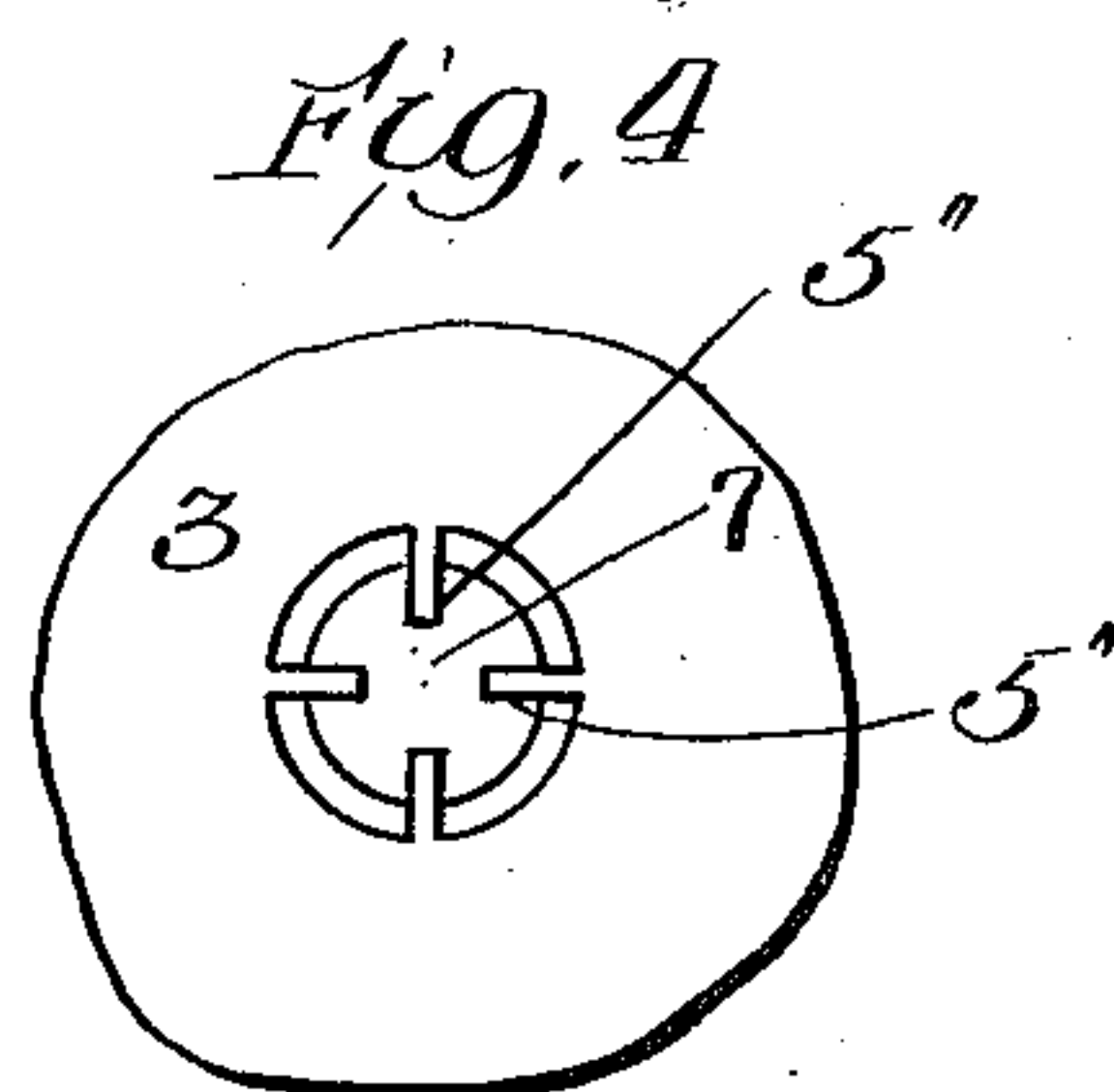
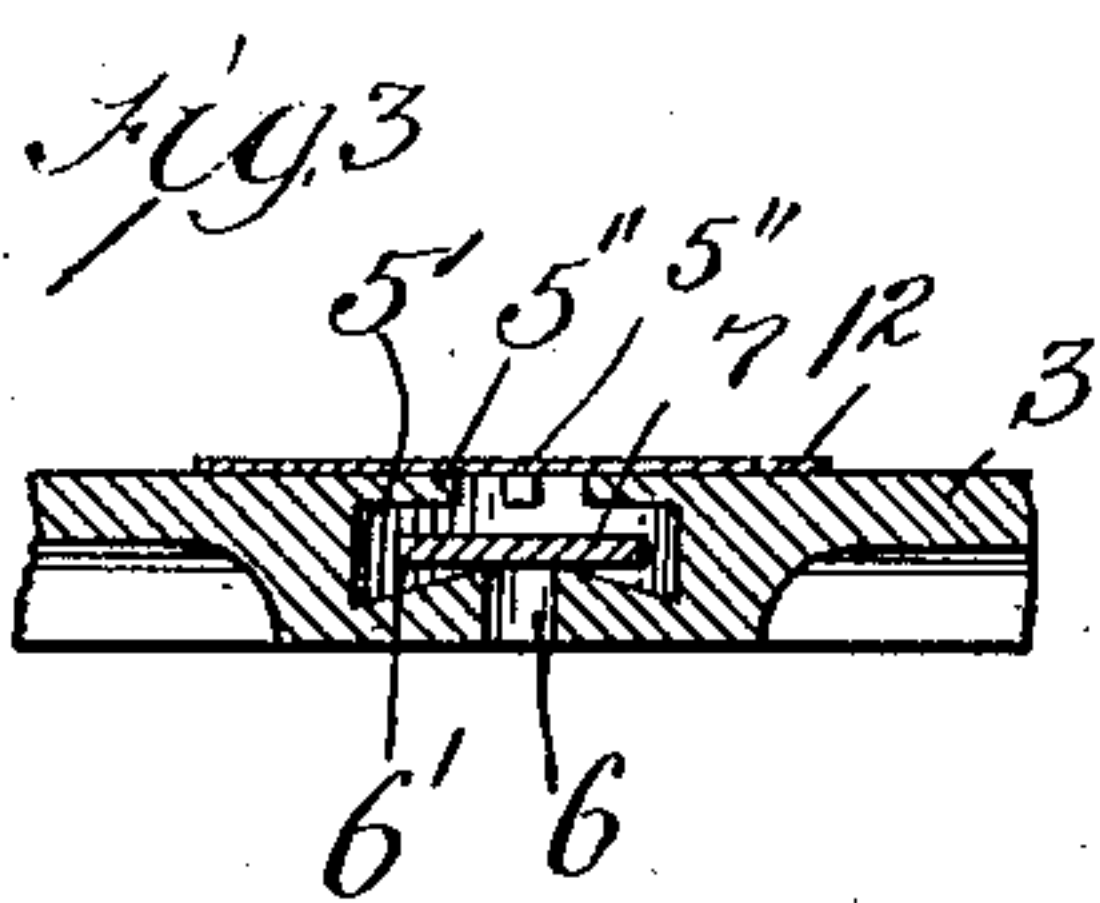
