

G. STAUNTON.
VACUUM PACKAGE APPARATUS.
APPLICATION FILED MAY 12, 1910.

1,005,349.

Patented Oct. 10, 1911.

Fig. 1.

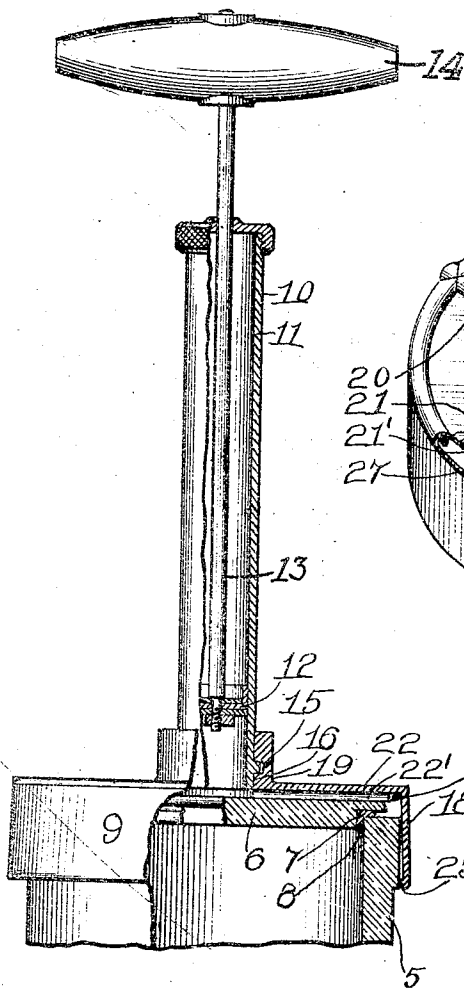


Fig. 2.

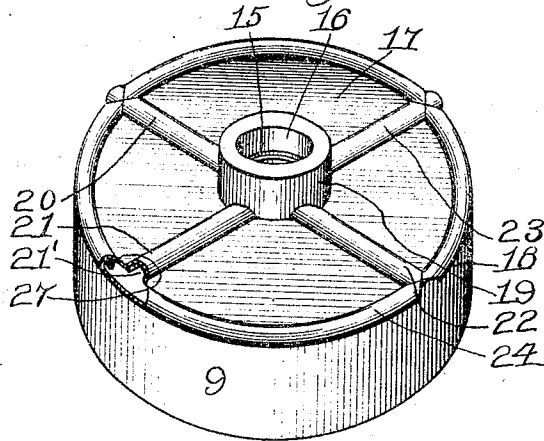
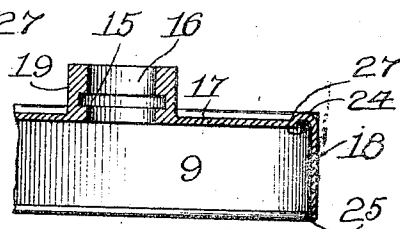


Fig. 3.



Witness
R. A. White.
H. R. L. White.

Inventor
Gray Staunton.

By J. J. R. R. and W. J. J. J.

UNITED STATES PATENT OFFICE.

GRAY STAUNTON, OF EVANSTON, ILLINOIS.

VACUUM-PACKAGE APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GRAY STAUNTON, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vacuum-Package Apparatus, of which the following is a specification.

My invention relates to improvements in vacuum package apparatus, and has for its general object to provide means for packing material in air-tight receptacles to be maintained sealed by preponderance of atmosphere pressure over a reduced pressure within the sealed receptacle.

More particularly, one of the objects of my invention is to provide a vacuum package apparatus, so that the exhausting apparatus may create in an area local to itself and the receptacle, an attenuated atmosphere, the cover of the receptacle, as a whole, being entirely inclosed within the area of the exhausting means, and receptacle, and free for bodily movement to permit egress of air from the receptacle into the exhausting means, and to be sealed upon the receptacle by the pressure produced in the operation of exhausting the air, so that when the exhausting means has been operated and removed, the cover will be maintained in sealing relation with the receptacle by the preponderance of normal atmosphere over the pressure of attenuated atmosphere within said receptacle.

A further and more specific object of my invention is to provide in association with a suitable receptacle a pump of the character to be described which is especially adapted for exhausting relatively large mouthed receptacles, such as fruit jars or tumblers, and to use the top or closure of such receptacle in conjunction therewith in lieu of a check valve, and thereby to avoid the necessity of perforating the top, or other wall of the receptacle, and placing a special check valve therein, to retain the atmosphere attenuation of the interior of such receptacle.

