

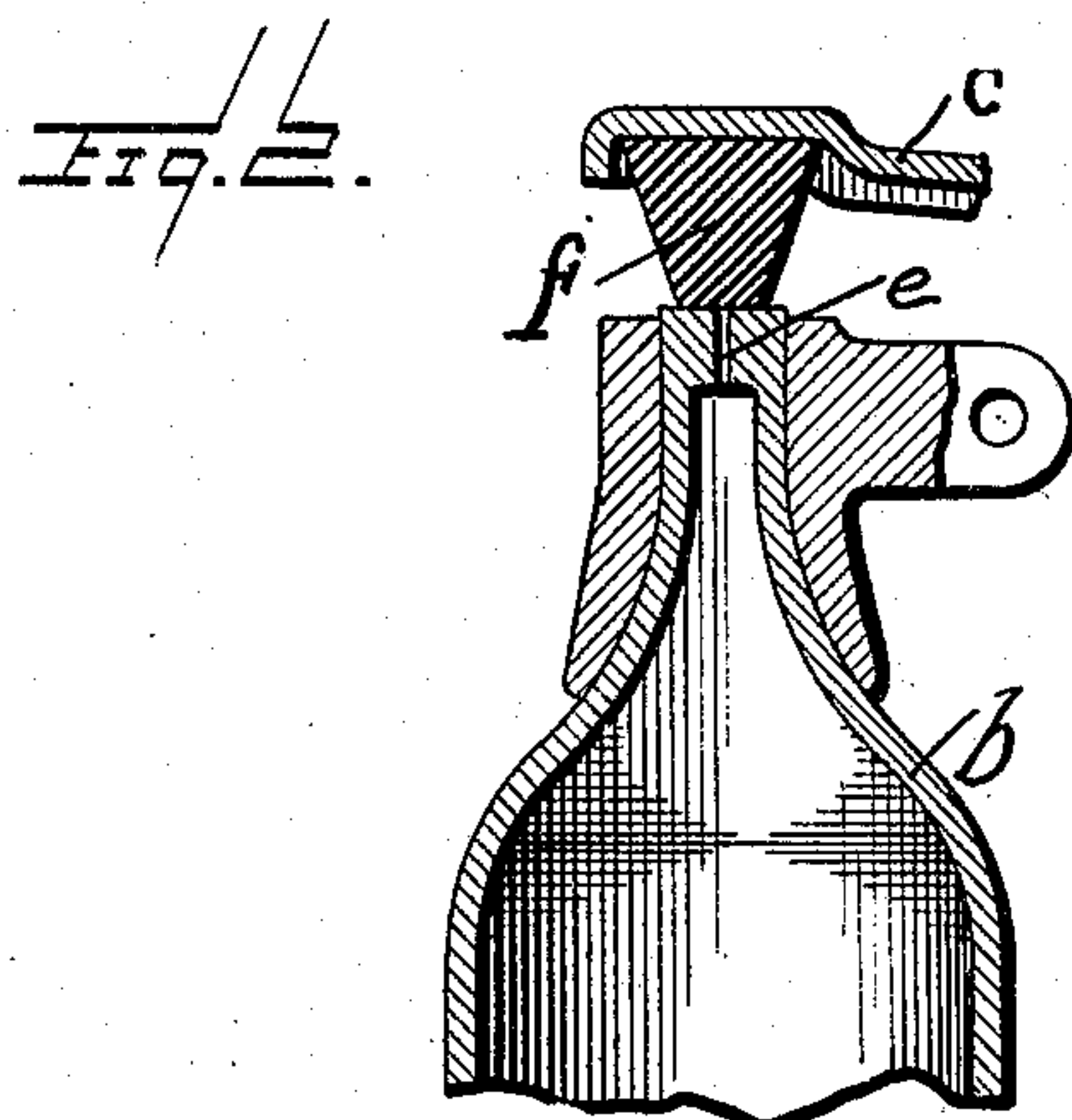