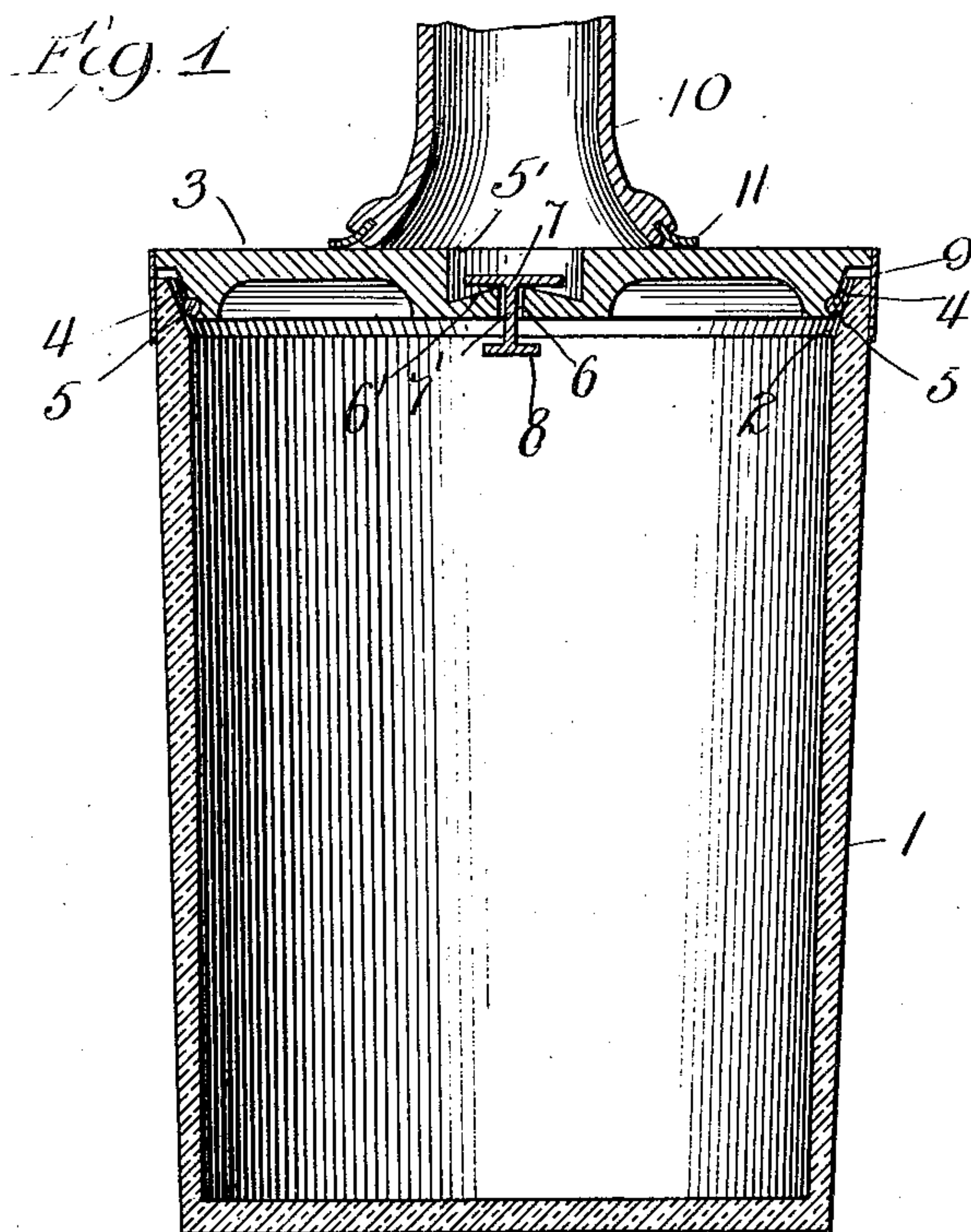


