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J. P. VIARENGO

2,584,946

BATTERY LID

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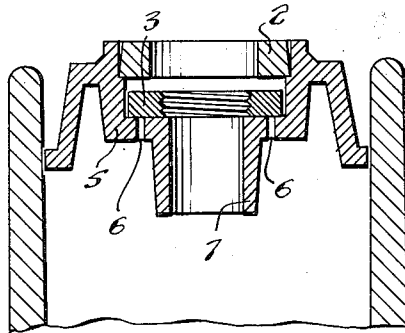


FIG. 1.

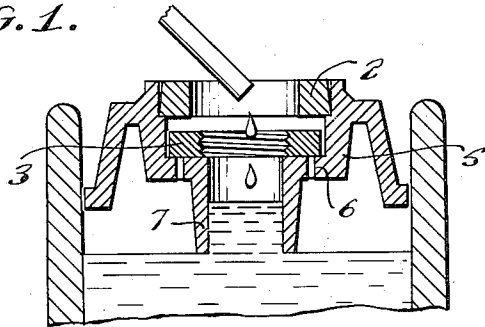


FIG. 2.

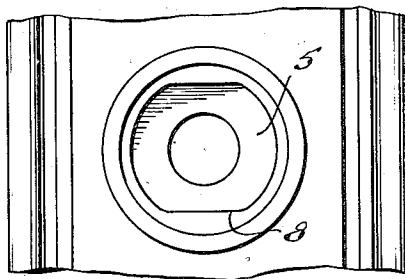


FIG. 7.

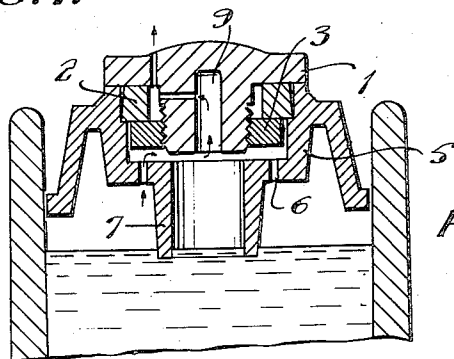


FIG. 8.

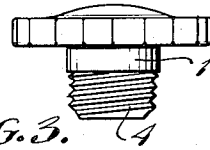


FIG. 3.

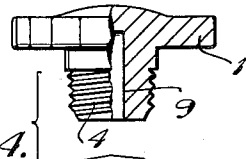


FIG. 4.

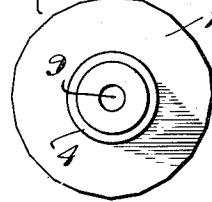


FIG. 5.

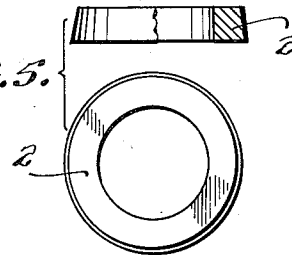
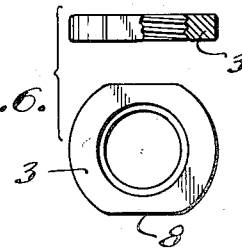


FIG. 6.



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UNITED STATES PATENT OFFICE

2,584,946

BATTERY LID

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1 Claim. (Cl. 136—178)

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The present invention is related to an improved battery lid which automatically regulates the level of the liquid in the interior of the element.

The lid which is the object of this invention is based upon the well known general principle of obtaining the desired electrolyte level inside the battery by keeping a determined volume of air and gases inside the same battery, thus preventing the possibility of introducing liquid in excess.

The lid which is the object of the present invention represents a new, simplified realization of this principle, and, being composed of a reduced number of parts of easy manufacture, it solves the problem in a simple but efficient and sure way, as I will proceed to show by drawings attached to the present detailed description.

Fig. 1—Section of the battery on being inspected,

Fig. 2—same section when liquid is being poured,

Fig. 3—side view of the stopper,

Fig. 4—partial section and top view of stopper,

Fig. 5—view and section of ebonite ring,

Fig. 6—view of the valve seat cavity and valve section.

Fig. 7—top view of valve seat, and

Fig. 8—section of battery after the addition of liquid is completed.

Stopper 1 is provided with the usual central canal 9 for the discharge of air and with a lower threaded portion 4, associated with a valve 3, internally threaded, which rests on a base 5 with small straight stretches 8 corresponding to straight stretches 8 of the valve 3 itself, so that the latter cannot rotate but only moves vertically. When lowered, valve 3 closes the air outlet orifices 6 provided on base 5, and when stopper 1 is introduced it raises valve 3 thus opening said orifices 6.

As shown on the attached drawings, the battery lid opening comprises an annular portion with a cavity to lodge valve 3 which is traversed by the air and gas outlet orifices 6, and is provided with a tubular extension 7.

On said annular portion rests a valve 3, the manner indicated on the drawings, with internal thread. Said valve 3 will be made of comparatively heavy material resisting the electrolyte and the battery gases. In case of acid batteries, it will, for instance, be made of lead.

On the upper part of the cover opening is fixed a ring 2, of ebonite or other suitable material selected among those used for battery containers.

The operation of the unit is explained by the same drawings.

Fig. 1 shows the battery on being inspected:

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stopper 1 is removed, and valve 3 rests upon the annular portion of cavity 5 and closes the gas outlets 6. The inspection reveals the necessity of adding liquid for re-establishing the normal level of the electrolyte.

Fig. 2 shows the operation of adding liquid. Orifices 6 being closed by valve 3, the liquid added cannot rise inside the battery above the level of the border of tubular extension 7, the final level of the electrolyte being determined by the length of said tubular extension.

Fig. 8 shows the battery after the liquid addition is completed: stopper 1 is replaced on the cover opening and screwed on valve 3, which cannot rotate due to the action of the threads and so is lifted and consequently opens orifices 6 thus allowing the free discharge of air and gases. The small part of liquid existing before in the tubular extension 1 flows down into the battery.

The battery can thus be put in service with the correct level of electrolyte, the electrolysis gases being allowed to escape freely following the path indicated by the arrows.

The drawings show one form of practical realization, without the invention being limited to the details set forth, and the latter therefore can be modified provided the basic feature remains unaltered which ensures that the gas outlet orifices remain automatically open when the stopper is placed on the lid and automatically closed in the reverse operation, that is, when the stopper is removed from the lid.

I claim:

A battery cover, comprising in combination, a lid member having an outer and an inner face and formed with a transversal opening having an annular surface; an annular recess in said annular surface spaced from both faces of said lid member and thus forming an outer annular projection between itself and the outer face and an inner annular projection between itself and the inner face of said lid member, said outer annular projection being designed as a separate annular member connected to said lid member by friction; at least one transversal passage through said inner annular projection; an annular valve member arranged non-rotatably within said annular recess and having a diameter and width being smaller than the diameter and width respectively of said annular recess and formed with an inner screw threaded hole having a smaller diameter than the inner diameter of said outer annular projection; and a stopper consisting of a head adapted to abut against the

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outer face of said lid member and a shank having a smaller diameter than said outer annular projection and having a screw threading fitting into said screw threaded hole in said annular valve member, said screw threading extending from the tip of said shank of said stopper toward the head thereof at least to such extent that after said shank is screwed into said screw threaded hole in said annular valve member the distance between said valve member and said stopper head is equal to the width of said upper annular projection, thereby enabling a firm clamping of said valve member to said upper an-

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nular projection by screwing of said stopper into said valve member.

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The following references are of record in the file of this patent:

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