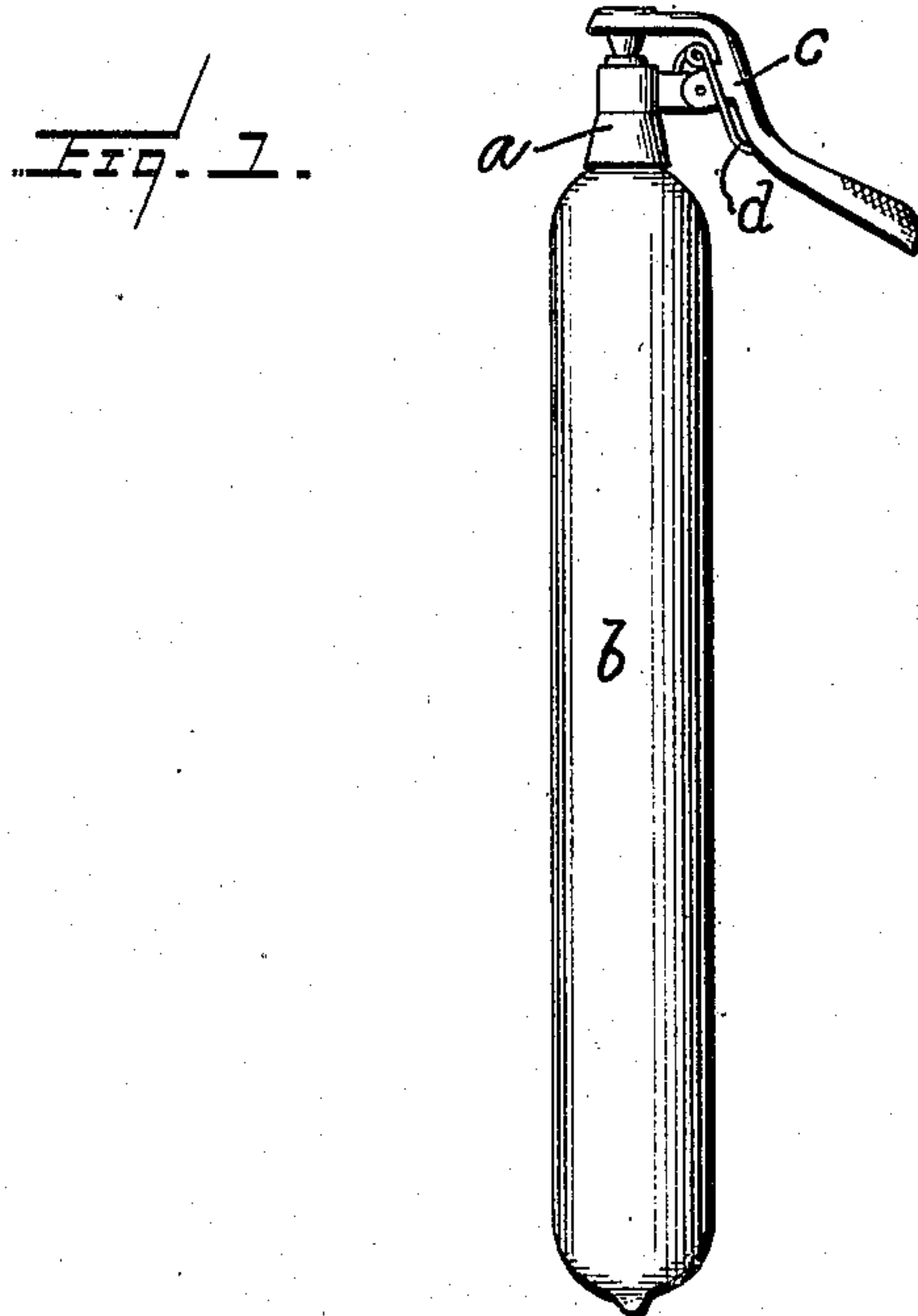
S. PAULARD & N. GRILLET.

