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(71) Applicant: JAMISON, Terry, Jr. [US/US]; 5603 LaSalle Street, Savannah, GA 31405-5435 (US).

(74) Agent: CRAIN, Andrew, N.; Thomas, Kayden, Horstemeier & Risley, LLP, Suite 1750, 100 Galleria Pkwy. NW, Atlanta, GA 30339-5948 (US).

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(54) Title: NAIL DRILL

(57) Abstract: A nail drill is configured to create a hole in a nail, such as a fingernail or toenail. The nail drill has a shaft extending from a handle. A tip is configured on an end of the shaft not coupled to the handle and has one or more cutting sections configured to cut into a nail. The nail drill may be utilized for relieving a pressurized area underneath a nail, such as bodily fluid that may have collected due to a prior trauma or other condition. The method for relieving the pressurized area includes positioning the tip onto an outer surface of the nail. The shaft may be rotated so that the tip turns and cuts a hole in the nail. The shaft is rotated until a hole is created through the nail enabling the bodily fluid to pass from the pressurized area through the hole, thereby relieving the painful condition.

NAIL DRILL

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to a copending U.S. Provisional Patent Application entitled "Nail Drill" filed on March 24, 2005 and accorded serial number 60/664,892, which is entirely incorporated herein by reference.

TECHNICAL FIELD

[0002] This disclosure pertains to a medical instrument, and, more particularly, to an apparatus and method for relieving a pressurized area beneath a fingernail or toenail.

BACKGROUND

[0003] Oftentimes when a person injures a finger or toe, blood and other bodily fluids collect beneath the nailbed of the individual's finger or toe, thereby resulting in great pain. While this injury may ultimately heal on its own over time, the pain experienced by the individual suffering the injury can be excruciating, thereby resulting in pursuit of medical treatment.

[0004] Historically, this condition has been treated by substantially heating a metal object with a relatively sharp point such that the heated object melts the fingernail upon contact, thereby creating a hole in the fingernail or toenail extending into the area of collected blood and/or other bodily fluid. By creating a hole through the fingernail or toenail, the blood and/or bodily fluid, which may have collected under pressure, may be released through the hole. By making a hole, which permits blood/fluid to exit the

opening created by the hole, the pressure under the nailbed may be relieved, thereby easing the pain to the individual having suffered the injury.

[0005] However, problems exist with this scheme of heating a metal object, which oftentimes may simply be a paperclip or other available device. Such devices are typically not sterilized, thereby leading to one heating the object over a flame. But in heating the object, such as a paper clip, heat energy can be transferred through the metal portion of the clip, resulting in the holder being burned. Plus, the paperclip or other available device, generally is heated to a high temperature to penetrate via burning/melting, the nail so as to reach the to the nailbed, which is sensitive to pain.

[0006] For at least this reason, a heretofore unaddressed need exists to overcome the deficiencies and shortcomings described above.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0007] Many aspects of this disclosure can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present disclosure. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.
- [0008] FIG. 1 is a diagram of a nail drill that may be configured as a single use disposable instrument to drill a hole through a fingernail or toenail.
- [0009] FIG. 2 is a bottom view diagram of the nail drill of FIG. 1.
- [0010] FIG. 3 is a top view diagram of the nail drill of FIG. 1 depicting a nonlimiting exemplary octagon shaped.
- [0011] FIG. 4 is a diagram of the nail drill of FIG. 1 as it may be positioned against a fingernail so as to create a hole in the nail.
- [0012] FIG. 5 is a diagram of the finger of FIG. 4 depicting a hole drilled into the nail of FIG. 4 to access a collected area of bodily fluid.
- [0013] FIGS. 6 and 7 are diagrams depicting a cross-section of an alternative embodiment for the nail drill of FIG. 1.
- [0014] FIG. 8 is a diagram of the nail drill of FIG. 1 placed in an enclosed and sealed package, as may be prepared for use.

