

W. A. LORENZ & W. H. HONISS.
JAR SEALING APPARATUS.
APPLICATION FILED FEB. 3, 1902.

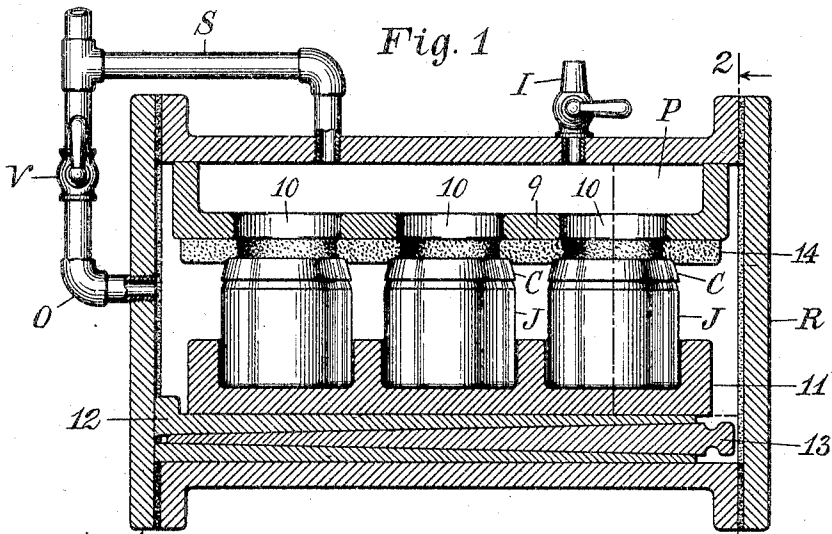


Fig. 2

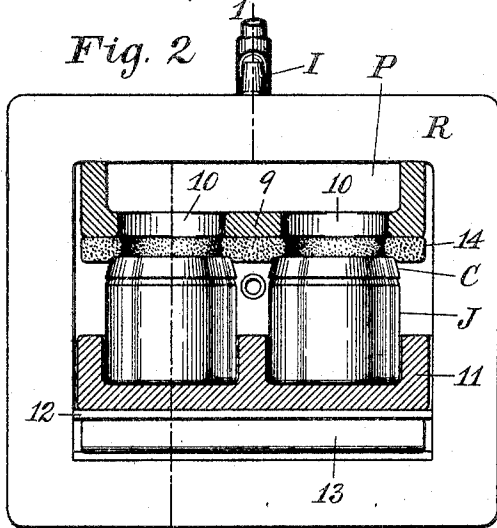


Fig. 3

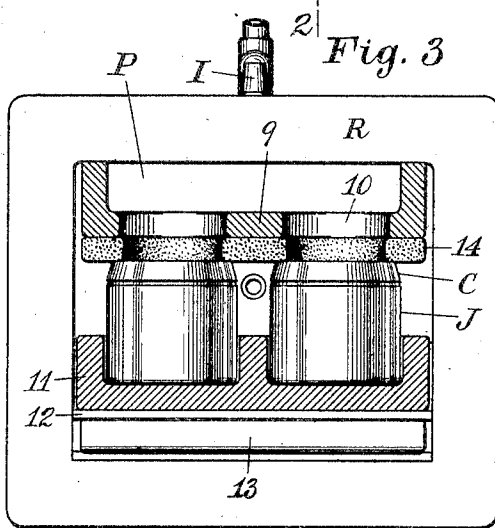
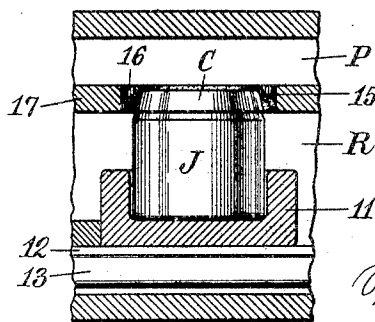


Fig. 4



Witnesses:
H. Mallory
Joseph Merritt

Inventors
William A. Lorenz
W. H. Honiss.

UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ AND WILLIAM H. HONISS, OF HARTFORD, CONNECTICUT, ASSIGNORS OF ONE-HALF TO BEECH-NUT PACKING COMPANY, OF CANAJOHARIE, NEW YORK, A CORPORATION OF NEW YORK, ONE-FOURTH TO SAID LORENZ, AND ONE-FOURTH TO SAID HONISS.

JAR-SEALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 789,502, dated May 9, 1905.

Application filed February 3, 1902. Serial No. 92,327.

To all whom it may concern:

Be it known that we, WILLIAM A. LORENZ and WILLIAM H. HONISS, citizens of the United States of America, and residents of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Jar-Sealing Apparatus, of which the following is a specification.

This invention is an improved apparatus for exhausting and hermetically sealing jars, cans, and similar receptacles.

In the drawings, in which similar characters denote similar parts, Figure 1 is a side view of this apparatus in section, taken along the line 1 1 of Fig. 2. Fig. 2 is a front view in section, taken along the line 2 2 of Fig. 1, showing the jars in their unsealed position. Fig. 3 is a front view similar to that of Fig. 2, except that the jars are shown in their sealed position. Fig. 4 is a fragmentary sectional side view of the apparatus of Fig. 1, showing a modified form of the packing adjacent to the jar-cap.

Hermetically-sealed jars and similar receptacles are ordinarily closed by means of a detachable cap C, the closure being made airtight by the use of an annular gasket of rubber or similar material. In order to insure a vacuum in the jars approximately equal to that obtained in the receiver, it is desirable to have the caps supported squarely and with little pressure upon their gaskets during the exhausting operation, and when the pressure of the readmitted air is utilized to press down and seal the caps upon the jars it is desirable to prevent this readmitted air from entering the jars during the jar-sealing operation; otherwise the caps may not seal at all, or at best the jars will contain a percentage of air, which is liable to deteriorate its contents.

The object of this invention is to provide an apparatus which will support the caps squarely upon their gaskets to permit of the air being exhausted from the interior of the jars and which will be operated upon by the readmitted air-pressure to force the caps down upon their gaskets with ample and positive pressure without allowing the readmitted air to

reach to the closure-joint while thus making the seal.

In our preferred embodiment illustrated in the accompanying drawings this apparatus is employed in connection with an ordinary air-exhausting receiver R, which constitutes a jar-chamber having an outlet-pipe O for connecting with any suitable air-exhausting pump. The chamber P, forming an atmospheric-pressure chamber, is supported in any suitable or convenient way within the receiver R. The wall 9 of this chamber is fixed relative to the receiver and to the jars and is provided with one or more pressure-openings 10, located substantially coincident with the positions of the jars to be operated upon, a separate opening being provided for each jar. This chamber P is connected with the outlet-pipe O by means of a branch pipe S, a shut-off valve V being interposed in one of these two pipes between their junction with each other and with the apparatus. The chamber P is also provided with an inlet-valve I, which is closed during the exhausting operation.

The jars to be sealed may be placed directly upon a table 12 or upon a receptacle or tray 11, which may be of any desired depth and serves to bring the jars coincident with the openings 10. This table is provided with a lifting device, which in the present instance consists of a wedge 13 below the table 12, which is so formed that when it is pushed inwardly the jars will be elevated and when it is drawn outwardly the jars will be lowered.

J represents the jars having detachable caps C.

Between the caps C and the wall 9 of the pressure-chamber there is interposed a flexible packing 14, having openings through it corresponding, substantially, with the openings 10. This packing 14 closes the space between the edges of the openings 10 and the edges of the caps C, leaving the greater portion of the area of the cap in communication with the interior of the pressure-chamber. The margins of these openings close against the peripheral edges of the cap to a sufficient extent to substantially exclude the air; but the

area of contact being comparatively small permits of a large degree of flexibility, thus enabling the packing to adjust or adapt itself to variations in the heights of the jars and to the downward travel of the cap during the sealing operation.