G. STAUNTON.
CLOSURE FOR JARS OR VESSELS.
APPLICATION FILED MAY 13, 1905.

934,103.

Patented Sept. 14, 1909.



Witnesses:
Ray White.
Harry R. L. White

Inventor:
Gray Staunton.
By Josie Davis
Atty.

UNITED STATES PATENT OFFICE.

GRAY STAUNTON, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
WILLIAM S. POTWIN, OF CHICAGO, ILLINOIS.

CLOSURE FOR JARS OR VESSELS.

934,103.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed May 13, 1905. Serial No. 260,220.

To all whom it may concern:

Be it known that I, GRAY STAUNTON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Closures for Jars or Vessels; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to new and improved means for hermetically sealing jars, bottles and other receptacles, for the preservation of fruit stuffs, beverages, liquids, paints, varnishes, etc.

One of the objects of my invention is to provide an improved, simple and practical means for sealing a receptacle after the air has been partially exhausted therefrom, and an additional means for retaining the closure in place after the sealing has been accomplished.

Another object of my invention is the provision of a means whereby the valve, covering the vent, is protected, to prevent accidental unseating or tapering, by a valve seal, that must be destroyed before the valve is unseated in the process of opening the receptacle, to preserve the evidence of the integrity of the contents of the original package.

Other objects of my invention will become apparent to those persons who are skilled in the art from the following description taken in conjunction with the drawings.

In the drawings; Figure 1 is an elevation in cross-section of a receptacle with the closure in position, and a broken-away portion of an air exhaust pump for exhausting the air from the receptacle and thereby sealing the same. Fig. 2 is a plan view of the valve shown in section in Fig. 1. Fig. 3 is a broken away portion of the closure showing a modification of the valve and recess in which the valve is inclosed. Fig. 4 is a plan view of the same.