DETAILED DESCRIPTION

[0015] A nail drill is configured to create a hole in a nail, such as a fingernail or toenail. The nail drill has a shaft extending from a handle. A tip is configured on an end of the shaft not coupled to the handle and has one or more cutting sections configured to cut into a nail. The nail drill may be utilized for relieving a pressurized area underneath a nail, such as bodily fluid that may have collected due to a prior trauma or other condition. The method for relieving the pressurized area includes positioning the tip onto an outer surface of the nail. The shaft may be rotated so that the tip turns and cuts a hole in the nail. The shaft is rotated until a hole is created through the nail enabling the bodily fluid to pass from the pressurized area through the hole.

[0016] FIG. 1 is a diagram of a nail drill 10 that may be, as a nonlimiting example, configured as a single use disposable instrument to drill a hole through a fingernail or toenail to alleviate pressure resulting from blood and/or other fluid deposited under the nailbed, as similarly described above. Nail drill 10 may be constructed, in this nonlimiting example, with a handle that is comprised of a composite material that may be formed into an octagonal shape on an upper part of the drill. One of ordinary skill in the art would know, however, that handle 12 may be comprised of any suitable material and may be shaped in any form to achieve the purposes of this disclosure. Nail drill 10 also includes a metal shaft 14 having sufficient tensile strength that may be, as in one nonlimiting example, approximately equal to a venipuncture needle.

[0017] Nail drill 10 also includes a tip section 16 at the end of shaft 14 that is shaped with at least one or more cutting edges. In this nonlimiting example, tip section 16 may be configured at a 45 degree angle with cutting edges on opposing sides, as shown in

FIG. 2. However, one of ordinary skill in the art would know that tip sections having different angles and different cutting edge configurations could be used.

[0018] FIG. 2 is a bottom view diagram of the nail drill 10 of FIG. 1. In this diagram, handle 12 extends outwardly from shaft 14 at a greater diameter. However, as stated above, handle 12 may be configured in a variety of formats in addition to the octagon shape as shown herein. Tip section 16 is depicted in FIG. 2 such that cutting edges 17 and 19 cut into and through the fingernail or toenail.

[0019] FIG. 3 is a top view diagram of the nail drill 10 of FIG. 1 depicting the octagon shaped handle in this nonlimiting example. As stated above, one of ordinary skill in the art would know that handle 12 may be configured in a variety of shapes and materials.

[0020] FIG. 4 is a diagram of the nail drill 10 of FIG. 1 as it may be positioned against a fingernail 21 so as to create a hole in the nail 21. In application, nail drill 10 may be used by a physician or other individual by placing the nail drill 10 on the outer surface of the nail 21 of finger 20 and rotating the device. The tip section 16 with cutting edges 17, 19 (FIG. 2) may be configured to carve a hole 22 (FIG. 5) of increasing diameter into the nail 21. In at least one nonlimiting example, the shaft 14 may be of a 3/32" diameter.

[0021] FIG. 5. is a diagram of the finger 20 of FIG. 4 depicting a hole 22 drilled into the nail of FIG. 4 to access a collected area of bodily fluid 23. The hole 22 created by nail drill 10 is sufficient to relieve the pressure of blood and/or other bodily fluids 23 beneath the fingernail or toenail as the blood and/or other bodily fluids 23 can escape through the created hole 22. Thus, by placing tip 16 on the outer surface of a fingernail or toenail (collectively 21) and turning the nail drill 10 such that the cutting surfaces 17, 19 carve a

hole 22 in the nail 21, nail drill 10 may carve a hole 22 in the nailbed to relieve the pressure caused by fluid 23 up beneath the nail 21.

[0022] One of ordinary skill in the art would also understand that the cutting edges 17, 19 are sufficiently sharp so as to cut the hole 22 in the nail 21 without placing excessive pressure on the nail 21, thereby increasing the pain experienced by the individual having suffered the injury. However, one of ordinary skill in the art would know that a variety of additional tip configurations may be used on tip 16 in addition to the one shown herein.

[0023] FIGS. 6 and 7 depict a cross-section of an alternative embodiment for the nail drill 10 of FIG. 1. In this alternative embodiment of FIG. 6, nail drill 10 includes a motor 25 that is powered by battery 27, which is coupled to motor 25 by electrical contacts 29. A button 31 operates a switch 33 to activate and deactivate motor 25 at desired intervals. As shown in FIG. 7, when button 31 is depressed, thereby closing switch 33, motor 25 causes shaft 14 to rotate so that tip 16 can carve a hole 22 in the nail 21 of the patient's finger 20.

