Oct. 3, 1944. G. M. HOEY 2,359,644

AMPOULE OPENER

Filed Oct. 1, 1943

Fig. 1

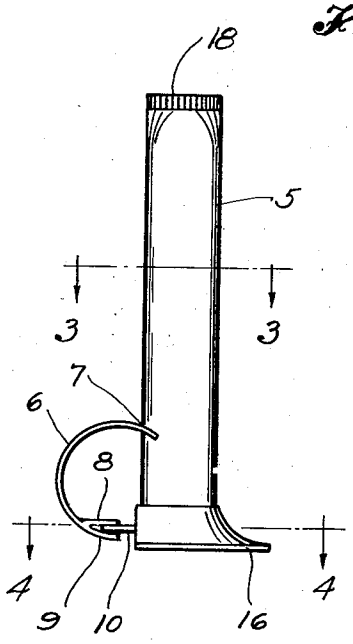


Fig. 2

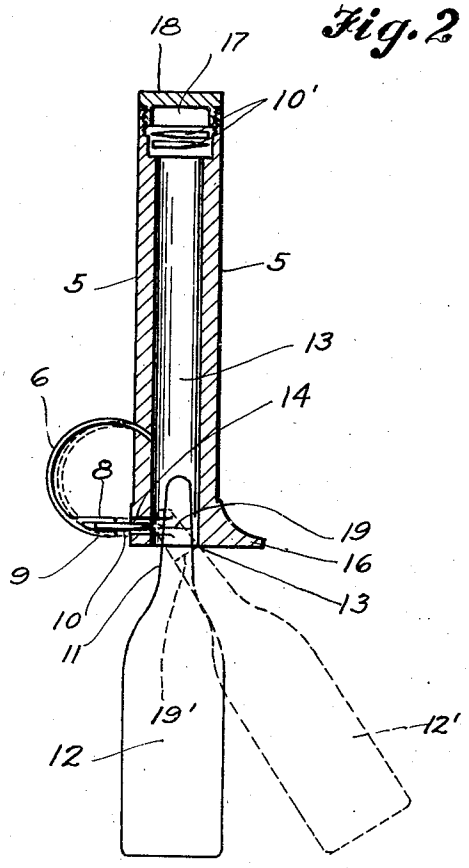


Fig. 3

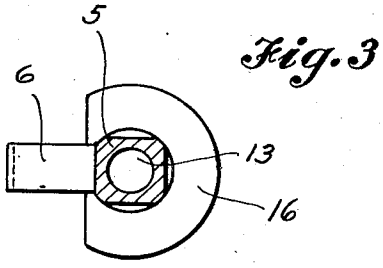
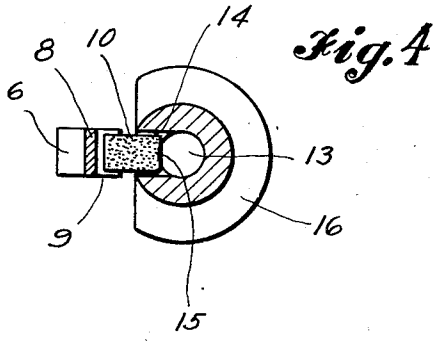


Fig. 4



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AMPOULE OPENER

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1 Claim. (Cl. 49—52)

This invention relates to devices for opening liquid filled glass ampoules, and particularly those with elongated necks and hermetically sealed.

In the packing and distribution of pharmacal liquids for medicinal and hypodermic uses it is customary for the pharmacal packers to fill the ampoules with the desired liquids and seal the same to prevent contamination and to facilitate the distribution thereof. These amopules are carried by physicians for use where needed. These containers are relatively small, sufficient for one charge for a hypodermic syringe. It is most important that in the opening of such containers no contamination of the contents shall occur. It is necessary in opening the ampoules to break off the neck thereof. This is ordinarily accomplished by the operator using his two hands therefor, and in such process the thin glass frequently splinters and sometimes cuts the hands from which blood may mingle with the contents of the ampoule; and some of the contents may become contaminated from substances on the hand and flow back into the body of the liquid. In some cases files and abrading elements have been used to weaken the line around the necks of the ampoules of facilitate the breaking along an even line around the neck, but difficulty is found in forming such line evenly around the necks, and contamination is sometimes carried by the files and elements upon the surface of the ampoules which may enter the contents when opened.

