

[54] DEVICE FOR TREATING SUB-UNQUAL HEMATOMA

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[73] Assignee: The United States of America as represented by the Secretary of Health, Education and Welfare

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[51] Int. Cl... A61f 7/00, A61m 27/00, A61b 17/34

[58] Field of Search ..... 128/81 A, 303 B, 128/303 R, 303.1, 310, 329, 330

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[57] ABSTRACT

A device for treating sub-ungual hematoma having guide means and plunger means. The plunger means includes a metal tip which is heated and pushed through the guide means which has been affixed to the nail above the injured area. The heated metal tip melts a channel through the nail to a pool of blood or hematoma beneath the same. When the plunger means is withdrawn, the entrapped blood is allowed to drain.

5 Claims, 4 Drawing Figures

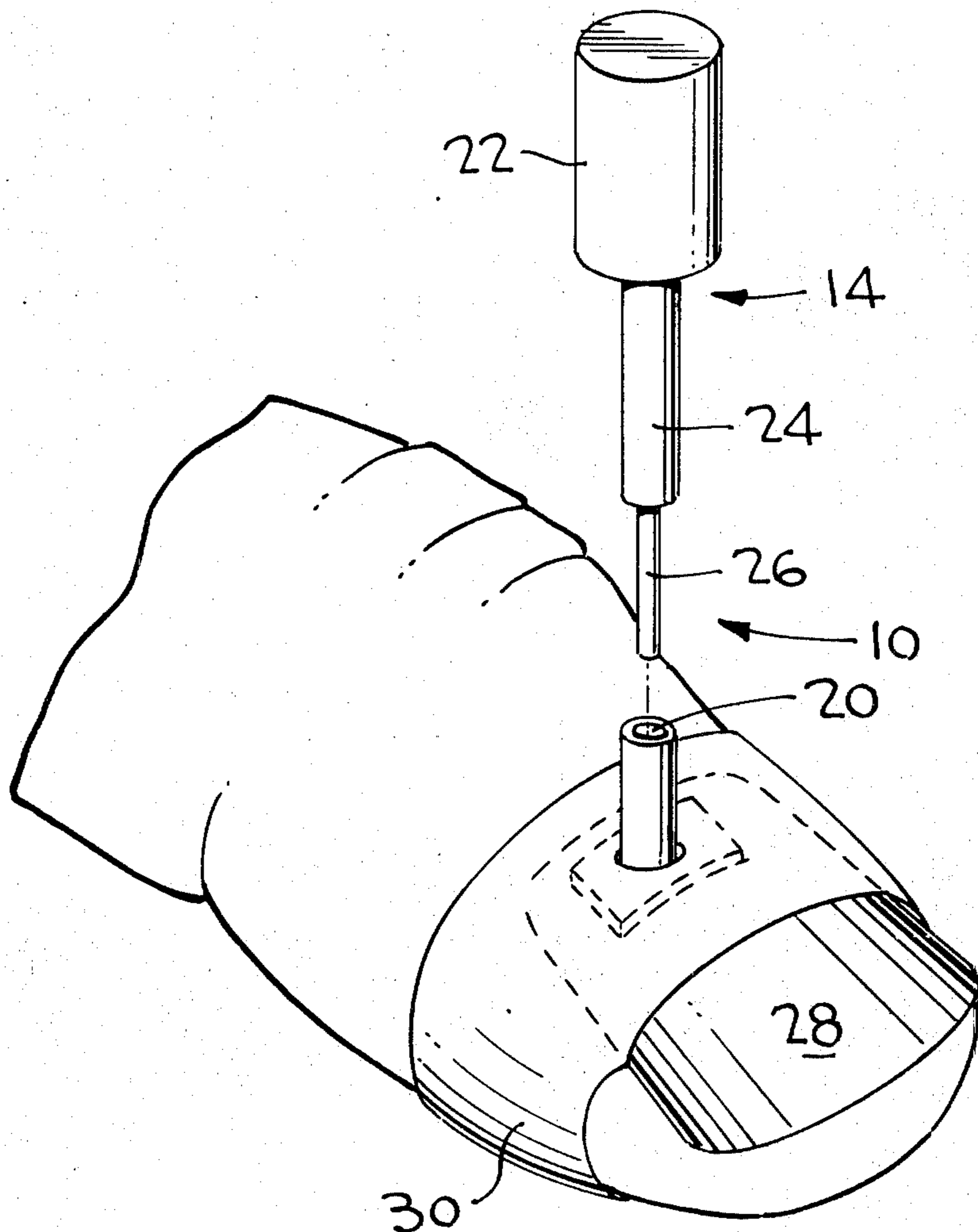


FIG. 1

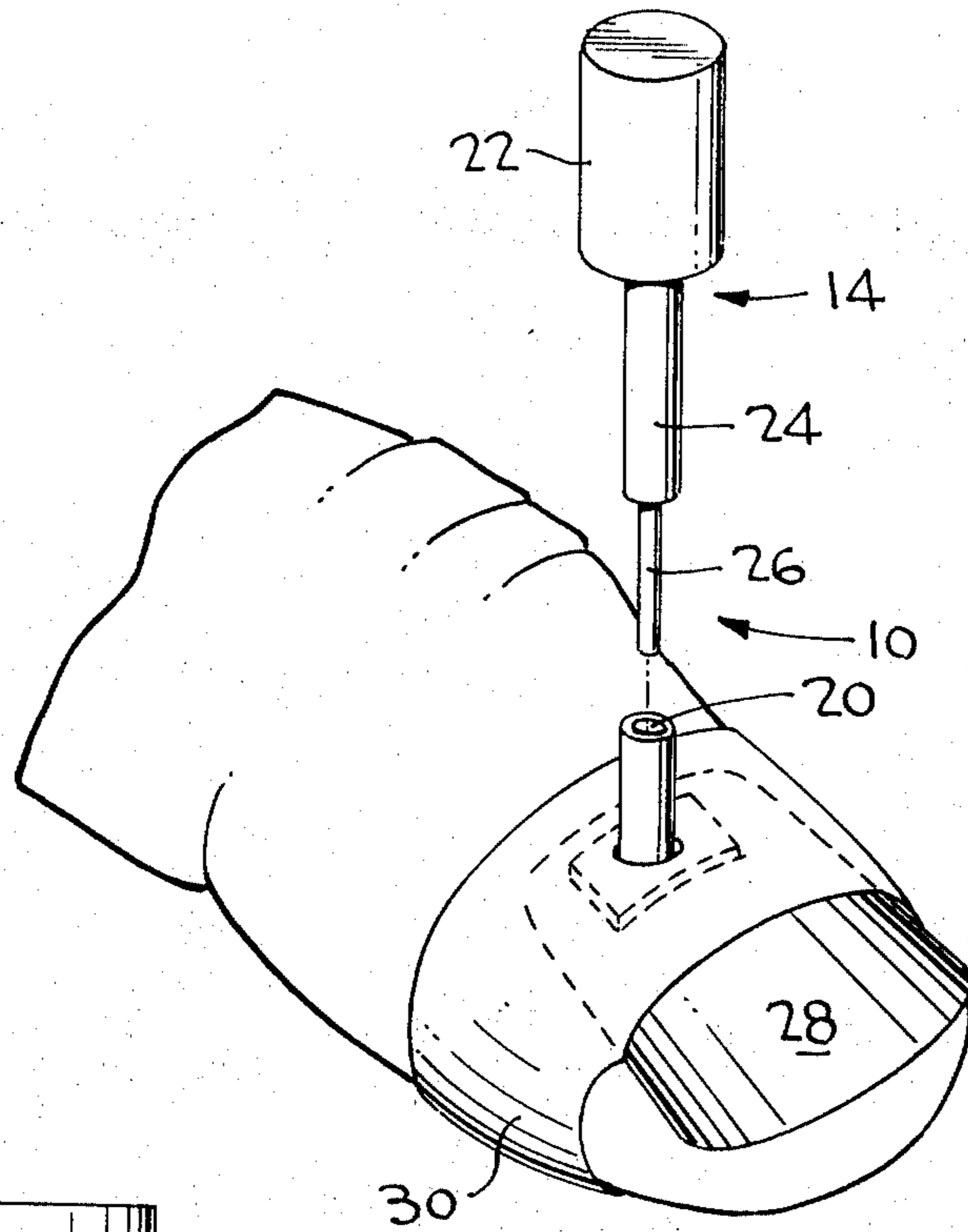


FIG. 3

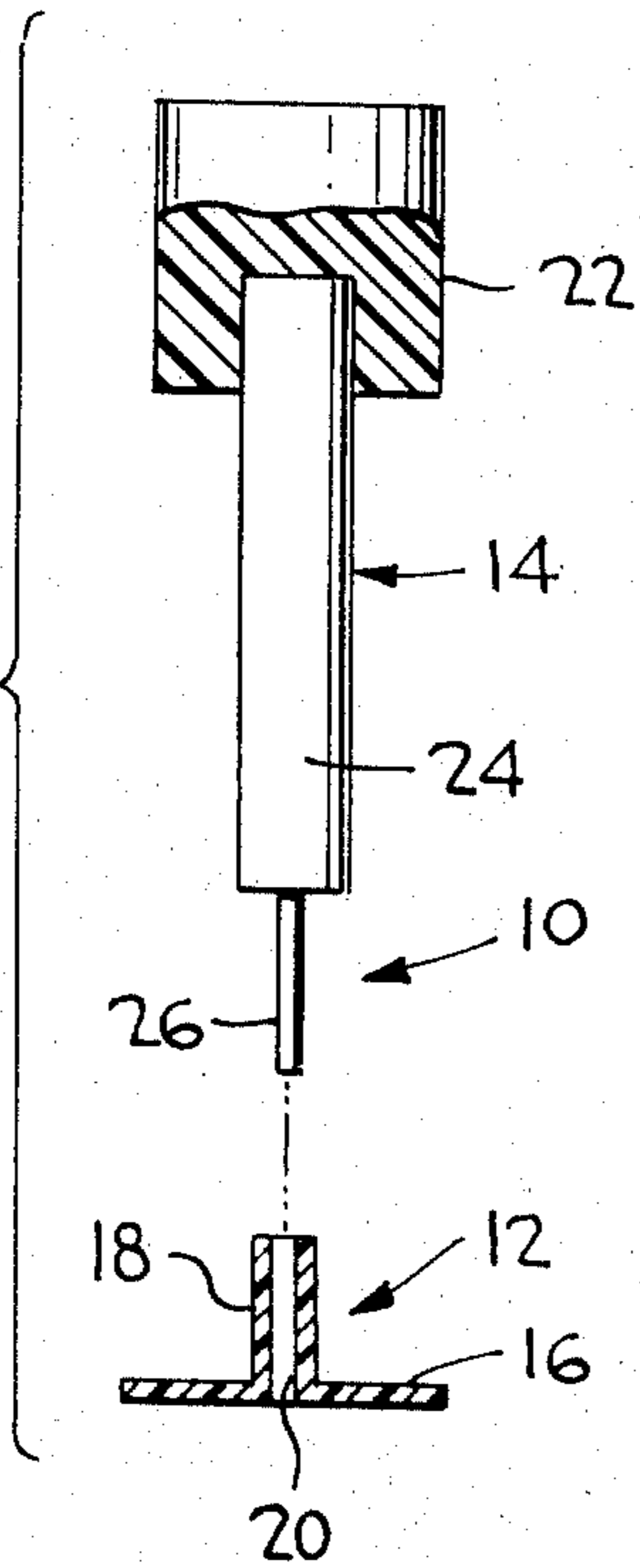


FIG. 2

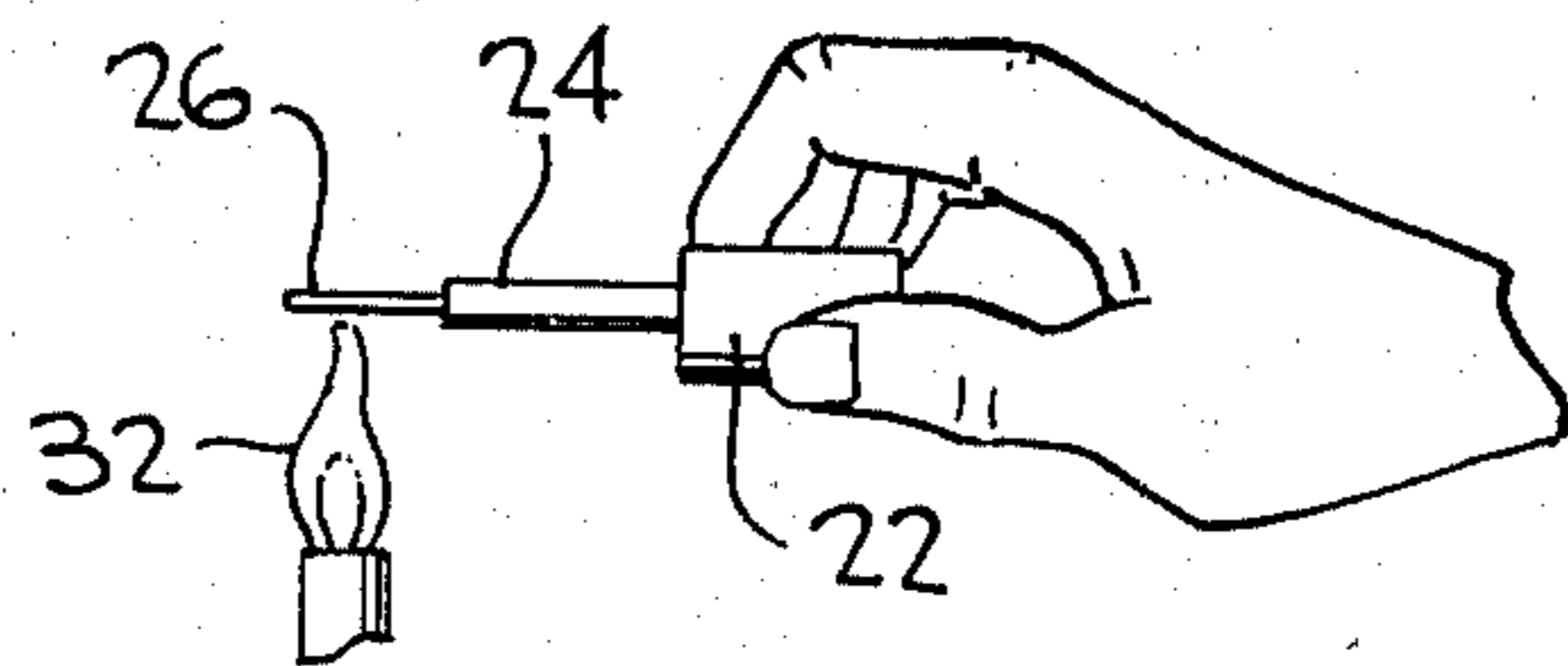
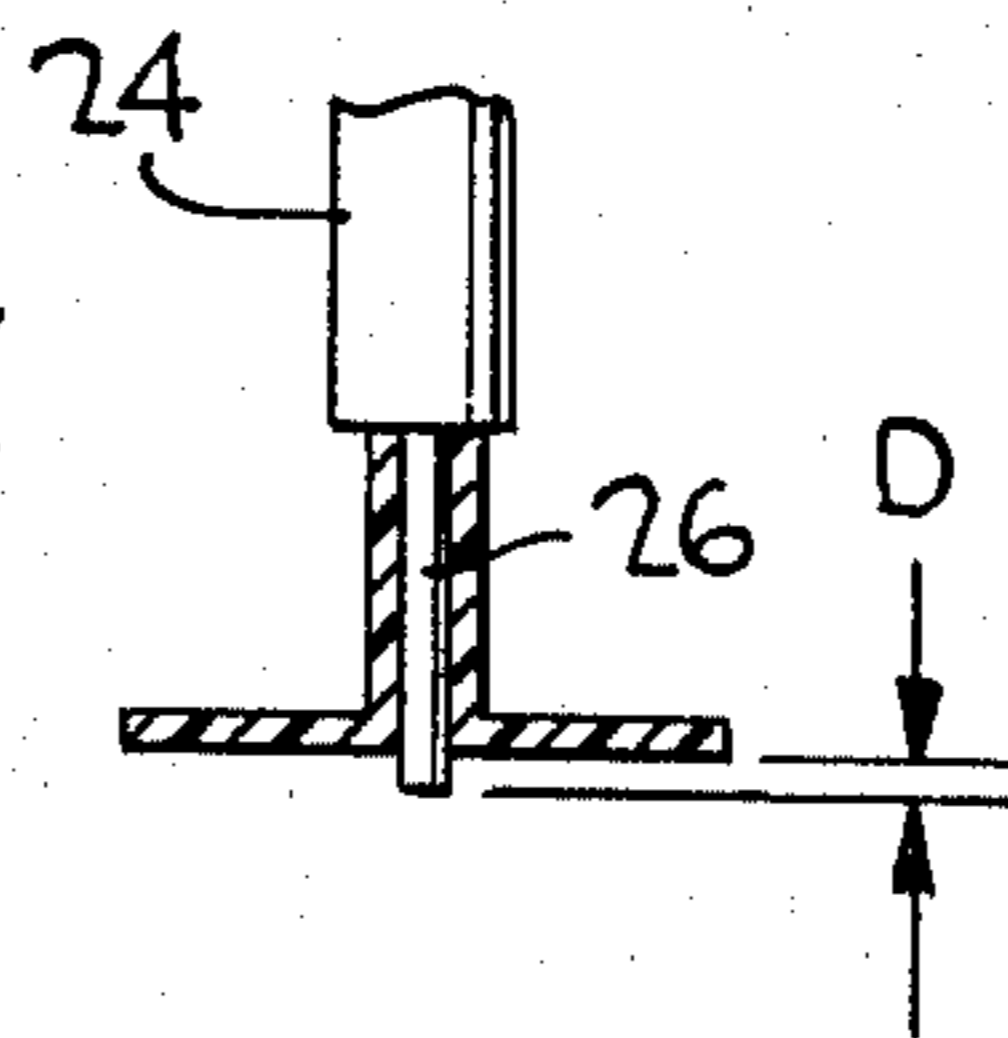


