(No Model.)

A. INGERSOLL & C. L. AYERST.

Method of and Device for Sealing Vessels.

No. 234,674. Patented Nov. 23, 1880.

Fig. 1.

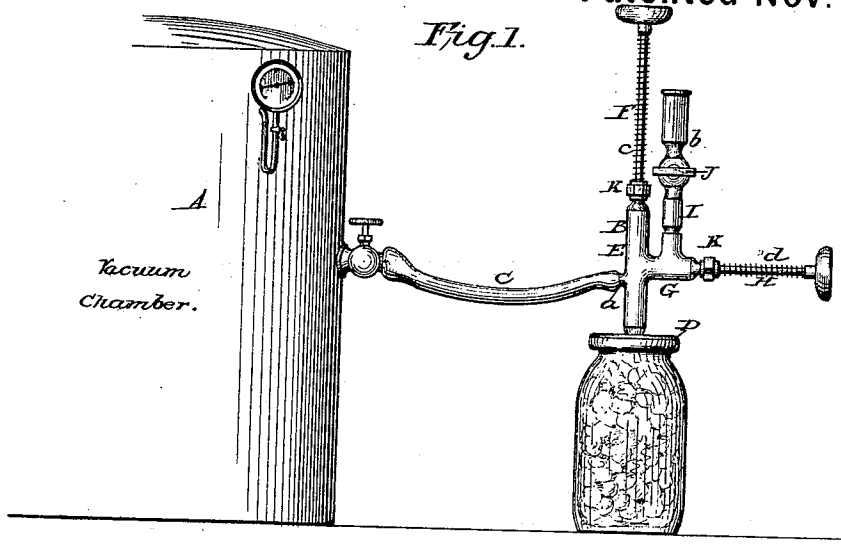


Fig. 2.

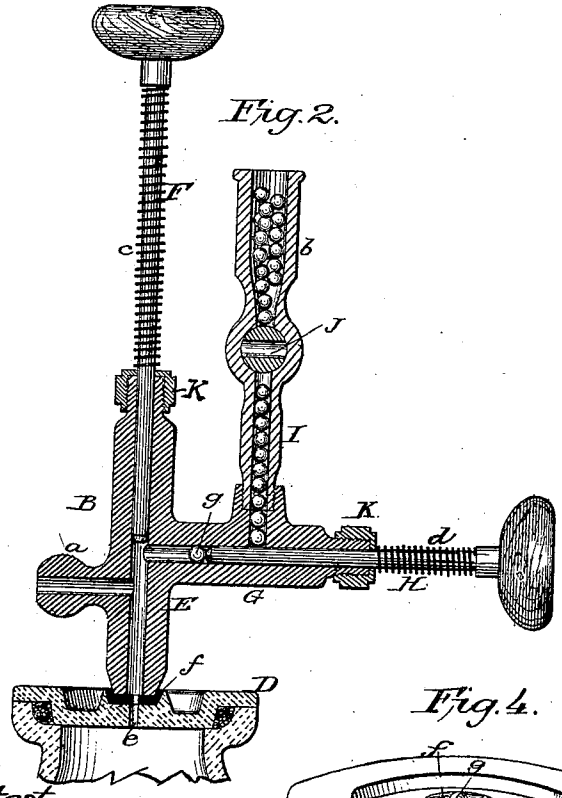


Fig. 3.

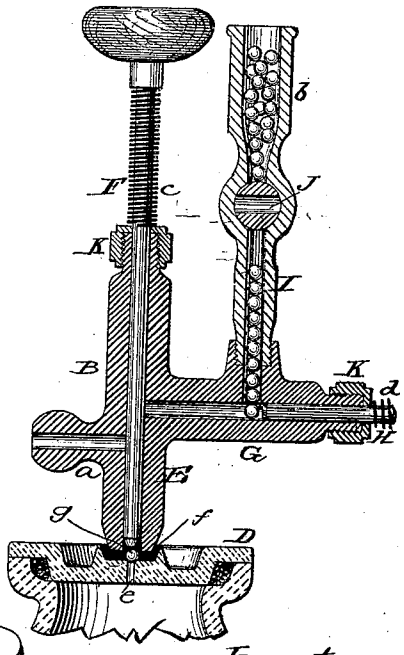
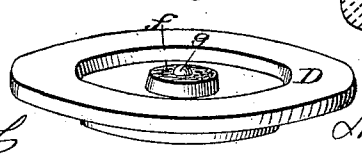


Fig. 4.



