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H. J. POOLE

EVACUATION AND SEALING OF GLASS JARS OR SIMILAR CONTAINERS

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Fig. 1.

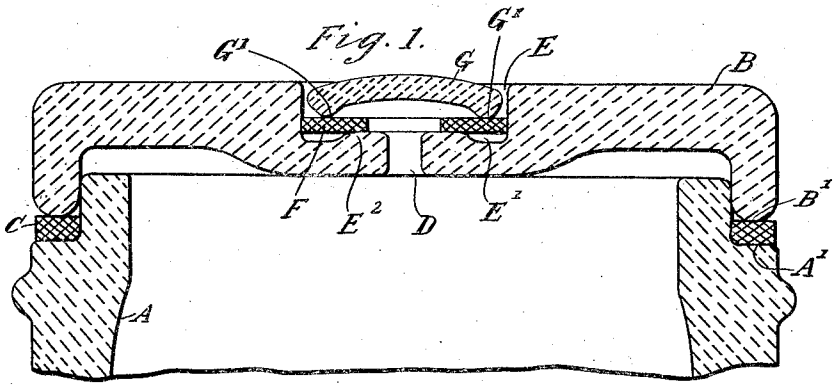


Fig. 2.

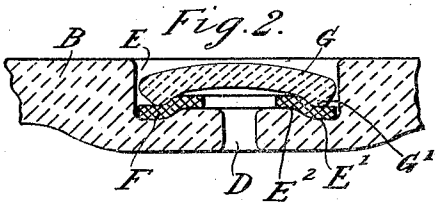
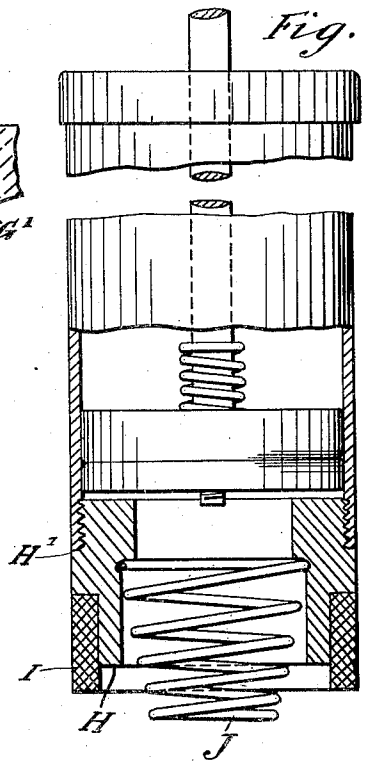


Fig. 3.



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UNITED STATES PATENT OFFICE.

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EVACUATION AND SEALING OF GLASS JARS OR SIMILAR CONTAINERS.

Application filed February 21, 1923, Serial No. 620,440, and in Great Britain June 9, 1922.

This invention relates to the method of evacuating and sealing glass jars and similar containers according to which the evacuation of the jar is effected after the cover or lid has been placed in position by means of a pump or equivalent evacuating device, through an aperture in the said cover provided with a closing piece which lifts off its seat to permit the evacuation of the jar when the pump is operated and automatically closes on its seat when the vacuum is broken.

According to the present invention the closing piece or cap is raised from its seat by the vacuum established by the pump against a mechanically applied force and is positively urged against its seat by such a force the instant the vacuum is broken, and in the preferred apparatus for carrying out the invention this force is supplied by a spring embodied in the pump by means of which the evacuation of the jar is effected. Further, instead of the closure being effected by opposing flat surfaces on the closing piece or cap and its seating, between which is interposed a luting ring of indiarubber or equivalent material, a better and more permanent closure is obtained by providing the cap or its seating with an annular ridge or ledge encircling the aperture in the lid, between which ridge and the opposing surface the luting ring is firmly pressed and a more effective and permanent seal thereby ensured. Or both the cap and its seating may have such an annular ridge or ledge, one of them being preferably of greater diameter than the other.

In the accompanying drawings Fig. 1 is a central vertical section through the upper part of a glass jar and its lid, showing the means according to the present invention whereby the evacuation of the jar and its sealing are effected; Fig. 2 is a sectional part view showing the relation of the sealing elements when the glass vessel has been evacuated; and Fig. 3 is a longitudinal section of a hand pump adapted to effect the evacuation of the container.

In these drawings A represents the glass vessel or similar container, B the cover or lid of same and C the usual luting ring of indiarubber or equivalent material which is interposed between the edge B′ of the cover and the ledge A′ on which it rests. The lid B is provided with an aperture D which as shown in the drawings, is preferably centrally disposed within a recess E formed in the lid. A luting ring F of indiarubber or the like encircles the aperture D and a cap G rests upon the luting ring so as, in conjunction therewith, to enclose completely the aperture D. As shown in the drawings, the recess E is preferably formed with an annulus E′ surrounding a ledge E^2 upon which the luting ring F rests and against which it is firmly held by atmospheric pressure when the evacuation of the jar is completed, and the cap G is dished or otherwise suitably formed, as with an annular ridge G′, so that its edge rests upon the unsupported part of the luting ring and, when the vessel is evacuated, presses it firmly into the annulus E′. There are thus two annular ridges or ledges, one on the cap and one on its seating, between which and the opposing surfaces the luting ring is firmly compressed, thereby effectively sealing the aperture D. The recess E is preferably of such depth that when the lid is sealed the cap G will not project above the general surface of the lid B.

The evacuation of the vessel may be effected by establishing a suitable connection between the aperture D, when the lid and cap are in position on the vessel, and a vacuum chamber connected with any suitably fitted evacuating device, power-driven or otherwise, or it may be effected by means of a hand pump such as illustrated in Fig. 3, the nozzle ring H of which is provided with a luting ring I adapted to make an air-tight connection between the pump nozzle ring H and the sealing cap G. A conical spring J seated on a ledge H′ within the nozzle ring H serves to press the cap G into the sealing position when the evacuation of the vessel has been effected by the pump through the aperture D.

In lieu of the cap and luting ring shown in the drawings a button or dished disc of rubber of sufficient thickness and hardness as to obviate buckling might be used without any separate washer or ring.

Having thus described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

1. A glass jar or similar container in which the evacuation of the jar is effected through an evacuating aperture in a lid which closes by the vacuum established within the jar on the mouth of the jar with an interposed luting ring, comprising in combination a lid having a recess therein contain-

ing the evacuating aperture, a closure cap actuated by the vacuum established in the jar and accommodated in said recess with lateral clearance, and a luting ring interposed between said cap and the recessed portion of said lid, said last-named members having annular ridges of different diameters forming concentric annular contacts of restricted width with the said luting ring around said evacuating aperture.

2. A glass jar or similar container in which the evacuation of the jar is effected through an evacuating aperture in a lid which closes by the vacuum established within the jar on the mouth of the jar with an interposed luting ring, comprising in combination a lid having a recess therein containing the evacuating aperture, said lid having an annular ridge and a substantially plane surface surrounding said aperture, a closure cap actuated by the vacuum established in the jar and accommodated in said recess with lateral clearance, said cap having a substantially plane surface and an annular ridge opposed, respectively, to the annular ridge and plane surface of the lid, and a luting ring interposed between said cap and the recessed portion of said lid, said ridges of the lid and cap providing two concentric lines of sealing contact with the luting ring around the evacuating aperture.

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

HENRY JEFFREY POOLE.