It is therefore among the objects of this invention to provide a relatively small device that may be cheaply manufactured from plastic or other suitable material and easily carried in the pocket or instrument case of a physician for use wherever needed and adapted for opening such ampoules easily and quickly without danger of contaminating the contents and without danger to the hands of the operator.

A particular object is to provide a tube of suitable bore to receive the neck of an ampoule perpendicularly, with a slot through one side thereof near one end adapted for guiding horizontally an abrading element across the slot, with resilient means for compressing the element against the neck of an amopule positioned in the bore for cutting or grinding a slight groove around the neck or an even line to facilitate the breaking of the neck along such line. The edges of the bore provide fulcrums for breaking off said neck along such line after the same has been so cut or marked.

With these and other objects to be hereinafter stated I have illustratively exemplified my invention by the accompanying drawing, of which:

Figure 1 shows a full elevation thereof;

Figure 2 shows a longitudinal section thereof, with an ampoule in position to be cut, and dotted lines indicating position of the ampoule for breaking off the neck.

Figures 3 and 4 show cross sections, taken on lines 3—3 and 4—4 respectively of Fig. 1.

Like numerals on the different figures represent like parts. Numeral 5, indicates the body of the instrument or device, which is preferably square in cross section to prevent the instrument rolling on a flat surface or table and, to facilitate manipulation thereof by the physician or other user. 6 represents a resilient element, with one end thereof as 7 anchored to the body 5 in any suitable manner or as by a mortise at 7. The other end is bifurcated to provide jaws 8 and 9 for grasping and holding a cutting or abrading element 10, which may be Carborundum, or similar material.

The body is provided with a central bore 13 of suitable diameter to receive the neck 11 of any ordinary ampoule 12, which the operator desires to have broken off in order to gain access to a supply of chemical in the ampoule, such chemicals being usually lower in the ampoule than the neck thereof. The bore preferably extends the full length of the body, to provide an opening to receive the broken tips of the ampoules, and to provide passageway for any small pencil or instrument for ejecting such broken parts in event they should not readily fall therefrom as desired. In practice such broken parts frequently become packed or jammed in the bore and must be forcibly removed by insertion of suitable instruments to be extended through the length of the bore.

A slot or passageway 14 is provided crosswise through one side of the body in which is slidably disposed the cutter element 10, the point 15 being normally supported by the spring in line with the inner wall of the bore, to leave free entry for the neck of the ampoule. 16 represents any preferable flange adjacent the lower end of the body to guard the hands of operator from any possible glass splinters, and to protect the contents of the ampoule from any possible contamination from the hands. This flange is important in practice for the dual purposes mentioned.

In operation the ampoule 12 is perpendicularly disposed with its neck 11 in position in the bore beneath the cutter 10, and the operator then depresses the spring and cutter while simultaneously revolving one or both the cutter body and

ampoule, whereby a circular scratch or groove indicated as 19 is formed evenly around the neck to weaken the same thereat. The ampoule is then tipped to one side, as indicated by dotted outline 12', with the groove 19 abutting one edge of the bore, and the tip or neck binding against the opposite side of the bore, whereby the top of the neck is easily broken off along such groove, and usually without splintering of glass, or loss of any contents of the ampoule, or contamination thereof.

As the commingling of different chemicals is sometimes dangerous, and as the use of one cutter for opening ampoules with such varying chemicals is possible to cause such dangerous mixtures, it is important to provide a supply for quickly changing such cutter, and an enlarged pocket 17 is provided therefor at one end of the bore, for the cutters to be carried as 10', and a cover cap 18 thereover.

Having described my invention I claim as new:

An ampoule opener, for pocket use including a body elongated in form and generally square in cross section to prevent the instrument rolling on a flat surface and to facilitate manipulation and provided with a central bore thoughout its length to facilitate removal of broken parts of ampoules therefrom and to provide an entrance for the necks of ampoules in one end thereof, said body having a slot adjacent one end thereof of a cutter mounted adjacent the slot for movement through the slot into the bore for grooving necks of ampoules and normally elevated above the bore to prevent injury thereto and to provide unobstructed area for breaking off the necks of ampoules by leverage across the wall of the bore, resilient means for mounting the cutter on the body and a flange extended about the end of the instrument adjacent the cutter for the dual purposes of protecting the hands of operators from injury from broken glass of the ampoule necks and to protect the contents of the ampoules from contamination from the hands of the operators.

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