Attest.

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ARTEMIDORUS INGERSOLL AND CHARLES L. AYERST, OF WAUPUN, WISCONSIN; SAID AYERST ASSIGNOR TO SAID INGERSOLL.

METHOD OF AND DEVICE FOR SEALING VESSELS.

SPECIFICATION forming part of Letters Patent No. 234,674, dated November 23, 1880.

Application filed June 16, 1880. (No model.)

To all whom it may concern:

Be it known that we, ARTEMIDORUS INGERSOLL and CHARLES L. AYERST, of Waupun, in the county of Fond du Lac and State of Wisconsin, have invented certain Improvements in Methods of and Devices for Sealing Vessels, of which the following is a specification.

Our invention relates to the preservation of food in hermetically-sealed vessels, and more particularly to that process of preserving in which the air is withdrawn from the vessels by suction instead of being expelled by heat.

The invention consists in a novel method of and apparatus for sealing the vessels after the air is exhausted therefrom, the method consisting in embedding a shot in wax surrounding the exhaust-orifice by simple pressure without the aid of heat, and the apparatus consisting in a magazine to contain a number of shot, a plunger to carry the shot, one at a time, from the magazine to a vertical passage, and a second plunger traveling in said passage and serving to force the shot down upon and into the wax.

The invention further consists in a peculiar arrangement of parts, whereby the plunger may also be made to close or open communication with the exhaust-chamber.

This process of removing air from vessels containing food, &c., has been for a number of years well known, and devices have also been provided for sealing the vessels while connected with the exhaust-chamber. Such devices have not, however, been as convenient in use as is desirable, first, because, as a rule, they required to be supplied anew with the sealing material or device for each vessel, and, secondly, because such materials and devices, as heretofore applied, were not always certain of producing a perfect sealing of the vessel. To overcome these objections and expedite the sealing operation are the objects of our invention; and to this end the invention consists in surrounding the orifice through which the air is withdrawn with wax or equivalent naturally plastic material and embedding therein a shot or like body directly over the orifice, and in the device for performing said operation illustrated in the accompanying drawings, in which—

Figure 1 represents an elevation of the entire apparatus in position for operation; Fig. 2, a vertical central section, showing the manner in which the shot are taken from the magazine; Fig. 3, a similar section, showing the manner in which the shot is embedded in the wax; and Fig. 4, a perspective view of a jar-cover having the suction-orifice sealed in accordance with our plan.

A represents an exhaust chamber or tank, from which the air may be withdrawn or expelled in any well-known manner; B, the shot-supplying apparatus, connected with the exhaust-chamber by a tube or pipe, C; and D, the cover or top of the vessel to be sealed.

The shot-supplying apparatus, by which the shot are placed upon and embedded in the wax, consists, as more clearly shown in Figs. 2 and 3, of an upright tubular standard, E, in which is arranged a close-fitting rod or plunger, F, and which is furnished with a short tubular neck, *a*, for the attachment of the suction-tube C, a lateral tubular side arm or extension, G, communicating with the interior passage of the standard E and furnished with a plunger rod or stem, H, and an upright supply tube or magazine, I, sustained by the lateral arm G and opening into the same, and furnished with a closing-valve, J, and hopper or funnel-shaped mouth *b*, as shown.

The upper extremity of the standard E and the outer end of arm G are preferably furnished with packing-glands K, as shown, and a spiral or other spring is, by preference, arranged to raise the rod or plunger F and another to withdraw the stem H, as indicated by the letters *c* and *d*, while the lower extremity of the standard E is made of conical or tapered form, as shown.

The device being constructed as above described, the valve J is opened and a supply of shot of proper size deposited in the magazine I, the lowermost shot falling from the lower end of the magazine into the interior of the lateral arm G, directly in front of the end of the rod or stem H, the interior passage of the upright E, arm G, and magazine I being of

uniform diameter and of just sufficient size to permit a single shot to pass freely through. The valve J is then closed and the device placed in communication with the exhaust-chamber A, when it is ready to operate successively upon a number of vessels until the supply of shot becomes exhausted.

