Feb. 17, 1953 J. M. MYERS 2,628,404

TROCAR

Filed Nov. 30, 1951

Fig. 1

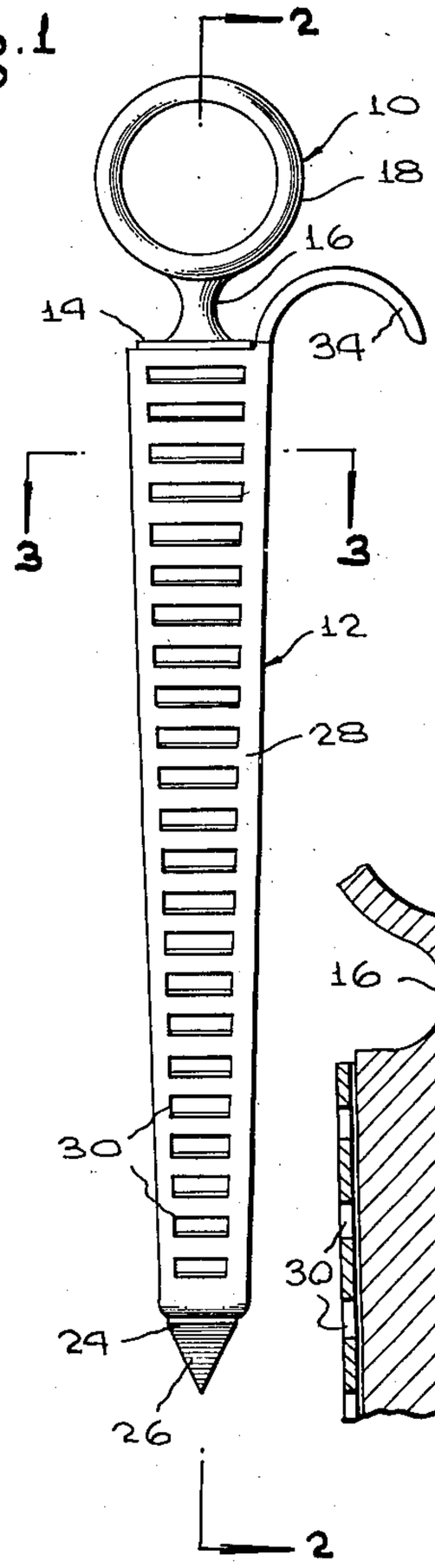


Fig. 2

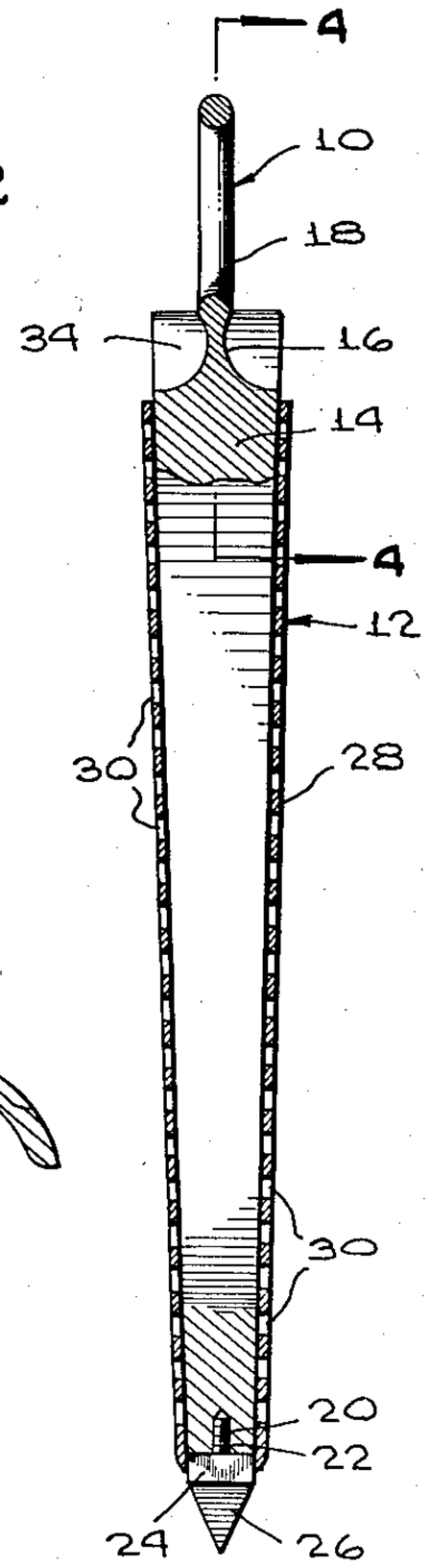


Fig. 4

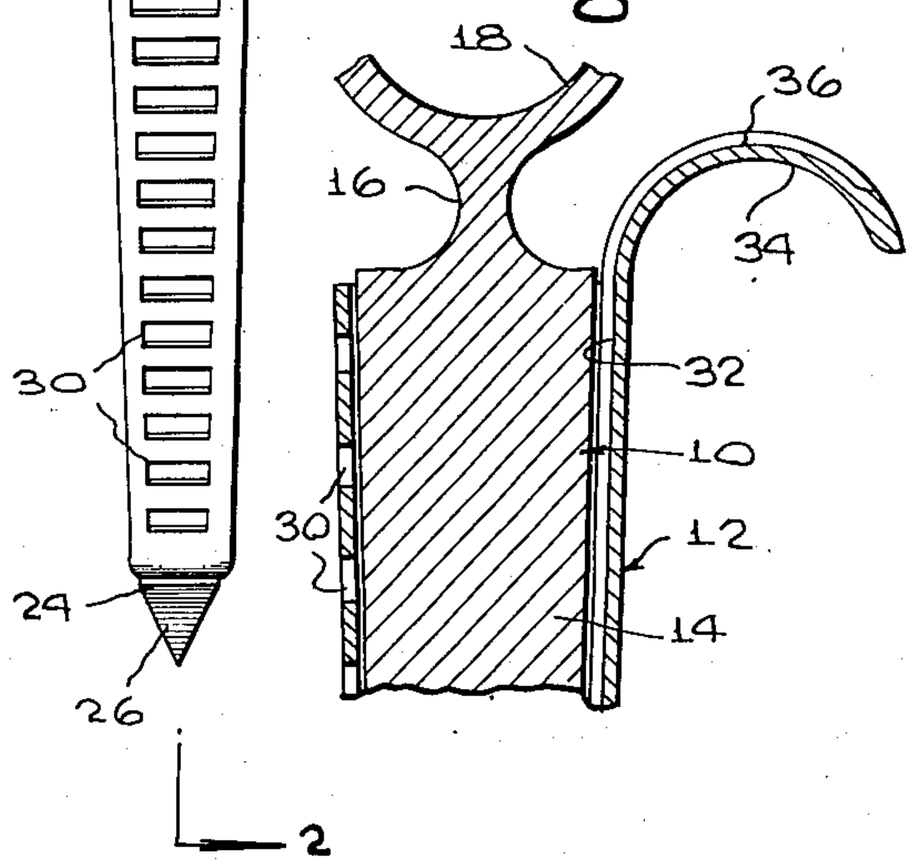
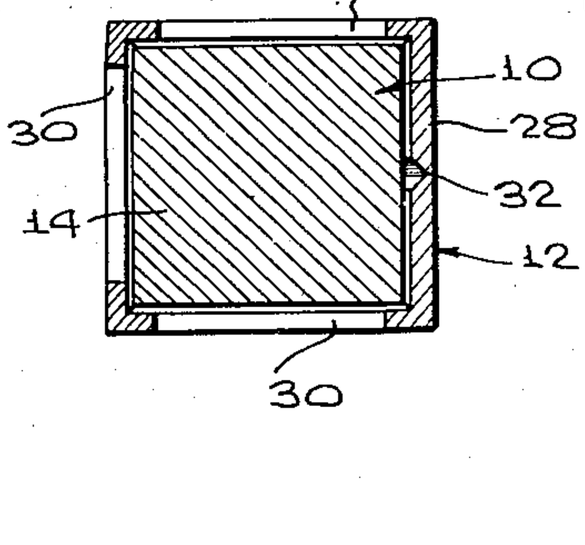


Fig. 3



INVENTOR
JOHN M. MYERS

BY
McMorrow, Berman & Davidson
ATTORNEYS

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TROCAR

John M. Myers, Del Norte, Colo.

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2 Claims. (Cl. 27—24)

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This invention relates to embalming instruments, and more particularly, has reference to a trocar designed especially for the drainage of excess fluid from the body of one having an edematous condition.

It will readily be appreciated that in the embalming of a person who in life had an edematous condition, it is necessary to drain off a substantial amount of fluid from the affected tissues. Heretofore, the instruments used for this purpose have not been found to operate with full efficiency, and tend to clog in many instances, while in other cases the instruments are not capable of being manipulated with sufficient ease during the insertion thereof in the tissues.

It is the main object of the present invention to provide an improved trocar for the purposes stated, which will be so formed as to be easily directed through the fatty tissues in the edematous areas, and which will, after being properly positioned, function efficiently in draining off the excess fluid from said areas.

A still further important object is to provide a device of the type stated which will be so formed as to eliminate the clogging problem often experienced, through the provision of a plurality of openings formed in the several sides thereof, said openings being so arranged as to permit the drainage of the fluid to continue, despite the clogging of some of said openings during the drainage operation.

Still another important object is to provide an instrument as described which will be so formed as to permit the drainage of fluid to occur throughout the length of the instrument, said instrument having a drainage trough formed therein and related in a novel manner to the drainage openings, so as to permit the fluid draining through the openings to be drawn off through the medium of the trough.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, wherein like reference characters designate like parts throughout the several views, and in which:

Figure 1 is a side elevational view of a trocar formed in accordance with the present invention;

Figure 2 is a longitudinal sectional view taken substantially on line 2—2 of Figure 1;

Figure 3 is an enlarged transverse sectional view taken on line 3—3 of Figure 1; and

Figure 4 is an enlarged fragmentary longitudinal sectional view taken substantially on line 4—4 of Figure 2.