[0024] One of ordinary skill in the art would know that a variety of battery types as well as a variety of motors 25 may be used and inserted within handle 12. The configuration of motor 25 may result in the rotation of shaft 14 at sufficient speed so that tip 16 carves a hole 22 in the nail 21 without placing excessive pressure on the nail 21 of the patient's finger 20.

[0025] FIG. 8 is a diagram of nail drill 10 placed in an enclosed and sealed package 41, as may be prepared for use. In this nonlimiting example, nail drill 10 may be sterilized

and enclosed or sealed within package 41 so that a physician or other individual may open the package 41 in order to use the sterilized nail drill 10.

[0026] In this nonlimiting example, package 41 comprises a back portion 43 upon which instructions and other communications may be placed upon an outer side. Package 41 also includes, in this nonlimiting example, a clear wrapping material 44 that seals to backing 43 so as to enclose the nail drill within the package 41. As the nail drill 10 may be configured as a single use instrument, packet 41 enables a physician or other individual to merely open the package to retrieve a sterilized instrument, thereby ensuring that the patient is being treated with a proper instrument. One of ordinary skill in the art would know that a variety of packages 41 may be used in addition to that as shown in FIG. 8, which is merely a nonlimiting example.

[0027] It should be emphasized that the above-described embodiments and nonlimiting examples are merely possible examples of implementations, merely set forth for a clear understanding of the principles disclosed herein. Many variations and modifications may be made to the above-described embodiment(s) and nonlimiting examples without departing substantially from the spirit and principles disclosed herein. All such modifications and variations are intended to be included herein within the scope of this disclosure and protected by the following claims.

CLAIMS

I claim:

- 1 1. A nail drill for creating a hole in a fingernail or toenail, comprising:
2 a handle portion;
3 a shaft extending from the handle portion, the shaft having a width that is
4 less than a width of the handle portion; and
5 a tip configured on an end of the shaft not coupled to the handle portion,
6 the tip having one or more cutting sections configured to cut into a
7 nail when the shaft is rotated.

- 1 2. The nail drill of claim 1, further comprising:
2 a battery positioned within the handle portion;
3 a motor positioned in the handle portion and coupled to the battery;
4 a switch on an outer portion of the handle portion and coupled to a circuit
5 also coupled to the battery and the motor so that the switch may
6 open and close a electrical path coupled to the battery and the
7 motor, wherein the motor rotates the shaft and tip when the switch
8 is placed into a predetermined position.

- 1 3. The nail drill of claim 1, further comprising:
2 a package configured to encase the nail drill so that the nail drill is
3 maintained in a sterilized state while encased in the package.

1 4. The nail drill of claim 1, further comprising:
2 a package configured to contain the nail drill, the package having a clear
3 flexible portion enabling viewing of the nail drill when contained
4 in the package, the package also having a back portion configured
5 of a material of an increased stiffness than the flexible portion, the
6 back portion coupled to the flexible portion so as to create an
7 internal cavity that contains the nail drill.

1 5. The nail drill of claim 4, wherein the back portion is configured to display
2 text related to the nail drill.

1 6. The nail drill of claim 1, wherein the shaft has a diameter of 3/32 inches.

1 7. The nail drill of claim 1, wherein the shaft has a tensile strength
2 approximately equal to a venipuncture needle.

1 8. A method for relieving a pressurized area underneath a nail, comprising
2 the steps of:
3 positioning a shaft coupled to a handle on one end and a cutting tip on the
4 other end onto the nail proximate to the pressurized area, the
5 cutting tip being in physical communication with an outer surface
6 of the nail;
7 rotating the shaft so that the cutting tip turns and cuts into the nail; and
8 continuing rotating the shaft until a hole is created through the nail so that
9 fluid contained in the pressurized area is permitted to pass from the
10 pressurized area through the hole.

1 9. The method of claim 8, further comprising the step of:
2 actuating a button on the handle, the button coupled to a switch configured
3 within the handle, wherein the switch places a battery contained in
4 the handle in electrical communication with a motor contained in
5 the handle, wherein the motor is coupled to the shaft and rotates
6 the shaft.