Other and further objects of my invention will become apparent to persons skilled in the art from a consideration of the application, taken in connection with the drawing, wherein—

Figure 1 is an elevation, partly in section, of a fragment of a vessel to be exhausted, with a closure overlying the mouth thereof showing the manner of applying the pump;

Fig. 2 is a perspective view of the flexible pump end, with a portion broken away to show the grooves therein; Fig. 3 is a fragmentary section of the pump end taken on line 3—3 of Fig. 2; and in all of the views the same reference characters indicate corresponding parts.

My invention is to be used for exhausting the gaseous content of a jar or other receptacle and sealing same, as a result of such exhaustion. In preserving fruit, or the like, it is desirable to extract and exclude the air or oxygen from such packages. It is also desirable to seal the package securely in order to retain the package in its exhausted condition. By the practice of my invention the closure is securely held in place over the mouth of the jar, or package, by virtue of the difference of atmosphere pressure without and within said jar or package.

5 is the jar or package to be sealed, preferably composed of glass, provided with a glass cover or closure, 6. A circumferential shoulder is formed around and under the periphery of said cover, as at 7, around which is seated a flexible, preferably rubber, ring, 8, preferably of triangular shape, in cross section. This feature of my invention is specifically disclosed and claimed in my Letters Patent No. 835,166, dated November 6, 1906. In this case, however, the top is not perforated, and is not provided with a special sealing valve. The open end or cap, 9, is made of a material which is more or less flexible, such as rubber. It is designed to fit over the open end of the pump and to be such size as to conveniently encompass the outside surface of the jar or vessel.

The pump 10 consists of an ordinary brass pump barrel, 11, piston, 12, piston rod, 13, and handle 14, provided on its lower end with the head, 15. The cap, 9, consists of a boss part, 16, the disk part, 17, and the skirt part, 18. The hub 16 may be provided with an interior circumferential groove, 19, into which the head 15 passes when the cap is placed upon the end of the pump. Frictional engagement between the pump barrel 11 and the boss 16 is sufficiently great to retain the structure 9 on said pump, as the suction of the pump tends to produce a more intimate contact between the parts, but the head and groove provide a mechanical means for positively maintaining association of parts when the pump is not in use. The

plate part, 17 is preferably made of a quality of rubber that is somewhat stiffer and less flexible than the parts 16 and 18, so that the parts will be somewhat more rigid as a whole.

The cap 9 is provided with a plurality of hollow radial ribs, herein shown as four, 20, 21, 22, and 23, said ribs overlying or partially encompassing corresponding grooves as at 21' and 22'. These radial grooves extend from the central boss to a circumferential groove, coextensive with an exterior circumferential rib, 24, thus providing air passages from the pump to the outside surface of the closure, as clearly shown in Fig. 1. The lower edge of the flexible skirt, 18, is provided with an interiorly circumferentially extending bead, 25, which strengthens this part of the skirt and provides an accurate surface for contact with the side of the jar to prevent air leak when the device is in operation.

To hold the upper part of the skirt, an open brass wire hoop, 27, not large enough to fill the groove, 24', may be placed therein. This feature, however, is not essential to the use and practice of the invention, as the stiffer disk or plate 17 is sufficient for this purpose.

The use and operation of the device is as follows: After the receptacle 5, such as a preserve-containing jar or the like, has been filled to a greater or less degree, the top or closure 6 having thereon the packing ring, 8, is placed over the mouth or opening of the jar. The exhaust pump, 10, with the cap 9, is applied over the mouth of the jar, as shown in Fig. 1, so that the bead, 25, of the skirt, 18, makes contact with the sides of the jar. When the piston, 12, by means of the handle 14, is raised, air is drawn from the interior of the jar, the top, 6, rising sufficiently for the air to pass out between the packing ring, 8, and the normally contacting surface of the jar. When the handle, 14, is depressed, the piston, 12, forces the air contained therein upon the top surface of the closure, 6, thereby firmly sealing it, and the air will escape from under the bead 25, of the skirt, 18, the latter yielding sufficiently to permit of separation to provide an opening for the passage of air.

