Oct. 11, 1932. E. B. DONOVAN 1,882,213

TROCAR

Filed Dec. 9, 1929

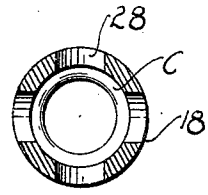


Fig. 6.

Fig. 1.

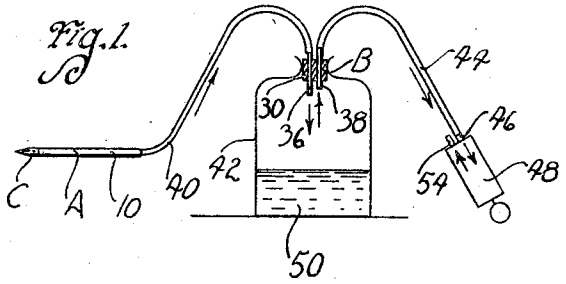


Fig. 1.a.

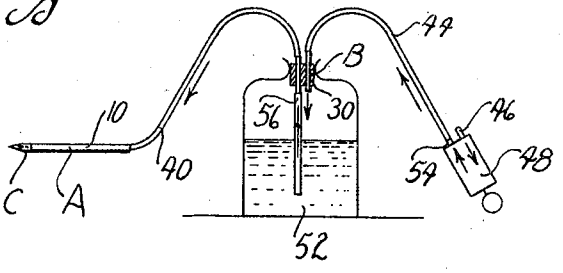


Fig. 5.

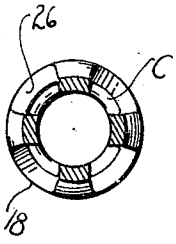


Fig. 2.

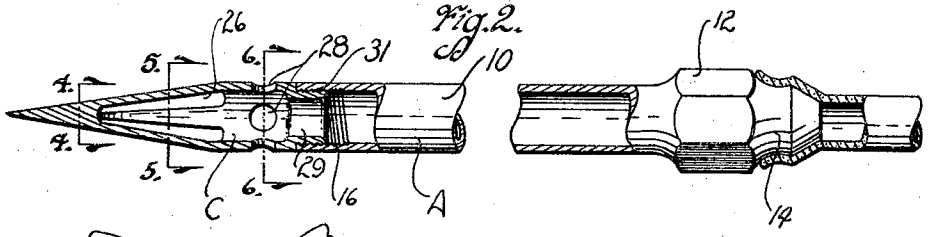


Fig. 3.

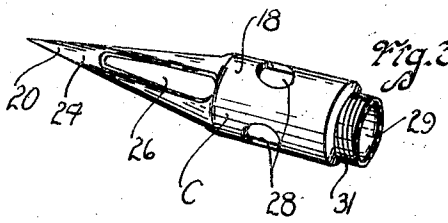


Fig. 7.

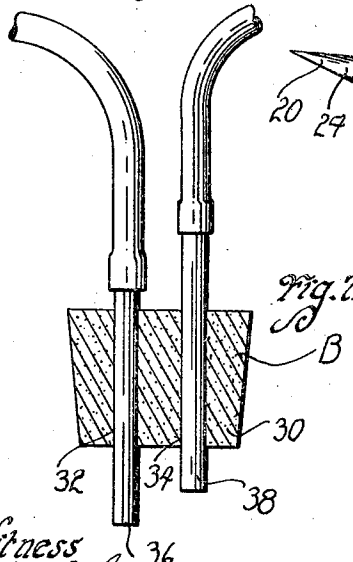
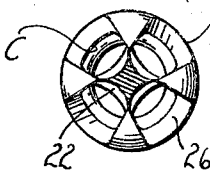


Fig. 4.



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Patented Oct. 11, 1932 1,882,213

UNITED STATES PATENT OFFICE

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TROCAR

Application filed December 9, 1929. Serial No. 412,763.

The object of my invention is to provide a trocar and apparatus for use thereof which is simple, durable and comparatively inexpensive to manufacture.

A further object of my invention is to provide an aspirating and injecting trocar having novel features of construction whereby the same has enlarged capacity for the flow of liquid through it and is easily cleaned when desired.

Another object is to provide a trocar point element of novel construction whereby the same is easily inserted into the abdominal or thoracic cavities of the body for the purpose of aspirating liquids from the body and injecting embalming fluid into the body.

More particularly it is my object to provide a trocar construction in which the tubular shank of the trocar is interiorly screw threaded and the trocar point is exteriorly screw threaded whereby when the point is removed the entire bore of the shank is unobstructed for cleaning purposes.

