July 25, 1933. R. LEVINSON 1,919,848

DEVICE FOR OPENING BULBS CLOSED BY WELDING AND THEIR APPLICATION TO FIRE EXTINGUISHERS

Filed Aug. 10, 1931

Fig. 1.

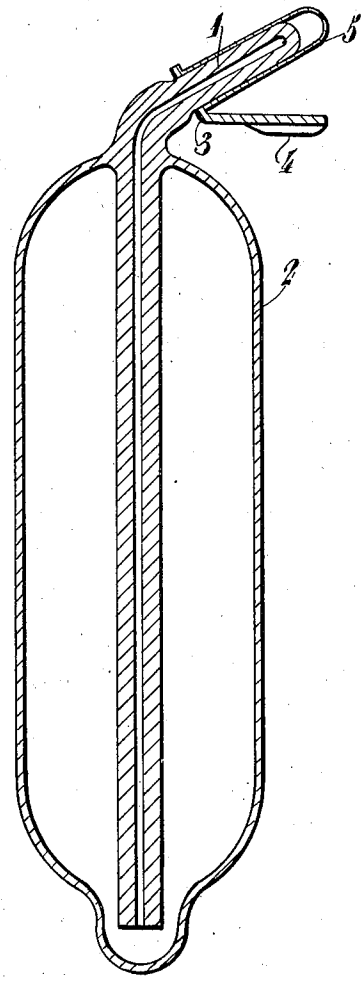


Fig. 2.

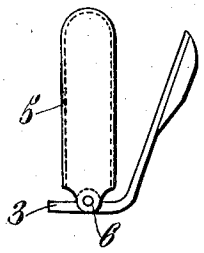
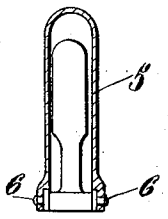


Fig. 3.



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Patented July 25, 1933 1,919,848

UNITED STATES PATENT OFFICE

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DEVICE FOR OPENING BULBS CLOSED BY WELDING AND THEIR APPLICATION TO FIRE EXTINGUISHERS

Application filed August 10, 1931, Serial No. 556,294, and in France August 12, 1930.

The present invention has for object a device intended to accelerate and facilitate the opening of bulbs made of glass or other material, for any use and closed by welding, for instance by closing their neck portion with a blow-pipe.

It is known that, actually, bulbs of this kind are opened by breaking the neck portion at a weakened part of the latter, and after having previously made in this weakened part a superficial groove by means of an abrasive tool. In effecting this operation, it is necessary to take precautions for avoiding injuries and, particularly, it is prudent to protect one's fingers by wrapping a cloth round them. In any case, the opening of a bulb in these conditions is never rapid and is often delicate.

The device forming the subject-matter of this invention remedies these inconveniences. It is mainly characterized by the combination of two elements so made as to limit the neck of the bulb to the breaking zone, these elements being acted upon for imparting to them a relative displacement and create bending and shearing stresses on the neck of the bulb.

Such as defined in its principle, the invention lends itself to various forms of construction which may differ from each other particularly:

— By the nature of the means allowing to impart to both elements of the device the relative displacements producing the breaking of the bulb neck,

— By the nature of the means ensuring the protection of the operator's fingers against injuries.

The invention particularly concerns the following forms of construction, which, for the moment, seem to be advantageous:

(*a*) One of the elements is constituted by a tube which fits as exactly as possible on the neck of the bulb, whilst the second element is constituted by a ring also fitted on the bulb and the plane of contact of which with the adjacent edge of the tube determined the breaking zone of the neck, the ring being provided with a gripping arm or lever which is acted upon for moving it towards the tube, and the latter protecting the fingers against injuries.

(*b*) By way of constructional modification of the device according to paragraph (*a*), the ring and the tube are joined to each other, the breaking zone being comprised in the empty space between the ring and the adjacent edge of the tube.

(*c*) Both elements are constituted by two rings provided at the ends of a tool in the form of shears, the two blades of which have been replaced by two rings which, preferably, have their two adjacent edges located and movable in one and the same plane, the action exerted on the branches of the shears determining the breaking of the bulb neck circumscribed by the two rings, without the hand, which is at a sufficient distance away, requiring special protecting means.

The invention has moreover specifically for object the application of the invention to glass bulbs of fire extinguishers, and particularly of a device according to paragraph (*a*) and in which the tubular element is closed at its free end and permanently fits over the neck of the unbroken bulb on which it is sealed by means of any suitable adhesive.

The accompanying drawing illustrates, by way of example only, two forms of construction of a device forming the subject-matter of the invention.

Fig. 1 is an axial section of a special bulb for fire extinguishers, which is provided with an opening device.

Figs. 2 and 3 are an elevation and a sectional side view of a constructional modification of the device.

In the example illustrated in Fig. 1, the inclined neck 1 of the bulb 2 is closed by means of a blow-pipe after this bulb has received its charge of fire-extinguishing liquid. On the closed neck, which is calibrated as regularly as possible, is fitted a ring 3, preferably made of metal, and provided with an arm or lever 4. On the neck 1 is then fitted a tubular cap 5. This cap is permanently sealed on the neck and the bulb

is delivered with the two elements constituting the opening device.

To open the bulb by breaking the neck, it suffices to move the arm 4 and the cap 5 towards each other with the fingers. Combined bending and shearing stresses are generated in the plane of contact of the ring 3 and of the edge of the cap, and the neck is neatly broken in this plane. It is obvious that the cap 5 protects the fingers against any injury by contact with the glass.

In the form of construction illustrated in Figs. 2 and 3, the ring 3 and the cap 5 are jointed together at 6 to constitute a tool or new commercial product which, delivered with a series of closed bulbs, allows one to instantaneously open the latter without taking any special precautions.

It is to be noted that the terms "rings" and "tube" or "tubular cap" employed in the foregoing, are not limitative. The ring can obviously present a discontinuity, and the tube can be apertured or replaced by two or more shells, or by jaws the arrangement of which allows one to obtain the advantageous commercial results indicated above. The invention defined in its principle in the preamble to the present specification includes in its scope any means and combinations of means allowing one to carry this principle into practice.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a device for effecting the opening of bulbs made of glass or other material, closed by welding and capable of containing any products and even of constituting bulbs for fire extinguishers, the combination of a tube fitting as exactly as possible on the bulb neck, a ring also fitted on the bulb neck and the plane of contact of which with the adjacent edge of the tube, determines the breaking zone of the neck, and a gripping arm rigid with the said ring, adapted to be forced towards said tube to break the bulb neck without risk of injury to the hand of the user.

2. In a device for effecting the opening of bulbs made of glass or other material, closed by welding and capable of containing any products and even of constituting bulbs for fire extinguishers, the combination of a tube fitting as exactly as possible on the bulb neck, a ring pivoted to the end of the said tube and also fitting on the bulb neck, and an arm rigid with the said ring, the zone comprised between this ring and the corresponding end of the said tube being the breaking zone of the neck, this breaking being obtained by forcing the said lever and tube towards each other.

3. In a device for effecting the opening of the bulbs of fire extinguishers, the combination with the said bulb, of a tubular element closed at one of its ends and permanently fitting over the neck of the unbroken bulb on which it is sealed by means of a suitable adhesive, an annular element surrounding the neck of the bulb in the region of the open end of the said tube, and a lever forming an extension of the said ring, said lever and tubular element being adapted to be forced together to break the bulb neck without risk of injury to the hand of the user.

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