In the operation of the exhaustion, the closure 6 acts as a check valve, and the skirt, by virtue of its elasticity separates from the side of the jar, due to the pressure of air from the interior, thus acting as an exhaust valve. The disk, 17, and ribs, 20, 21, 22, and 23, are preferably made of material somewhat harder and less flexible than the skirt, 18, and boss, 16, so as to hold the device more positively in the desired shape to be quickly applied. The wire ring 27 may be used to supplement this effect if desired. Either means may be separately

used, or both means may be used if desired. The air passes from the center to the periphery of the disk 17, through the radial grooves provided under the radial ribs 20, 21, 22, and 23, and the circumferential rib 24.

The cap 9 is sufficiently elastic to permit the free movement of the closure 6 in its operation as a check valve.

Having thus described my invention, what I claim is:

1. The combination with a receptacle having a single opening, and an imperforate closure therefor, of an exhaust pump, and a valveless cap terminal secured to said pump, inclosing the receptacle closure and adapted to make air tight contact with the receptacle beyond said closure.

2. The combination with a receptacle having a single opening, and an imperforate closure therefor, of an exhaust pump, a valveless cap carried by said pump and making normally air-tight contact with the body of the receptacle beyond the closure, leaving said closure free for vertical movement within the confines of said cap.

3. The combination with a receptacle having a single opening and an imperforate closure therefor, adapted for air-tight contact with the receptacle, of an exhaust pump, a valveless cap mounted upon the intake end of said exhaust pump, and providing an elastic skirt to inclose said closure and normally to make air-tight contact with the body part of said receptacle beyond the said closure, said cap acting on the exhaust-stroke of the pump to effect direct air-tight connection between the pump and receptacle to constitute of the spaces within the receptacle, cap, and pump, a single exhaust area, wherein the receptacle closure is free to move vertically as a check valve, and the skirt of said cap acting upon the return-stroke of the pump as a yieldable element to permit the expulsion of air from the pump and cap around the receptacle.

4. In combination with a receptacle and an imperforate closure therefor, of means for exhausting air from said receptacle comprising a cap having a flexible central perforated boss for attachment to an exhausting means, a substantially vertical elastic skirt for contact with said receptacle, an intermediate less elastic disk connecting said boss and skirt providing air passages between said boss and skirt, and air moving means connected to the central boss in communication with the central perforation thereof.

5. In combination with a receptacle and an imperforate cover therefor adapted to make air-tight contact therewith, of an exhausting means having secured thereto a cap extending over said closure and therebeyond and provided with an elastic depending skirt adapted to make tight contact with said re-

ceptacle by effect of outside pressure during the exhausting operations.

6. In combination with a receptacle having an opening and an imperforate closure therefor adapted to make air-tight contact with the edges of the opening, a piston pump and a terminal cap, said cap providing a boss having a constantly open center directly communicating with the intake end of the pump and carried thereby, and comprising also an elastic skirt to envelop the closure and make normally air-tight contact with the exterior surface of the receptacle beyond the closure, leaving the closure free for vertical displacement within the confines of the cap, whereby the closure alone opposes the flow of air from the receptacle to the pump, through the constantly open connection between the cap and the pump.

7. An exhaust pump provided with a terminal cap having a central perforate boss directly attached thereto, and having a disk and skirt of substantially uniform cross-section, said skirt being composed of material more flexible and elastic than that composing the disk.

8. An air exhausting means, comprising a pump, and a cap having a central perforate boss directly engaging the pump, a flexible skirt, and an intervening disk, the walls of said disk providing a circumferential interior channel, and a radially extending interior channel connecting said circumferential channel and the opening through the boss.

9. The combination with a piston-exhaust pump having an intake opening, of a ter-

40 minal cap secured to said pump comprising a flexible skirt and a transverse disk substantially uniform in thickness, portions whereof are deflected to provide an interiorly channeled circumferential bead, and an interiorly channeled radial bead, the channels of said beads communicating to constitute a continuous passage, said disk providing an opening directly communicating with the intake opening of the pump, and also communicating with said radial channel.

10. Means for producing a vacuum in and sealing receptacles, having a single opening and a closure-seat within the walls thereof comprising in combination an imperforate closure for, and of smaller diameter than, said receptacle, adapted and arranged to co-operate with said interior seat; an exhaust pump, a valveless enlarged terminal attached to said pump encompassing said closure and forming an air-tight joint with the outer walls of the receptacle whereby said receptacle is sealed by the preponderance of outside pressure resulting from partial exhaustion of the contents thereof, and its closure maintained against lateral movement and accidental unseating that would otherwise result from the force of blows directed later- 65 ally or upwardly against said closure.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

GRAY STAUNTON.

In the presence of—
W. LINN ALLEN,
MARY F. ALLEN.