CLOSURE FOR VESSELS CHARGED WITH VOLATILE LIQUIDS OR LIQUIDS UNDER PRESSURE.

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924,496.

Patented June 8, 1909.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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CLOSURE FOR VESSELS CHARGED WITH VOLATILE LIQUIDS OR LIQUIDS UNDER PRESSURE.

No. 924,496.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed December 28, 1906. Serial No. 349,924.

To all whom it may concern:

Be it known that we, STYLIT PAULARD, of 54 Rue Secretan, Paris, France, director-general, and NICOLAS GRILLET, of St. Fons, near Lyon, France, engineer, have invented certain new and useful Improvements in Closures for Vessels Charged with Volatile Liquids or Liquids under Pressure, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to closures for tubes, flasks or vessels having capillary orifices and charged with volatile liquids or liquids under pressure, and it has been more particularly devised for application to tubes or vessels charged with ethyl chlorid or like highly volatile liquids employed for producing local anesthesia and other purposes.

The chief object of the invention is to realize the practical application of an automatic closure to tubes or vessels having a capillary discharge tube closed by sealing at the blowpipe, and broken off when the vessel is to be used. The designation "automatic closure" applies to vessels which are automatically closed by a pad or joint of rubber or the like kept pressed by a spring upon the orifice of the capillary tube and adapted to be moved off the orifice by means of a lever or other device operated by one finger of the hand which holds the vessel. It has not hitherto been possible to apply such a closure in practice to blow pipe sealed vessels for the reason that when the capillary tube of these latter is broken for use, the surface left by the break is nearly always rough in parts and particularly at the edge. These rough portions, which require special tools for their removal, render a hermetic joint between the capillary orifice and the spring pressed pad impossible. According to this invention we overcome this disadvantage and provide a hermetic automatic closure for the capillary tube, so that when this is broken a perfectly hermetic joint is provided. We attain this object by making the rubber pad of the automatic closure of conical shape, the slightly rounded point of the pad being kept pressed accurately over the capillary orifice, thus avoiding all the rough portions of the break. Absolute hermeticity is thus secured and in fact the closure is even more perfect than with automatic vessels which

are not sealed at the blowpipe, because in the improved joint the pressure on the capillary orifice is much stronger, being localized on a restricted surface around the orifice.

In the accompanying drawings, Figure 1 is a view in elevation of an ethyl chlorid tube having a closure in accordance with the invention, Fig. 2 is a corresponding detail sectional view of the upper part of the tube on a larger scale.

In the drawing *a* is a metal collar cemented on the neck of the tube *b* and to which is pivoted a bent lever *c* similar to a flute key and subject to the action of a spring *d*; *f* is the conical rubber pad carried by the lever *c*. When the vessel is in use the spring *d* presses the pad down over the top of the tube and closes the capillary orifice *e*. It will be seen that the smaller end of the pad is kept accurately pressed over the capillary orifice *e* and does not come in contact with the rim portions of the top of the neck where a rough surface is liable to be left when the capillary tube is broken off, whereas the pad is compressed and its pressure concentrated on the flat portions surrounding the capillary orifice, so that a hermetic closure is insured. By depressing the lever and inverting the tube the jet of anesthetic is applied in the ordinary way.

It is evident that the improved closure may also be applied to blowpipe sealed vessels provided with non-automatic closures. For example it may be applied to vessels closed with a screw cap.

What we claim and desire to secure by Letters Patent is:

1. In a closure for vessels, a discharge tube having a capillary discharge passage extending therethrough, the end of said tube presenting a surface produced by fracture resulting from a protruding end of said tube having been broken off; a conical pad of yieldable material the apex whereof is of less diameter than the end of said discharge tube, and which apex is disposed opposite the discharge end of said passage, whereby said pad upon being forced into contact with the end of said tube will be flattened but will not enter said discharge passage because of the minute diameter thereof; and means for forcing said pad against the end of said discharge tube.

2. In a closure for vessels, a discharge

tube having a capillary discharge passage
extending therethrough, the end of said tube
presenting a surface produced by fracture
resulting from a protruding end of said tube
5 having been broken off; a conical pad of
yieldable material the apex whereof is of less
diameter than the end of said discharge
tube, and which apex is disposed opposite
the discharge end of said passage, whereby
10 said pad upon being forced into contact with
the end of said tube will be flattened but
will not enter said discharge passage because
of the minute diameter thereof; a pivotally

supported lever one end whereof supports
said pad and the other end of which forms 15
an operating means for the closure; and a
spring engaging said lever and serving to
maintain the closure in its closed condition.

In witness whereof, we have hereunto
signed our names in the presence of two sub- 20
scribing witnesses.

STYLIT PAULARD.
NICOLAS GRILLET.

Witnesses:

THOS. N. BROWNE.
MARIN VACHORY.