

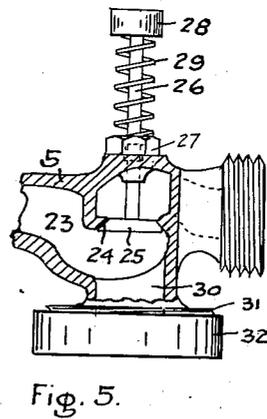
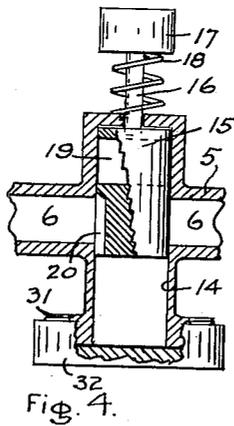
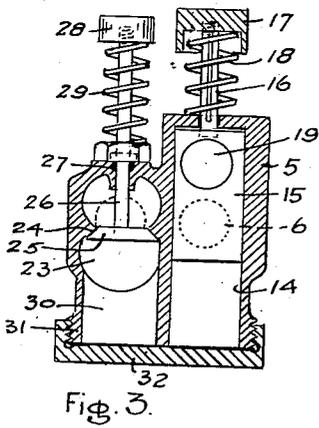
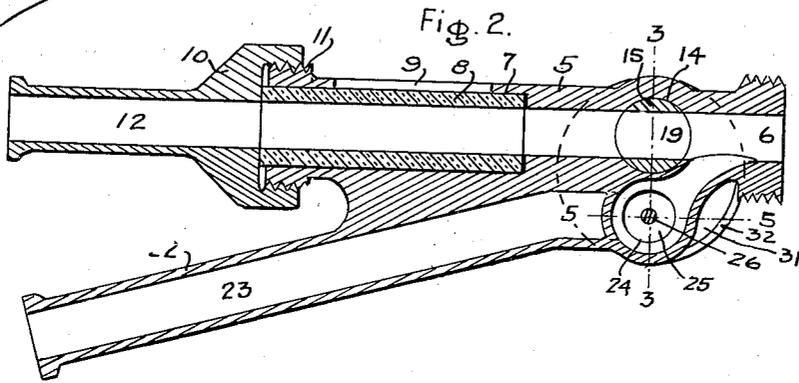
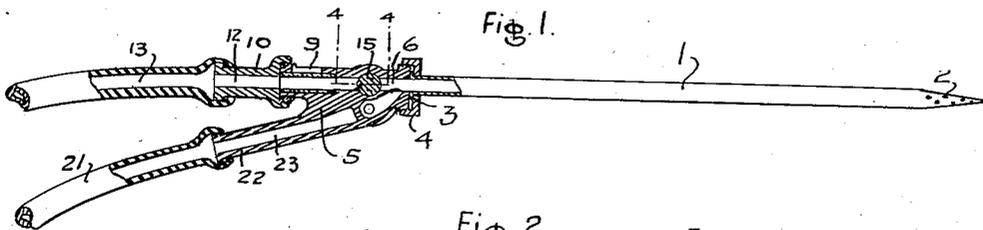
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TROCAR

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TROCAR

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2 Claims. (Cl. 27—24)

This invention relates to instruments known as trocars and especially to such instruments as are adapted for use by embalmers.

The objects of the invention are to provide an instrument which will not only evacuate the liquid from the cavity into which it is inserted, but will also provide means for injecting the embalming fluid without the removal of the trocar; which will provide means whereby the flow of the fluid being evacuated may be observed and which is cheap, effective and easily operated.

I attain these and other objects by the devices, mechanisms and arrangements illustrated in the accompanying drawing, in which—

Fig. 1 is a plan view of the trocar, a portion thereof being shown in section; Fig. 2 is a horizontal section of the control portion of the trocar; Fig. 3 is a vertical cross-section thereon taken on the line 3—3 in Fig. 2; Fig. 4 is a vertical section taken on the line 4—4 in Fig. 1; and Fig. 5 is a vertical section taken on the line 5—5 in Fig. 2.

Similar numerals of reference refer to similar parts throughout the several views.

The trocar needle 1 is of the usual construction, being hollow from end to end and is provided with a plurality of holes 2 at its point, and with the usual flange 3 at its other end, whereby it is attached to the control device by means of the usual nut 4, which screws on the threads 5 on the end of the control device.

This control device comprises a casting 5 formed substantially as shown in the drawing, and is provided with a longitudinal passage 6 extending in a straight line from the trocar needle 1 therethrough. A portion 7 of this passage 6 is enlarged to receive a glass tube 8, and a part of the casting 5 is cut away at 9 to expose the said glass tube 8 to view. This glass tube 8 is held in place by means of the nipple 10 which is screwed on suitable threads 11 on the casting 5 and which has a passage 12 corresponding with and in alinement with the said passage 6. A rubber tube 13 is slipped over the end of the nipple 10 and extends to any desired point.

