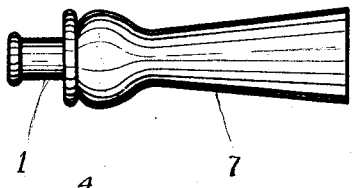
Sept. 24, 1929. G. N. HEIN 1,728,965

APPARATUS FOR ENABLING THE WITHDRAWING OF THE CONTENTS OF AMPULES

Original Filed Nov. 17, 1924

Fig. 1.



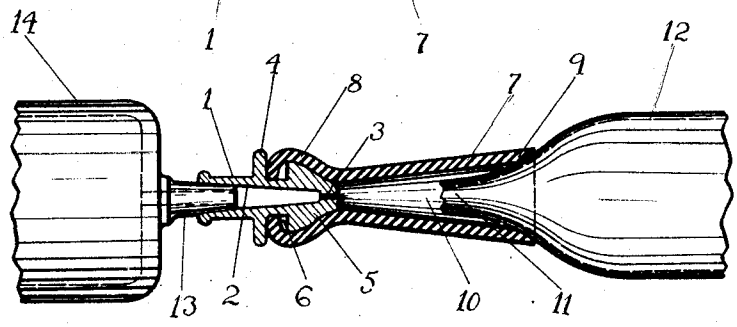


Fig. 2.

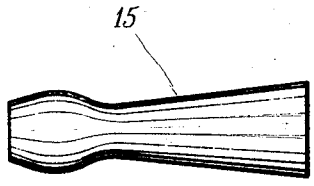


Fig. 3.

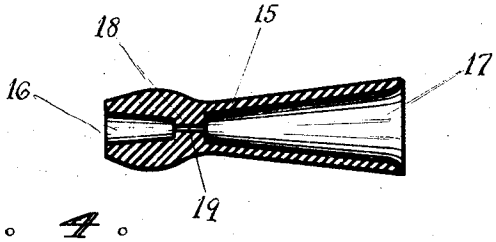


Fig. 4.

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Patented Sept. 24, 1929

1,728,965

UNITED STATES PATENT OFFICE

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APPARATUS FOR ENABLING THE WITHDRAWING OF THE CONTENTS OF AMPULES

Application filed November 17, 1924, Serial No. 750,358. Renewed February 7, 1927.

Among the methods now employed for filling hypodermic syringes with medicinal solutions contained in ampules are the following:—One method is to fracture one end of the ampul and insert through the opening afforded thereby the needle of the syringe and draw the contents of the ampul through the needle into the syringe. The objection to this method is the slowness of the operation and the difficulty of keeping the needle submerged in the liquid. Another method is to break off the end of the ampul well up onto the body and insert the end of the syringe in such opening. The objections, however, to this method are the difficulty in breaking the ampul where intended and the liability of pieces of broken glass being drawn into the syringe. The third method is to break one end of the ampul and insert it into the end of the syringe barrel, then breaking the other end permitting the ampul contents to flow into the syringe. This method, like the others, has several objections in that it requires a double ended ampul, and there is always the liability of the solution flowing from the syringe outwardly through the needle during the filling operation.

In the above mentioned methods, the medical solutions contained in ampules are during the transfer exposed to the air, and there is a liability of particles of glass, due to the breaking of the ampul, entering the syringe during the filling operation.

The present invention relates to a coupling for use in connection with the filling of hypodermic syringes with the contents of ampules without unduly exposing the solution to the action of the air, and for reducing to a minimum the liability of glass entering the syringe.

The invention consists primarily in a coupling member of tubular formation, the opposite ends of which are adapted to receive respectively the broken end of an ampul and the needle mounting end of a syringe, said chambers being separated by a wall having a duct therein of very small diameter, insuring a means for screening or separating the glass from the solution as the same passes through the coupling. It is desirable that the wall surrounding one chamber at least be of elastic structure to receive ampules of various diameters and to tightly engage the same to preclude the entrance of air.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings illustrating my invention

Fig. 1 is a view in side elevation of one embodiment of coupling illustrating the coupling formed in two parts, one non-elastic and the other elastic.

Fig. 2 is a longitudinal sectional view of the embodiment of the invention illustrated in Fig. 1 with an ampul received within one end of the coupling and the syringe tip in the other end of the coupling.