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Referring to the drawings in detail, the instrument formed in accordance with the present invention comprises two main parts, these constituting a plunger generally designated 10, and a cannula generally designated 12.

Referring first to the plunger 10, this comprises a solid, elongated body 14 which tapers from its base toward its head end, and which is in the present instance of square or rectangular cross sectional configuration throughout its length.

Formed integrally with the body 14, at the base end thereof, is a centrally disposed, reduced neck 16, which is integral with a gripping ring 18, adapted to receive the finger of a user, whereby the plunger may be extended into retracted from the cannula 12 with speed and ease.

At the head end of the body 14, said body is formed with an axial, threaded socket 20 in which a threaded stud 22 is engageable, said stud 22 being integral or otherwise rigid with a square base 24 of a tissue-penetrating point 26. The point 26 is preferably of pyramidal formation, having four sides intersecting to form four converging cutting edges, that are adapted to facilitate the insertion of the instrument within the fatty tissue in the edematous areas.

The point 26 is preferably removable from the body 14, in the manner illustrated and described, so as to permit the point to be replaced whenever the cutting edges thereof become dull.

Referring now to the formation of the cannula 12, this comprises an elongated, tapered tube 28 that is complementary to the plunger 14. Thus, the tube 28, as readily seen from Figure 3, is of square cross sectional configuration, so as to permit the plunger to fit snugly thereinto.

The tube 28 is formed open at opposite ends, so as to permit the tissue-penetrating point 26 to project from the small end thereof, the reduced neck 16 and ring 18 projecting from the large or base end of the tube.

In three of the side walls of the tube 28, I form a longitudinal series of rectangular openings 30, that extend from end to end of each side wall, and which are progressively widened from the small to the large end of the tube, as readily seen from Figure 1.

The fourth side of the tube 28 is left imperforate, and has a longitudinal trough 32 formed in its inner service, said trough extending from end to end of the tube and being disposed longitudinally and centrally of the side wall in which it is formed.

That side wall of the tube 28 in which the trough 32 is formed is integrally formed with a

curved extension or tongue 34 at the base end of the tube (see Figure 4), and the trough 32 is extended into communication with an extension trough 36, that is disposed longitudinally and centrally of the curved tongue.

In use, the instrument is inserted, with the plunger 10 telescoped fully within the cannula 12, in the fatty tissues located in the inferior portions of the edematous areas of the body to be embalmed. Thereafter, the user grips the ring 18, and withdraws the plunger 10 wholly from its associated cannula. The tube 28 is left within the body.

With the assistance of gravity, and by manipulation of the edematous portions, the excess fluid contained within the affected areas of the body seeps through the graduated rectangular openings 30, into the interior of the tube 28, and will drop to the solid side wall of the tube, so as to drain out of the tube through the medium of the longitudinal drain trough 32. As the fluid moves through the drainage trough 32, it will pass into the extension trough 36, and will thereafter drop into a suitable container, not shown.

It will be understood that the tongue 34 is provided not only for the purpose of forming a finger grip on the tube as well as on the plunger, but also to prevent insertion of the tube into the body a distance greater than the length of the tube.

In the present instance I have illustrated rectangular openings 30, but I believe that openings of other configurations can be used with equal facility. Further, while preferably the plunger and tube are of rectangular cross sectional configuration, it is possible that they might be of triangular cross sectional configuration, or some other cross sectional shape.

It is believed clear that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor changes in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A trocar having its main application to edematous areas of a body and comprising a cannula formed as a tube of polygonal cross section open at opposite ends, one of the several side walls of the tube being of imperforate formation and having a drainage trough extending through substantially its entire length, each of the remaining side walls of said tube having a longitudinal series of drain openings for seepage of edemic fluid thereinto; and a plunger greater in overall length than and proportioned for extension into the cannula, the opposite ends of said plunger projecting beyond the respective ends of the cannula, said plunger having a handle at one end and having a tissue-penetrating point at its other end to facilitate insertion of the trocar into an edematous body area, said plunger being adapted to be wholly withdrawn from the cannula after extension of the trocar into said area, to expose the drain openings for seepage of the edemic fluid therethrough and for passage of said fluid longitudinally of the trough and out of one of the open ends of the cannula.

2. A trocar having its main application to edematous areas of a body and comprising a cannula formed as an elongated, tapered tube of polygonal cross section open at opposite ends, one of the several side walls of the tube being of imperforate formation and having a drainage trough extending through substantially its entire length, each of the remaining side walls of the tube having a series of drain openings extending the full length of the tube for seepage of edemic fluid thereinto; and a tapered plunger complementary to and greater in overall length than the cannula and proportioned for extension into the cannula, the opposite ends of said plunger projecting beyond the respective ends of the cannula, said plunger having a handle on one end and having a pyramidal, tissue-penetrating point at its other end to facilitate insertion of the trocar into an edematous body area, said plunger being adapted to be wholly withdrawn from the cannula after extension of the trocar into said area, to expose the drain openings for seepage of the edemic fluid therethrough and for passage of said fluid longitudinally of the trough and out of one of the open ends of the cannula.

JOHN M. MYERS.

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The following references are of record in the file of this patent:

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