In all of the views the same letters of reference indicate similar parts.

1 is a receptacle, in the illustration it is a jar, having an outwardly flaring or inwardly tapering opening 2 in which the closure is adapted to be contained. Of course the upper end of the receptacle could be contracted and the opening could be much smaller, as in a bottle, and the closure made to corre-

spond with the same without departing from the gist and spirit of my invention.

3 is a closure, a plate or cap preferably made of glass so that the contents of the receptacle, which may also be made of glass, will be visible at all points through the walls, and as providing the most sanitary material for the purpose of containing and preserving food-stuffs and the like. The closure is provided with a tapering surface 4 which corresponds substantially with the taper 2 provided in the opening of the receptacle. The surface 4 contains a groove in which a ring of elastic or compressible material, such as the ring 5, of rubber, illustrated, may be retained in position around the annulus. This ring forms a packing between the surfaces 2 and 4 when the closure is in position. It is not essential that the closure should be precisely placed in position, as one side may be tilted more than the other and not interfere with the proper operation of the device. This is one of the advantages possessed by this means of closing the jar.

5' is a countersunk depression, below the surface of the closure or cap 3, for containing the valve 7. The valve 7 is preferably made of a disk of very elastic rubber, or similar material having a depending neck portion 7' which passes through the vent 6 in the closure, and which carries, on its extended end, an enlargement 8, preferably of the same material of which the valve is composed, and adapted to be compressed so it may be easily passed through the vent 6, but of such shape or form that it may not be easily withdrawn through the vent 6 without considerable difficulty, thereby providing a means by which bodily movement of the valve 7 is permitted and by which it is conveniently retained in association with the closure 3. I prefer that the parts 7' and 8 should be made of yielding, soft rubber so that the valve may be easily put into position and be removed when it becomes necessary to cleanse the closure and the valve, which may be more easily done by removing the valve, as when the receptacle is to be used again. This arrangement also provides a means for the retention of the valve in association with the closure when the latter is removed from the receptacle. The vent or perforation 6, through the cap 3, is the opening through which the air is drawn, by

means of the air pump 10, in the process of exhausting the receptacle. It will be noticed that the surface in the bottom of the recess 5 tapers radially toward the vent 6 in all directions, thus providing a seat of the smallest area consistent with the size of the vent 6, for seating of the valve 7, thereby concentrating all of the pressure, due to the difference in pressure between the exterior and interior of the vessel upon a small area of the valve, and thereby firmly holding the said valve in position to retain the tendency toward exhaustion within the receptacle, and also providing an arch in the bottom of the depression 5 thereby securing greater strength owing to the arch shaped form of the part at the point where the closure is cut away by the depression 5.

When the cap 3 is placed in position on the jar 1, as shown in Fig. 1 of the drawing, and after the jar has been exhausted by means of the air pump 10, a strip 9 of paper, fabric, thin metal or other means may be placed in position in association with the jar 1 and the cap 3 for retaining the said cap in place after it has found its seat in the process of exhausting the receptacle. The retainer 9 may be used or not, as desired, as a means for reinforcing the vacuum effect to maintain the seal. If a fabric or paper is used it may be glued to the surfaces presented as shown in the drawings, or if a metallic strip is employed for this purpose it may be attached in any suitable manner for holding the closure in the position it has assumed in the process of hermetically sealing the jar. This is a feature which is not essential to my invention but it is advantageous as an additional means for maintaining the relative position of the cap and jar against any violent or sudden concussion to which it may be subjected.

10 is a broken away portion of an air exhaust pump, having a rubber or other packing 11, at its lower, bell-shaped end, which is brought into intimate contact with the top of the cap 3 and which will provide an air packing between the metallic parts of the pump 10 and the top of the said cap.

In Fig. 3 the modification of the valve 7 is shown to be simply a disk contained in the receptacle 5', which is provided with overhanging pieces 5'' that are adapted to retain the valve 7 in position to prevent its accidental removal. The valve, being elastic, may be pressed between these overhanging pieces into the chamber 5, after which it will straighten out and assume the disk form shown in Fig. 3.