1 10. The method of claim 8, further comprising the step of:
2 extracting the shaft from a package configured to maintain the shaft in a
3 sterilized configuration, the package having a clear portion and an
4 unclear portion upon which text may be positioned.

1 11. The method of claim 8, wherein the nail is a fingernail.

1 12. The method of claim 8, wherein the nail is a toenail.

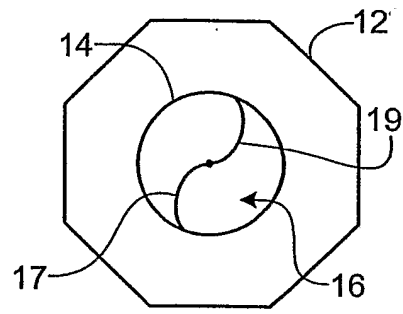
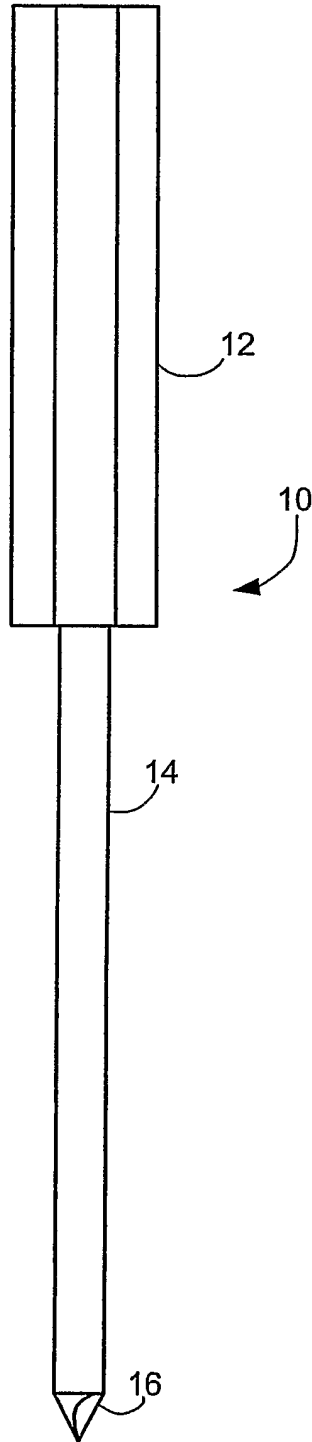