Another object is to provide an apparatus for use with the trocar including a goose neck fitting consisting of a closure or cork element having straight liquid conducting tubes extending therethrough instead of the usual form of curved or bent tubes.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a diagrammatic view of the trocar and apparatus for use in aspirating liquids from the cavities of the body.

Figure 1*a* is a diagrammatic view of the trocar and apparatus arranged for injecting embalming fluid into the cavities of the body.

Figure 2 is an enlarged sectional view of the trocar illustrating its construction.

Figure 3 is a perspective view of the point element of the trocar.

Figures 4, 5 and 6 are enlarged sectional views on the respective lines 4—4, 5—5, and 6—6 of Figure 2; and

Figure 7 is an enlarged sectional view of the goose neck fitting.

On the accompanying drawing the trocar is indicated generally by the reference character A and the goose neck by the reference character B.

The trocar A consists of a tubular shank 10 having an enlarged angular head 12 at one end thereof terminating in a hose fitting 14. The other end of the shank 10 is interiorly screw threaded as indicated at 16.

The trocar point element is indicated at C and includes a cylindrical portion 18 and a tapered or pointed portion 20. The portion 20 has concaved sides as indicated at 22 whereby a star shaped piercing point 24 is provided. The concaved sides 22 are each provided with an elongated opening 26. The cylindrical portion 18 is provided with additional openings 28.

The goose neck fitting B consists of a closure element 30 provided with a pair of openings 32 and 34 extending through the tubes 36 and 38 and mounted in the openings 32 and 34. The ends of the tubes 36 and 38 terminate at points spaced above and below the closure element 30. The closure element 30 may be in the form of a cork to fit a bottle or in any other form to fit special containers of various characters.

Use and operation of my trocar and apparatus

In the use and operation of my trocar and apparatus for aspirating, a hose or rubber tube 40 extends from the hose fitting 14 of the trocar A to the tube 36 of the goose neck fitting B. The closure element 30 is inserted in a bottle 42 as shown in Figure 1. A hose 44 extends from the tube 38 to the intake 46 of a hand or power air pump 48. The trocar point element C is inserted in the cavities of the body and the pump 48 operated for producing a vacuum within the bottle 42. This causes the air pressure outside the cavities of the body to force the liquids from the cavities into the bottle 42 as indicated at 50.

After the cavities have been completely aspirated the apparatus is used for injecting embalming fluid 52 into the cavities of the bodies for preserving the organs thereof.

The apparatus is arranged as shown in Figure 1*a* with the hose 44 connected with the outlet 54 of the pump 48 and a hose 56 connected with the lower end of the tube 36 and extending below the surface of the embalming fluid 52. The pump 48 is then operated for creating a pressure within the bottle 42 which forces the embalming fluid 52 through the hose 56, the tube 36, the hose 40 out through the openings 26 and 28 of the trocar A and into the cavities of the body.

It will be noted that the openings 26 and 28 are relatively large so that there is ample capacity of fluids to and from the trocar A. The interior of the trocar is large with the exception of the neck portion 28, which does not materially reduce the flow of liquids and thus a trocar of large capacity is provided.

By threading the interior of the shank 10, the shank may be easily cleaned by running water under pressure through it when the point element C is removed. The trocar may be made of metal or any other suitable material.

The tubes 36 and 38 through the goose neck fitting B being straight prevents all possibility of clogging as in goose neck fittings having right angle or curved bends. The tubes 36 and 38 may be made of any desired material or other composition found suitable.

They are of large internal diameter so as not to restrict the flow of the fluid and provide for a large capacity so that the aspirating and injecting operation can be quickly performed.

Various changes in the sizes of the parts and in the materials used for making the trocar and apparatus may be made without departing from the real spirit and purpose of my invention and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A trocar comprising a tubular shank having one end adapted for insertion in a hose and its opposite end interiorly screw threaded and a point element, a reduced exteriorly threaded portion on said point element to coact with the second mentioned end of the shank, the interior diameter of said point being less than the interior diameter of said shank.

2. A trocar comprising a tubular shank having one end adapted for insertion in a hose and its opposite end interiorly screw threaded and a point element having a tapered portion, a reduced exteriorly threaded portion on said point element to coact with the second mentioned end of the shank, the interior diameter of said point being less than the interior diameter of said shank, the tapered portion of said point element having concaved sides provided with openings, the edges between said sides being of acute angle formation.

3. A trocar comprising a tubular shank having one end adapted for insertion in a hose and its opposite end interiorly screw threaded and a point element having a reduced exteriorly threaded portion to coact with the interiorly screw threaded end of the shank, the exterior diameter of said point being substantially the same as the exterior diameter of said shank.

Des Moines, Iowa, October 22, 1929.

EDWARD B. DONOVAN.