I provide a vertical cylindrical cavity 14, near the forward end of the passage 6 in the main casting 5, the said cavity 14 being of larger diameter than the said passage 6 and cutting the said passage. A cylindrical plug valve 15 is mounted in this cavity 14, said plug valve 15 being provided with an operating stem 16 extending through a suitable opening in the casting 5, and this stem 16 is terminated by a removable operating button 17. A spring 18 is mounted around

the stem 16 and between the said button 17 and the top of the casting 5. The said cavity 14 extends entirely through the bottom of the said casting 5 as hereinafter described. This plug valve 15 is provided, near its upper end, with a passage 19 corresponding in size to the above passage 6 through the main casting 5. The plug valve 15 extends downward below the said passage 19 a sufficient distance to cut and close the passage 6 when the plug valve 15 is in its normal or upper position. A small vertical groove 20 is made in the side of the said plug and extending upward from the bottom thereof a sufficient distance to connect with the rearward portion of the passage 6 when the said plug valve 15 is in said normal position.

Thus it will be seen that the plug valve 15 closes the said passage 6 except when it is pressed down against the action of the spring 18, at which time the passage 19 in the plug valve 15 registers with the two parts of the passage 6 in the main casting 5, and the said passage 6 is then open and may receive the fluid from the body cavity to carry it away.

The embalming fluid is delivered by means of the rubber tube 21 which is connected to a branch arm 22 of the main casting 5, said branch arm 22 having a passage 23 therethrough, extending to a point adjacent to the above described vertical cavity 14 in which the plug valve 15 is operated. At this point the passage 23 bends downward as shown in Fig. 5 and passes upward through the horizontal valve seat 24 and thence it extends downward and joins the above described passage 6 in the main casting 5 at a point between the plug valve 15 and the front end thereof. An upward-acting poppet valve 25 is mounted on a vertical stem 26 which extends through a suitable stuffing box 27 in the casting 5 and is provided with an operating button 28 at its upper end. A spring 29 surrounds said stem 26 and is positioned between the said stuffing box 27 and the button 28 and is adapted to hold the valve 25 closed on its valve seat 24.

Thus it will be seen that, normally, the valve seat 24 is held closed and that the embalming fluid cannot pass through the passage 23 until said button 28 is pressed down and the valve 25 opened, whereupon the embalming fluid passes into the needle 1 and thus into the cavity in the body from which the liquid has been evacuated. An opening 30 is made in the bottom of the casting 5 axially below the said valve 25 and of sufficient size to permit the valve 25 to be removed therethrough.

The two valves 15 and 25, above described, are preferably in transverse alinement and the vertical passages 14 and 30 leading therefrom extend downward and are open at the bottom. An enlargement 31 is formed at the base of the casting 5, said enlargement being circular in plan and of sufficient size to completely contain the two said openings 14 and 30. This enlargement 31 is screw-threaded on its outer surface and a closure cap 32 is screwed thereon, said cap 32 being adapted to completely close both of the said openings 14 and 30.

Thus it will be seen that the two valves 15 and 25 may be readily removed from the casting 5 for cleaning or other purposes by removing the closure cap 32 and then removing the buttons 17 and 28 and sliding the said valves 15 and 25 downward therethrough, thus permitting the entire apparatus to be thoroughly cleaned.

It will be readily seen that by making the angle between the main casting 5 and the branch arm 22 small the said parts may be grasped by one hand of the operator by means of which the apparatus may be manipulated to the best advantage and that, when so grasped, the two valve stems 17 and 28 are conveniently placed so that either one may be depressed by the operator's thumb, to open the desired valve, without having to use the other hand which might be otherwise engaged. Thus the use of the one hand to control the position of the trocar enables it to be pushed further in or pulled out from the body as needed, and by watching the window 8 the effect can be observed. Since the valves are spring closed they are opened by simple depression and are automatically closed, thus permitting them to be efficiently operated by the thumb of the operator.

In operation, the trocar is inserted into the body cavity, then the plug valve 15 is pushed downward to permit the evacuation of all liquid therefrom, and while this is being accomplished,

the flow of the said liquid may be watched through the opening 9 and the glass tube 8. When the flow of liquid has ceased the plug valve 15 is released and closes the outlet passage 6, then the valve 25 in the embalming passage 23 is opened by pressing on the button 28 and the embalming fluid then passes into the cavity by way of the trocar needle 1.

It is, of course, understood that many variations in construction from the above-described control may be made without departing from the spirit of my invention as outlined in the accompanying claims.

What I claim and desire to secure by Letters Patent, is:—

1. In a trocar, a relatively compact body secured to the end of said needle and adapted to be operatively grasped by one hand; a drain passage extending through said body; a spring-closed plug valve, positioned at the front of said body and having a passage therethrough normally above the line of said drain passage, said plug valve being depressible against the action of its spring to bring said passage therethrough in alinement with said drain passage; an embalming-fluid passage in said body and branching from said drain passage at a point between said trocar needle and said plug valve and extending from said drain passage at a small angle thereto; and a spring-closed upwardly-acting poppet-valve in said last passage and in alinement with and adjacent to said plug valve, whereby either of said valves may be engaged at will by the thumb of the hand of an operator grasping the body.

2. In a trocar as set forth in claim 1, wherein said body is provided with open-ended cavities in axial alinement with said valves, and a single closure cap closing the open ends of both said cavities whereby said valves are accessible for cleaning.

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