FIG. 4



## DEVICE FOR TREATING SUB-UNQUAL HEMATOMA

This invention relates to surgical instruments, and more particularly this invention relates to a crushed nail pressure reliever.

Many people have experienced, at one time or another, the discomfort and pain accompanying an injury to the fingernail or toenail area, for example, an accidental blow to the fingernail by a hammer when hammering a nail, or the dropping of a heavy object on a toe. While the occasional handyman or mover may be prone to this type of injury infrequently, the worker who is involved in moving or operating heavy equipment or machinery is more prone to such types of accidents.

It is obvious that the initial blow suffered by the victim of such an accident causes pain and discomfort, but this pain and discomfort usually passes within a short time. Unfortunately, while an accident of the type herein discussed does not usually result in an open wound, it quite often causes damage to the blood vessels beneath the nail. Such damage to the blood vessels, in turn, creates internal hemorrhaging and the blood released has no outlet. As a result, the blood collects in a pool or hematoma beneath the nail and, as the pool enlarges, creates pressure upon the nerves. This pressure is the proximate cause of the considerable pain and discomfort experienced by the victim of the accident.

Partial and temporary measure can be taken to relieve the pain but these are merely for relief of symptoms and not of the cause of the pain. If the blood could be drained from beneath the nail the pressure would be relieved and the pain would, naturally, be removed.

Accordingly, it is a primary object of the present invention to provide means for relieving the pressure under a crushed nail.

It is another object of the present invention to provide means which are safe, convenient, and comfortable for relieving pressure induced by blood under a crushed fingernail or toenail.

It is yet another object of the present invention to provide means for relieving pressure induced by blood under a crushed fingernail or toenail which are inexpensive to manufacture and simple to use.

This invention will be better understood, and objects other than those set forth above will become apparent, when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawing wherein:

FIG. 1 is a perspective view of a portion of a finger with the device of the present invention in use thereon;

FIG. 2 is a plan view illustrating one step in the use of the device of the present invention;

FIG. 3 is a vertical cross-sectional view of the device of the present invention prior to actual use; and

FIG. 4 is a partially fragmented vertical cross-sectional view of the device of the present invention when in use.

Referring to the drawings, the crushed nail pressure reliever of the present invention is generally designated by the numeral 10. The device includes guide means 12 and plunger means 14. Guide means 12 has a flange portion or base 16 and an upstanding tubular guide member 18. There is a central axial bore 20 through the guide means.