FIG. 2

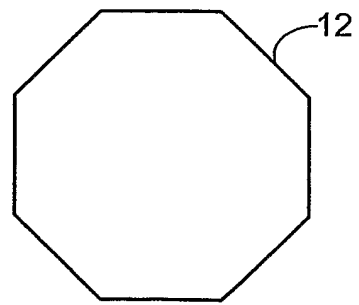


FIG. 3

FIG. 1

FIG. 4

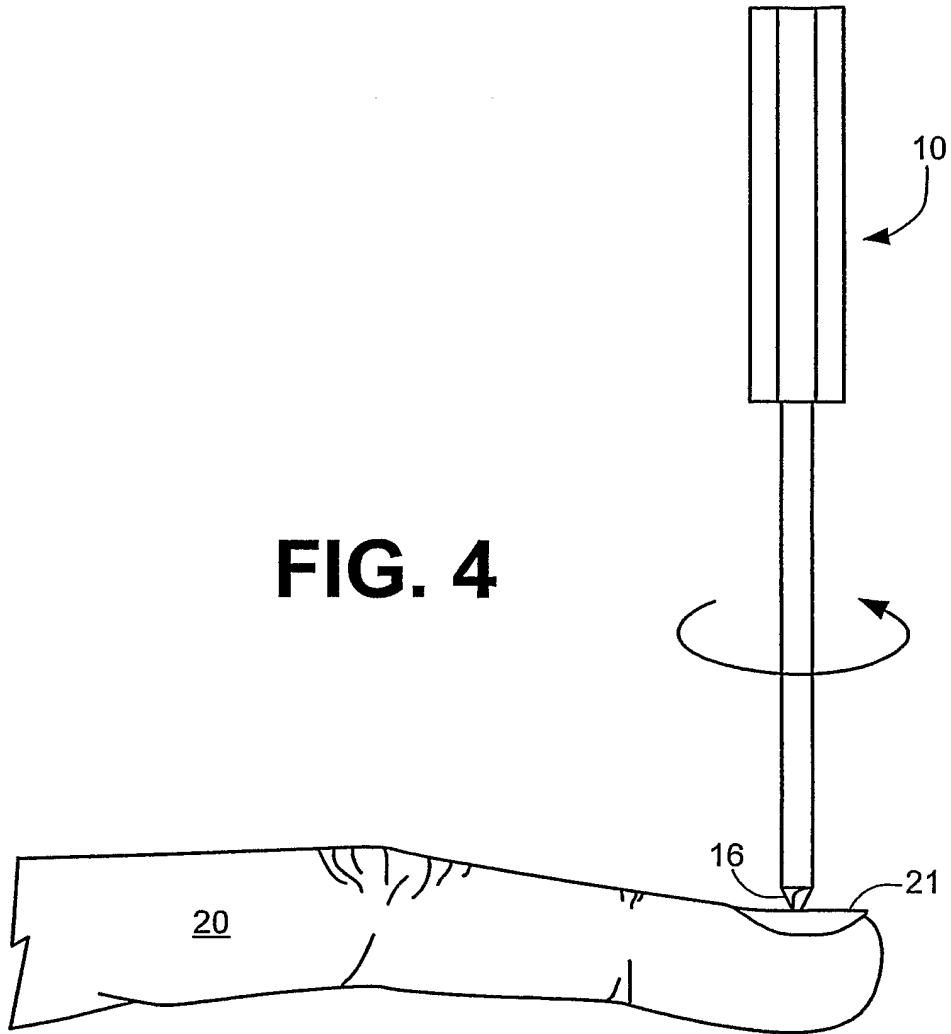
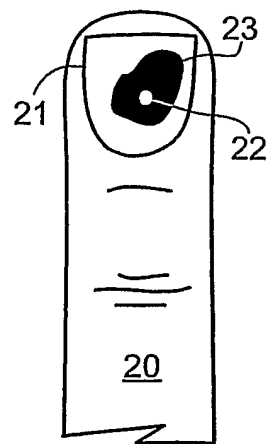