In practice it is found advantageous to employ a large exhaust chamber or tank, exhausting or expelling the air therefrom in any well-known manner, for the reason that a large number of vessels may then be operated upon in quick succession, the necessity of pumping out the air each time being avoided. In order to render this method of operating possible, it has been customary hitherto to provide a valve between the tank and the sealing apparatus, by which to prevent the entrance of air into the chamber or tank. By causing the plug or rod F to fit closely within the standard E it may be made to serve also as a cut-off or valve for this purpose, it being only necessary to force the end of the same down past the opening of the neck *a* and retain it in such position when not in use upon the vessel.

The vessel from which the air is to be exhausted, or its top or cover, is formed, as indicated in Figs. 2 and 3, with a small orifice, *e*, terminating at the upper side in a flaring mouth or enlargement to receive the wax or like material, *f*, and to receive and support the lower end of the standard E. Within the flaring mouth of the orifice *e* is placed a small quantity of wax, paraffine, or equivalent material, as shown in Fig. 2, care being taken to keep the opening *e* clear for the passage of the air. This may be conveniently done beforehand by inserting a small cylindrical stick or rod into the opening and pouring the wax or like material in a molten state around it, and afterward withdrawing the stick or rod. The opening being supplied with wax, the lower end of the device B pressed upon the wax, thus insuring an air-tight connection with the cover, the valve controlling the communication between the chamber A and device B is opened, and the air contained in the vessel rushes into the tank or chamber A to assist in supplying the vacuum thereof. As soon as the air is thus removed from the vessel the stem H is pressed inward, carrying before it a shot, *g*, as in Fig. 2, to the vertical passage of the standard E. The plunger or rod F is then pressed down, carrying the shot before it and embedding it firmly in the wax *f*, which is thereby pressed and compacted, so as to insure a perfect air-tight sealing. By removing the pressure from the stem or plunger F it will be permitted to rise by the action of the spring *c;* but, if desired, the stem or plunger may be held down until the device is seated upon another vessel, thus preventing air from passing into the tube or pipe C, as above described.

The plungers F and H are furnished with suitable knobs or handles, as shown.

Other material than shot may be employed; but shot is preferred, as being cheap and convenient in use and not liable to corrode.

We are aware that a magazine for containing corks has been employed in a bottle-corking machine, that the lids or covers of vessels have been sealed by means of wax, cement, and the like, and that sealing devices have been proposed in which the atmospheric pressure was alone to hold the cover to its seat; but we are not aware that any one has ever proposed to seal a vessel by simply pressing a small particle of matter into plastic material surrounding the orifice to be sealed without the aid of heat during the sealing process. This method of sealing, besides avoiding the possibility of causing wax or cement to flow into the vessel, is also far more expeditious and simple than those above referred to, and much cheaper.

We are also aware that a thin coating of clay reduced with water to the consistency of molasses, or thereabout, has been applied by a brush to the joint between an alkali-can and its cover, to prevent the injurious action of the alkali in said joint, and that rubber is commonly used to pack and seal the joints between various vessels and their covers. These we do not claim.

Having thus described our invention, what we claim is—

1. The herein-described method of sealing vessels, consisting in embedding a small particle of matter in wax or equivalent naturally plastic material by pressure without the application of heat.

2. In a device designed for use in connection with an exhaust-chamber for sealing vessels, the combination of a body having an opening through which to withdraw the air from the vessel, a magazine to contain the sealing plugs or pieces, provided with a valve to prevent the entrance of air, a plunger to carry the plugs over the orifice to be sealed, and a second plunger to force the plug down upon the mouth of the orifice.

3. In a device for use in connection with an exhaust-chamber for exhausting air from and sealing vessels, a tubular body communicating with the exhaust-chamber and the orifice to be closed, and a single plunger adapted and arranged both to cut off communication with said chamber and to press the sealing-plug to its seat.

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CHARLES L. AYERST.

Witnesses:
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