The operation of the device is as follows; After the packing ring 5 has been placed in position in the groove around the tapering surface 4 of the closure 3, and after the receptacle 1 has been filled, or partially filled, with the material to be preserved, or con-

tained therein, the closure 3 is placed over the opening in the said receptacle, the air exhaust pump 10 is then placed in the position shown in Fig. 1 and it is operated to draw the air from the interior of the vessel 1. In the process of exhaustion the valve 7 is bodily raised and between the impulses produced by the pump, it is alternately raised and seated over the aperture 6, there being sufficient room in the aperture 6, between the shank 7' and the valve 7 and said aperture, for the escape of air, the part 8 being in the form of a cross, or other convenient shape, so as to prevent this part, or attachment, to the valve from entirely closing the aperture 6 when the valve is in its raised position, will permit the air to escape through the vent 6. When the air has been withdrawn from the vessel 1 the difference in pressure, between the interior of the vessel and the outside atmosphere, will cause the cover or cap 3 to be firmly seated upon the tapering orifice of the vessel. As the pressure increases during the operation of pumping out the air the ring 5 will become more and more compressed and will be forced into a constantly decreasing aperture, due to the tapering walls 2, and thereby provide an air tight joint between the closure 3 and the walls of the vessel 1. The difference in pressure between the exterior and interior of the vessel will also cause the valve 7 to be firmly seated over the aperture 6 and thereby firmly close the vent through which the vessel was exhausted. After the vessel has been completely exhausted, in the manner described, the retainer 9, of suitable character, may be employed in association with the vessel 1 and the cap 3 to retain the cap in substantially the position it has assumed, as a result of the difference in pressure, in the process of hermetically sealing the vessel. After the vessel has been completely sealed a seal 12, such as a gummed disk or the like, may be pasted on the top of the cap 3 and over the valve 7 to protect it, and thereby provide evidence of the fact that the jar or vessel has not been opened and its contents disturbed. In order to open the vessel, for the purpose of obtaining the contents of or a part of the contents thereof, all that is necessary to do is first to remove or break the seal 12, which may be of some arbitrary character containing a trade mark or any private mark of the packer, and then by inserting a sharp pointed instrument under the edge of the valve 7 it may be lifted from its seat and the partial vacuum within the receptacle will be destroyed by the inrush of air, when the cap 3, being relieved of the exterior pressure, due to the tendency toward exhaustion of air on the inside of the receptacle may be easily removed by first removing the clamp or retainer 9, which may be used to retain the cap in the proper asso-

ciation with the vessel 1, and then removing the cap or closure. When proper exhaustion has been effected practically all of the air is removed from the interior of the vessel, the cap 3 will be held in position by atmospheric pressure to an extent approaching 15 pounds per square inch, and it has been demonstrated by practice that this is sufficient to hold the cap in place against ordinary usage. It will also be understood that the atmosphere and the oxygen thereof being practically all removed from the interior of the package or vessel, the contents will be better preserved as a result of the absence of oxygen.

One of the advantages possessed by the use of my means of sealing the jar or package is the fact that part of the contents may be used and the package resealed in the manner heretofore described, and the remaining part of the contents will be preserved with practically the same degree of certainty as it would have been if the package had not been opened. Another advantage of the device is that it may be used time and again without destroying or at all injuring or damaging any of the parts that become necessary to the hermetic sealing of the same.

Having thus described my invention, what I claim and desire to secure by Letters Patent, of the United States, is;

1. In combination with a receptacle having an outwardly flaring opening, a closure

inwardly tapering and having an air vent therein, a yielding packing medium between said tapering surfaces, a valve for said air vent, and means for retaining said valve normally in association with the closure arranged to leave the valve free for bodily movement to close or open the vent, and to permit detachment of the valve from the closure.

2. In combination with a receptacle, a closure having a vent opening therein, a packing interposed between the receptacle and the closure, a valve for the vent opening and means for normally retaining said valve in association with the closure, arranged to permit free bodily movement of the valve to close and open the vent, and to permit removal of the valve from association with the closure.

3. In combination, a receptacle, a closure, having an air vent, a valve adapted to close the vent when the receptacle is exhausted, and a means to permit the bodily movement of the valve and to normally retain it in association with said closure, adapted to permit ready removal of the valve.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

GRAY STAUNTON.

In presence of—

FORÉE BAIN,

MARY F. ALLEN.