body member **18.** A pin or pricker **22** is inserted into each passage with its point **24** extending therefrom.

In the illustrated form of this invention the tip or body member has a maximum length of about 0.26 inches and a maximum width of about 0.225 inches and a maximum heighth of about .16 inches. The exposed position of the wand or handle **12** is about ½ inches long and ⅛ inches wide and has a thickness of about 0.025 inches. The pins **22** project from body member **18** about 0.025 inches. Wand or handle **12** terminates in a bifurcation or U-shaped extension which is disposed within the tip or body member **18** to add sufficient stability thereto with the pins being located between the legs of the U. As best shown in FIG. **2,** the pin most remote from handle or wand **12** is slightly shorter than the other pins since it is disposed in the curved portion of the tip or body member **18.** In this manner a uniform amount of projection is maintained with respect to all pins **22.** It is to be understood that other dimensional relationships and geometric shapes may be utilized within the concepts of this invention.

In operation the body member is pressed against the vessel wall and the tissue is stabilized by the prickers or pins **22.** The surgical needle **28** is pushed into and penetrates the body member **18** and is gripped by the body member due to the nature of the silicone or rubber-like material. The needle may then be manipulated by simple manipulations of the surgical tool **16.** In practice the needle tip is embedded in the silicone to a point where its resistance is greater than that of the shank of the needle against the vessel wall. The needle holder is released and the left thumb and forefinger perform a pin-rolling motion to complete passage of the needle. The needle is thus immediately in position to be regripped and extracted from the body **18** and ready to be used for the next time.

In the manner described above, a surgical needle capturing device is provided employing low cost materials wherein the device is adaptable to existing surgical tools and may be conveniently used by surgeons. Because of the low cost nature of device **10** after it has been used it may be discarded and a new device loaded into chuck **14** of tool **16** so that the entire reloadable unit is disposable and may be discarded after a single use.

What is claimed is:

1. A surgical needle capturing device comprising a handle member, one end of said handle member being adapted for securement to a manipulating element, a body member, the other end of said handle member being attached to said body member, said handle member being of sufficient stiffness to transmit manipulations of said handle member to said body member whereby said body member may be manipulated in a controlled manner by manipulating said handle member, said body member being a solid block adapted to rest against a vessel wall and having sufficient resistance to be penetrated by a surgical needle passing through the vessel wall and to then grip the needle

whereby manipulation of the handle member results in manipulation of the needle, including tissue anchoring means on said body member for stabilizing the tissue while the surgical needle penetrates the body member, and said tissue anchoring means including a plurality of pins having points projecting from said body member.

2. A surgical needle capturing device comprising a handle member, one end of said handle member being adapted for securement to a manipulating element, a body member, the other end of said handle member being attached to said body member, said handle member being of sufficient stiffness to transmit manipulations of said handle member to said body member whereby said body member may be manipulated in a controlled manner by manipulating said handle member, said body member being a solid block adapted to rest against a vessel wall and having sufficient resistance to be penetrated by a surgical needle passing through the vessel wall and to then grip the needle whereby manipulation of the handle member results in manipulation of the needle, wherein said handle member being a flat wand capable of securement to the manipulating element, including tissue anchoring means on said body for stabilizing the tissue while the surgical needle is being pushed into said body member, said tissue anchoring means including at least one row of pins extending from said body member, said body member being generally elliptical in cross-section, said body having a maximum length of about 0.26 inches and a maximum width of about 0.225 inches and a maximum heighth of about 0.16 inches, said pins extending from said body member about 0.025 inches, and the exposed portion of said handle member being about ½ inches long and having a width of about ⅛ inch and a thickness of about 0.025 inches.

3. A device as set forth in claim **2** wherein said handle member terminates in a bifurcated portion which is disposed within said body member, and said pins are disposed in a single row between the legs of the bifurcations of said body member.

4. A surgical suturing needle capturing device for suturing vessels and the like comprising a handle member, one end of said handle member being adapted for securement to a manipulating element, a body member, the other end of said handle member being attached to said body member, said handle member being of sufficient stiffness to transmit manipulations of said handle member to said body member whereby said body member may be manipulated in a controlled manner by manipulating said handle member, said body member being a solid block adapted to rest directly against a vessel wall and having sufficient resistance to be penetrated by a surgical needle passing through the vessel wall and to then grip the needle whereby manipulation of the handle member results in manipulation of the needle, tissue anchoring means on said body member for stabilizing the tissue while the surgical needle penetrates said body member and said body member having a maximum length of about 0.26 inches and a maximum width of about 0.225 inches and a maximum heighth of about 0.16 inches whereby said body member is sufficiently small to be disposed against a vessel.

5. A device as set forth in claim **4** wherein said body member is made of a rubber-like material.

6. A device as set forth in claim **5** wherein said rubber-like material is silicone.

7. A device as set forth in claim **4** wherein said handle member is a flat wand capable of securement to the manipulating element.

8. A device as set forth in claim **4** wherein said tissue anchoring means includes contours on the surface of said body member.

9. A device as set forth in claim **8** wherein said contours are projections extending outwardly from said body member.

10. A device as set forth in claim **9** wherein said projections terminate in tissue penetrating points.

11. A device as set forth in claim **4** wherein the edges of said body member are rounded and said body member is of convex cross-sectional shape.

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