

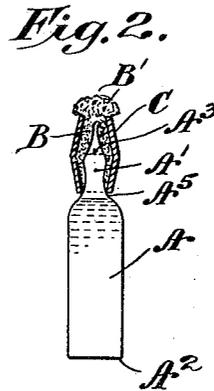
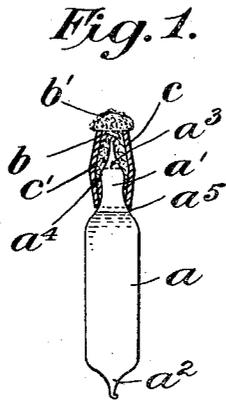
A. C. HIGGINS.

AMPOULE.

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1,166,761.

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# UNITED STATES PATENT OFFICE.

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## AMPOULE.

1,166,761.

Specification of Letters Patent.

Patented Jan. 4, 1916.

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*To all whom it may concern:*

Be it known that I, ARTHUR C. HIGGINS, a citizen of the United States, residing in the city of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Ampoules, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

It has been proposed in this country and abroad to put up single applications of a medication in small glass containers or capsules which are frangible to permit the escape of the medication and which are inclosed, either partially or wholly, by an absorbent material which, when saturated, serves as a convenient swab for the application. Such containers or ampoules, while satisfying a widespread demand for such single applications, are not, as now constructed, entirely satisfactory, because the covering of absorbent material is entirely exposed and permits the medication to be exposed to the hand of the user throughout a large area and also results in the waste of a substantial part of the liquid through its absorption by the covering. Again, the bulk of the swab precludes its introduction into small wounds and conversely, always results in the application of the medication over a much greater area than is desired. Further, the covering of absorbent material, now generally used, is retained in position on the ampoule by means of a mesh bag, usually of silk, which is rather expensive and offers no protection to the fingers against laceration by the splintered glass.

By means of the present invention, it is sought to overcome all of the objections enumerated above and to provide an ampoule which shall be more inexpensive than those now known and which shall have a covering about the frangible portion thereof of an imperforate material, such as rubber, in which a relatively small swab of absorbent material can be incased.

In accordance with the invention, the ampoule is formed with an attenuated frangible neck on which is slipped in yielding engagement a tubular band or cap of rubber or

other suitable material, one end of which rests snugly against the shoulder of the ampoule and the other end of which is open to receive a swab of absorbent material which lies over the frangible portion of the container and presents an exposed tip by which the medication may be applied. The rubber band is preferably of a distinctive form interiorly so as to form a retainer for the swab.

Other objects of the invention and other advantages incidental to the use of the improved container will appear more particularly hereinafter, wherein is given a detailed description of the invention with reference to the accompanying drawings, in which—

Figure 1 is a view in elevation of a container provided with the improved devices for applying the liquid and directing its flow, these devices being shown in vertical section. Fig. 2 is a view similar to Fig. 1 but showing a somewhat modified form of container.

It will be evident as this description proceeds that the invention is not to be limited to any particular form of container, but thus far commercial requirements have indicated the desirability of using one or another of the two forms of containers illustrated in the accompanying drawings. In Fig. 1, the container or ampoule *a*, of glass, has the medication sealed therein and the neck *a'* thereof attenuated, preferably during the sealing operation. The other end of the container *a'* may have formed therein a small tip *a<sup>2</sup>* which may be broken readily to admit atmospheric pressure to the container and thereby facilitate the flow of the medication from the container as will appear more particularly hereinafter. It will be observed that the attenuated neck *a'* is drawn down into a frangible portion indicated roughly by the transverse dotted line *a<sup>3</sup>*. Directly around the neck *a'* is disposed a covering of some suitable absorbent material *b*, such as cotton or gauze, and around this material is placed a tubular band or cap *c* of some imperforate material, such as rubber which embraces and grips the material and compresses it. The rubber band *c* fits snugly over the absorbent material *b* and holds it in place

around the frangible neck  $a'$ , and this retaining action of the rubber band may be enhanced by forming the band interiorly of concave outline along its longitudinal axis, an indicated at  $c'$ . If desired, the neck  $a'$  of the container  $a$  may be formed with a bulge  $a^4$  which will lie within the band  $c$  at about its midpoint so that the material  $b$  beyond the bulge  $a^4$  will be wedged more tightly against the neck  $a'$ , by the converging wall of the band. By this simple construction, there is very little chance of the material  $b$  being accidentally displaced or lost from the container. The inner end of the band  $c$  embraces snugly the neck  $a'$  and rests on the shoulder  $a^5$  of the ampoule so as to prevent the escape of the medication at this end of the band. The opposite end of the band  $c$  is open and the absorbent material  $b$  extends through its open end and presents an exposed surface  $b'$  which will serve as a convenient swab for applying the medication.