FIG. 5



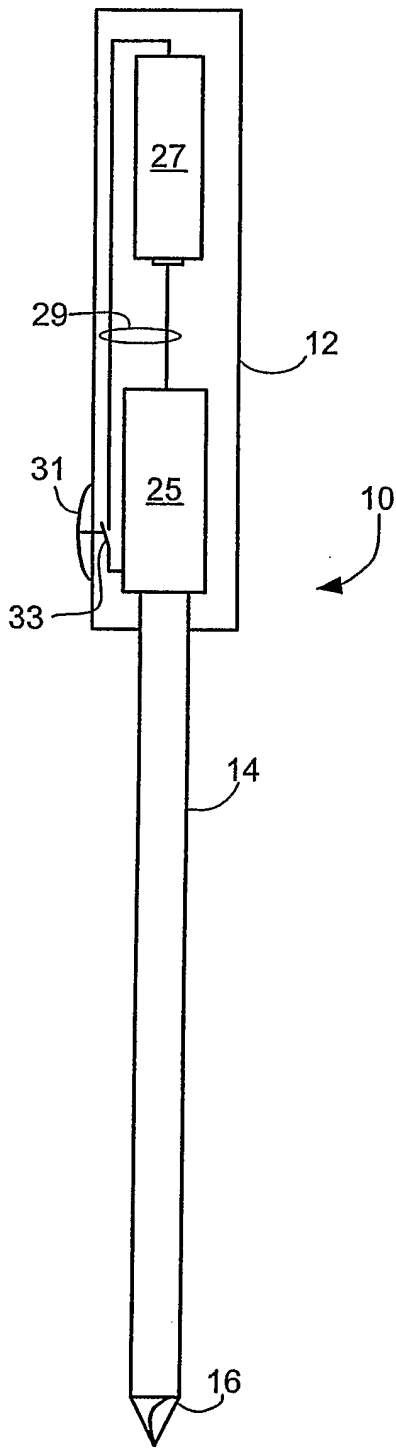


FIG. 6

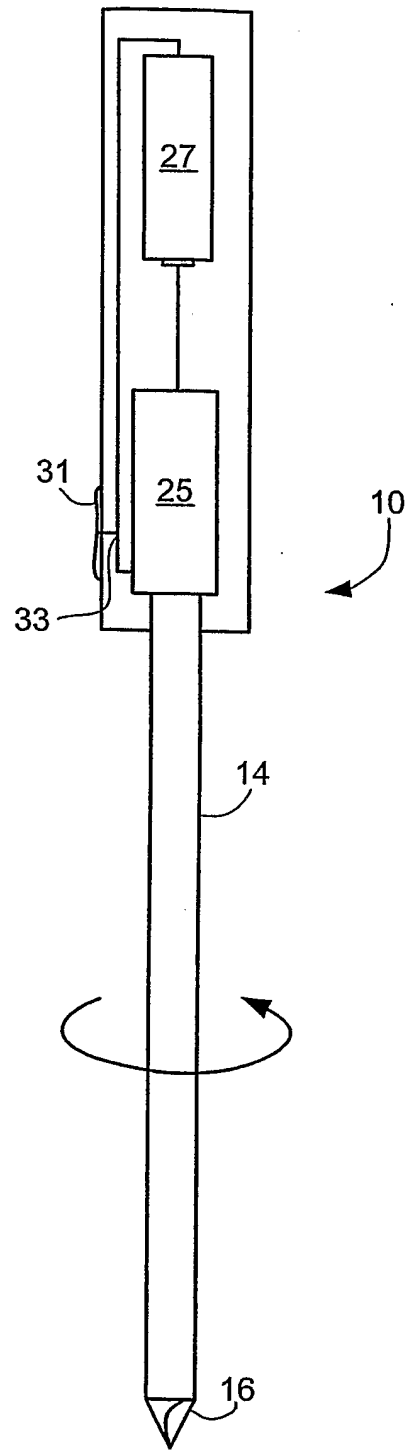


FIG. 7

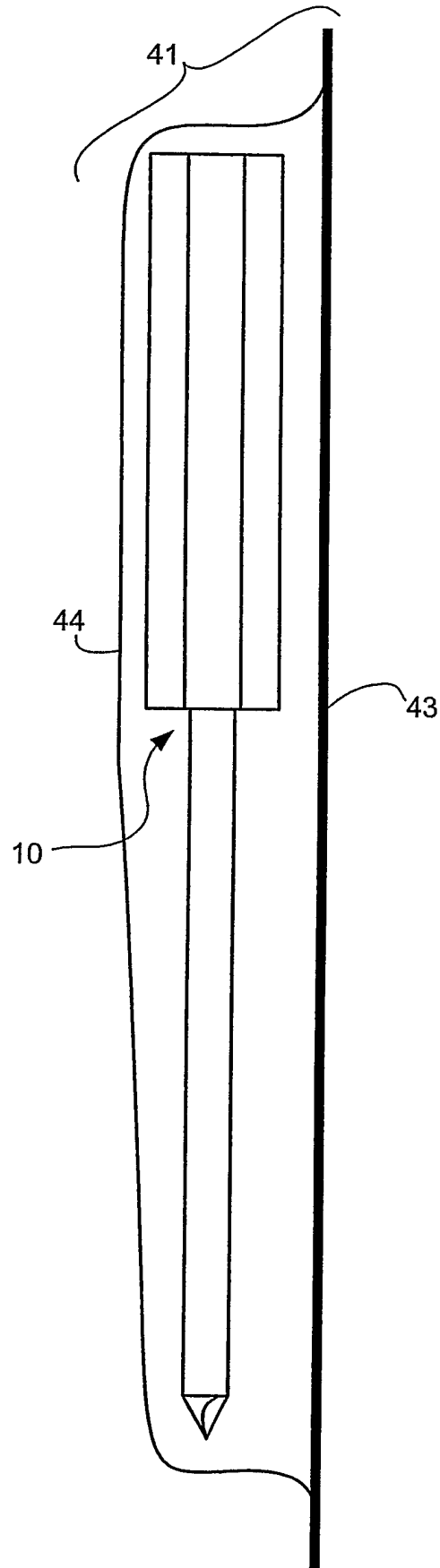


FIG. 8