The plunger means 14 includes a heat-resistant, heat-insulating, handle portion 22 made of any suitable material having these characteristics. Such materials could include wood or a variety of plastics. The preferred material, due to its unique properties, is "Teflon" which is a polytetrafluoroethylene. The guide means 12 is also made of such a suitable heat-resistant, heat-insulating, material. Plunger means 14 also has a tubular shank portion 24 to which is attached a nail-puncturing portion 26. The nail-puncturing portion 26 is fabricated of any metal, the preferred metal being stainless steel.

Referring to FIG. 1, in use, guide means 12 is placed on the nail 28 above the pool of blood. It is held in place by any type of adhesive plaster, and preferably by an adhesive bandage 30. The stainless steel member 26 is heated to a cherry red by any convenient means such as an open flame 32 illustrated in FIG. 2. This heating serves a two-fold purpose. First, the member 26 is sterilized, and second, it is heated to a temperature wherein it will melt the fingernail or toenail. The metal member 26 is then guided into the bore 20 of guide means 12. When it contacts the nail 28 it melts the same and opens a channel through which the blood can drain. The plunger means 14 is then removed from guide means 12 and the blood is allowed to escape through the resulting hole in the nail and through the bore 20. Cleanliness and sterility of the nail is then accomplished by conventional means.

In a preferred embodiment, the length of the nail-puncturing portion 26 is longer than upstanding tubular guide member 18 by approximately the thickness of a nail. This is illustrated in FIG. 4, where this additional length is designated D. Since nail-puncturing portion 26 is smaller in diameter than bore 20 and shank portion 24 is greater in diameter than bore 20, shank portion 24 forms a stop thereby preventing nail-puncturing portion 26 from extending further through the nail than the approximate thickness thereof.

Of course, it is understood that the additional length D of portion 26 is equal to the average thickness of a nail, such average thickness being in the order of 1/16 of an inch. It will be apparent to one of ordinary skill in the art that the metal nail-puncturing portion 26 can be removable from the shank portion 24 and, in fact, the device of the present invention can be made with replacable and disposable nail-puncturing portions 26. Furthermore, there can be utilized different lengths of nail-puncturing portions 26 so that a proper length can be used depending on the actual thickness of the nail to be punctured. Furthermore, nail-puncturing portion 26 could be in the form of a needle with a point or, as illustrated in the drawings, merely in the form of a rod with a blunt tip.

It will also be apparent that shank portion 24 may be integral with nail-puncturing portion 26, that is, also made of metal. On the other hand, shank portion 24 could be a plastic as is handle portion 22. Additionally, while it has been mentioned that nail-puncturing portion 26 alone could be disposable, it is clearly understood that due to the low cost of manufacture, the complete device could be disposable.

Furthermore, in describing the use of the device by reference to FIG. 1, it has been mentioned that guide means 12 could be affixed to the nail using adhesive tape or an adhesive bandage. It should be understood that any equivalent mounting means is contemplated by the present invention, such mounting means includ-

ing, but not being limited to, an adhesive coating on the base of flange 16. The application of such an adhesive coating is well within the skill of the art and need not be described in further detail.

It should be apparent from the foregoing detailed description that the objects set forth hereinabove have been successfully achieved. Moreover, while there is shown and described a present preferred embodiment of the invention, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practised within the scope of the following claims.

Accordingly, what is claimed is:

1. A device for relieving the pressure and concomitant pain caused by a sub-ungual hematoma, said device comprising guide means having an upstanding tubular guide member having a central axial bore and a flange portion adapted to be mounted on said nail above said hematoma; and plunger means having a heat-resistant, heat-insulating handle portion and a metal nail-puncturing portion, said nail-puncturing portion being smaller in diameter than said bore,

whereby when said nail-puncturing portion is heated and applied to said nail through said guide means, it will melt an opening in said nail to provide drainage of said hematoma to thereby relieve said pressure and pain.

2. A device as defined in claim 1, wherein said metal is stainless steel.

3. A device as claimed in claim 1, wherein said guide means and said handle portion are fabricated of a polymeric plastic material.

4. A device as defined in claim 3, wherein said plastic is polytetrafluoroethylene.

5. A device as defined in claim 1, wherein said plunger means has a shank portion between said nail-puncturing portion and said handle portion, said shank portion being greater in diameter than said nail-puncturing portion and said bore, and said nail-puncturing portion having a length greater than the length of said bore by approximately the thickness of said nail.

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