The ampoule A shown in Fig. 2 has its neck  $A'$  of the same construction as that shown in Fig. 1 and has applied thereto the absorbent material B and the rubber band C, all as previously described, the only difference between the container shown in this figure and that shown in Fig. 1 residing in the provision of a flat bottom  $A^2$  for this container and the omission of the tip  $a^2$  shown in Fig. 1. Different conditions of use will determine whether one form or the other of these containers will be employed.

In use, the medication in both of the illustrated ampoules will be applied in the same way, except that the tip  $a^2$  shown in Fig. 1 will be broken before using this container. In each instance, the frangible neck  $a'$ ,  $A'$ , is broken at some point, such as  $a^3$ ,  $A^3$ , by pressure of the fingers against the rubber band  $c$ , C. As soon as the neck  $a'$ ,  $A'$  is thus broken the liquid in the container flows out and is absorbed by the material  $b$ , B until the exposed swab  $b'$ ,  $B'$  is saturated. During the passage of the liquid from the container to the swabbing surface, it is directed in its flow outward by the band  $c$ , C, and is prevented from escaping at any point except at the end of the swab, by the imperforate character of the band and its intimate union with the shoulder  $a^5$ ,  $A^5$  of the container. At the time of breaking the frangible neck it will be evident that the fingers are protected against injury by the splintered glass by the tough band  $c$ , C, and after the material  $b$ , B, is saturated, the fingers are prevented from coming in contact with the medication, so that an absolutely aseptic application is assured and discoloration of the fingers or other undesired action of the medication thereon is prevented. The concentration of the liquid at the end of the swab  $b'$ ,  $B'$

makes it possible to apply the medication at any desired point and over a very small area, so that waste is prevented. Again, by forming the swab with a relatively small exposed surface, it is possible to introduce it into small cavities or wounds and effect such an application as is impossible with the relatively bulky coverings now generally employed in connection with containers. Not only does the band  $c$ , C, perform its stated functions during the application of the liquid but it serves as a protective covering for the frangible neck  $a'$ ,  $A'$ , during shipment and handling of the ampoule.

Other means for attaining the same general objects as herein appear will suggest themselves to those skilled in the art, but mere modifications in the matter of the size, shape and relationship of parts are to be deemed within the spirit of this invention provided they fall within the scope of the appended claims.

I claim as my invention:

1. The combination of an ampoule having a frangible portion, absorbent material lying thereover, and an imperforate casing for the absorbent material embracing the material and compressing the same and having an opening through which the material protrudes.
2. The combination of an ampoule having a frangible neck, absorbent material lying thereover, and an open ended tubular casing of imperforate material disposed directly around and embracing the absorbent material and the neck and carried by the ampoule.
3. The combination of an ampoule having an attenuated frangible neck, absorbent material covering the neck and extending beyond the end of the same as a substantially cylindrical swab, and a tubular band of imperforate material fitting snugly over the absorbent material and embracing the same and the neck and having one edge resting on the shoulder of the ampoule, the cylindrical portion of absorbent material protruding beyond the other end of the band.
4. The combination of an ampoule having a frangible neck formed with a bulge, absorbent material lying thereover, and an elastic tubular band disposed directly around the absorbent material and embracing and compressing the same and tapered interiorly to cooperate with the bulge and retain the material in place.
5. The combination of an ampoule having an attenuated frangible neck formed with a bulge, absorbent material covering the neck and lying around the bulge and extending beyond the end of the neck as a substantially cylindrical swab, a rubber tubular band tapered interiorly to embrace and grip yieldingly the absorbent material and the bulge

and resting at one end against the shoulder of the ampoule, the cylindrical swab of absorbent material protruding beyond the other end of the band, and a frangible tip  
5 formed in the ampoule to admit atmospheric pressure during application of the medication.

This specification signed and witnessed this 24th day of February, A. D. 1915.

ARTHUR C. HIGGINS.

Signed in the presence of—

G. JONES,  
W. H. QUILLMAN.