Fig. 3 is a view in side elevation of another form of coupling constructed of a single piece of elastic material, and

Fig. 4 is a longitudinal sectional view of the structure illustrated in Fig. 3.

Referring to Fig. 1, the numeral 1 indicates a tubular mounting member formed inwardly in one end with a substantially conical opening 2, which terminates at the opposite end of the member 1 in a perforation or duct 3 of relatively small diameter. An annular flange 4 projects outwardly from the member 1 intermediate its ends and adjacent the same lying in spaced relation thereto the member 1 is formed with an annular bead or head 5 affording between the flange 4 and its inner surface a circumferential channel 6 for the hereinafter described purpose. 7 indicates a tubular elastic member, one end of which is stretched as at 8 over the member 5 with its end wall received within the circumferential channel 6. The opposite end

of the elastic member 7 is flared outwardly as at 9 affording an inwardly tapering channeled recess 10 into which is inserted the broken end 11 of an ampul 12 from which it is desired to withdraw the contents into a syringe, as in Fig. 1. The tapered tip end 13 of a syringe barrel 14 is inserted into the conical opening 2 and the operation of the syringe piston will with the ampul end inserted into the end of the member 7, withdraw the medicinal solution within the ampul therefrom and into the syringe barrel. The passage of the solution from the ampul into the syringe barrel is through the perforation 3 which will preclude the passage of any foreign material such as glass particles and the like into the syringe barrel.

In Fig. 4 the coupling is illustrated as being constructed of a single piece of elastic material 15, formed in its opposite ends with the respective substantially conical recesses 16 and 17, the recess 17 being of a diameter greater than that of the recess 16. These recesses or chambers are arranged with their apexes adjacent each other, separated by the wall 18, in which is a perforation 19 of very small diameter. When in use, the tapered tip end 13 of the syringe barrel 14 is received in the recess 16 and the broken end 11 of the ampul 12 is received in the recess 17, the elasticity of the walls of the member 15 tightly gripping the surfaces of the portions 13 and 11. When in this position, the contents of the ampul are quickly and easily drawn into the syringe barrel without exposure to the atmosphere.

It is understood that these coupling members may be used repeatedly, and by their use it will be observed that the transfer of solution from ampules to syringe barrels is materially expedited over the methods now employed.

It will be observed that the perforation or duct 3 in the principal embodiment and the perforation 19 in the modification are of such size as to afford filtering means for the material passing therethrough, their diameter being approximately that of the ordinary hypodermic needle. This diameter is sufficient to enable the filtering of particles of glass of the ampul from the fluid during its passage into the syringe, but if it is desirable a filtering medium such as cotton or the like may be inserted into the perforation to filter finer particles from the fluid as it passes therethrough.

I claim:—

1. An ampul and syringe coupling comprising a structure formed with substantially conical recesses at its opposite ends, one constituting a syringe receiving socket and the other a socket for supporting an ampul in position to be emptied into the syringe, said recesses communicating at their apexes through a perforation, the wall surrounding one of said recesses being elastic.

2. An ampul and syringe coupling formed at opposite ends with aligned recesses, one affording a syringe receiving socket and the other a socket for supporting an ampul in position to be emptied into the syringe, said recesses communicating at their apexes through a perforation affording a means for straining the contents of the ampul.

3. An ampul and syringe coupling comprising a tubular elastic member formed in each end with a substantially conical recess, one constituting a syringe receiving socket and the other a socket for supporting an ampul in position to be emptied into the syringe, said recesses arranged with their axes in alignment and their apexes adjacent each other, said coupling being formed with a perforation of relatively small diameter connecting the apexes of the respective conical recesses and constituting a means for straining the contents of the ampul.

4. An ampul and syringe coupling provided with a syringe receiving socket and having means associated with the socket for supporting an ampul in position to be emptied into the syringe, and means carried by the coupling for straining the contents of the ampul.

5. An ampul and syringe coupling provided with a tubular end for cooperating with a syringe, and having means associated with the coupling for receiving and supporting an ampul in position to be emptied into the syringe, and means within the coupling for straining the contents of the ampul.

In testimony whereof I have signed my name to this specification.

GEORGE N. HEIN.