In the operation of this apparatus the filled jars having their caps placed in position upon their respective gaskets are placed in the tray 11 upon the table 12, which is then in its lowered position. The wedge 13 is then forced inwardly either by the hand or by the closing of the door of the receiver, which elevates the table 12 and the jars J, thereby carrying the edges of the caps C against the lower portion of the flexible packing 14, as shown in Figs. 1 and 2. This packing should be sufficiently elastic to allow of making a close joint without forcing the caps down upon the gaskets with much pressure. The receiver R is then hermetically closed and the exhausting operation begins, during which time the inlet I is closed and the valve V is opened, thereby permitting the air to be exhausted equally from the interior of the chamber P, the receiver R, and the jars J. When a suitable vacuum has been thus obtained, the valve V is closed and the inlet I is opened, thereby permitting the air to return to the pressure-chamber, while excluding it from the interior of the receiver R, thus causing the atmospheric pressure to be fully exerted upon the caps, forcing them down upon the jars, as shown in Fig. 3. This operation will more or less release the compressed portions of the packing 14; but after the closure-joints between the jars and their caps have thus been closed it will be immaterial if the pressure then escapes below the packing 14 into the receiver R, as it cannot then enter those closure-joints. Even this will not occur if there is sufficient elasticity in the packing 14. Having thus safely closed the jars, the valve V is opened, so as to balance the pressure in the receiver and the pressure-chamber. The front of the receiver may now be opened, the table 12 lowered, and the sealed jars be withdrawn.

Fig. 4 illustrates a modified form of the packing. In this case a flexible ring 15, of rubber or other suitable material, is secured in the opening 16 of the wall 17 of the pressure-chamber P and bears with its inner edge against the cap C of the jar J. The operation of this modified arrangement is like that already described, the air being exhausted from the interior of the receiver and the interior of the chamber P, after which the air is readmitted first to the pressure-chamber and then to the receiver, the air-pressure taking effect directly upon the cap C. With this form there is practically no downward pressure upon the caps during the exhausting operation.

Other modifications of this apparatus will suggest themselves to those skilled in the art, and it may be adapted to suit the number and

kind of jars to be operated upon. The valve V may be omitted if the size and length of the connecting-passage O and S between the pressure-chamber P and the interior of the chamber be made of proportions which prevent air from reaching the jars until after the caps have been closed down.

Under favorable conditions the packing 14 may be omitted and the jars elevated far enough to press the caps against the lower wall 9 of the chamber P. In such a case after the exhaustion of the air from both chambers and upon the readmission of air to the chamber P the effective pressure upon the caps will press them down upon their gaskets far enough to seal the closure-joints before the air reaches those joints to any appreciable extent. We prefer, however, to use the packing 14, which fully excludes the readmitted air from the closure-joint during the sealing operation.

We claim as our invention—

1. In a jar-sealing apparatus, the combination of a jar-chamber, an atmospheric-pressure chamber, a wall between the two chambers provided with openings communicating from one chamber to the other, means for supporting and locating jars in the jar-chamber with their respective caps closing the said openings, means for exhausting air from both chambers, and means for readmitting air-pressure to the pressure-chamber while substantially excluding air-pressure from the jar-chamber.

2. In a jar-sealing apparatus, the combination of a jar-chamber, an atmospheric-pressure chamber, a wall between the two chambers supported against movement and provided with openings, means for supporting and locating jars in the jar-chamber with their caps pressing against the edges of the said openings, and closing those openings, means for exhausting air from both chambers, and means for readmitting air-pressure to the pressure-chamber, while substantially excluding air-pressure from the jar-chamber.

3. In a jar-sealing apparatus, the combination of a jar-chamber, an atmospheric-pressure chamber adjacent thereto, a wall between the two chambers provided with openings, a flexible packing adjacent to the pressure-chamber side of the said wall and having openings substantially coincident with those of the said wall, means for supporting and locating jars in the jar-chamber, with their respective caps bearing against the said flexible packing and closing the openings therein, means for exhausting air from both chambers, and means for readmitting air to the pressure-chamber, while substantially excluding air-pressure from the jar-chamber.

4. In a jar-sealing apparatus, the combination of a jar-chamber, a pressure-chamber adjacent thereto, a wall between the two chambers supported against movement and provided with openings, a flexible packing adja-

cent to the jar-chamber side of the said wall, having openings substantially corresponding with the openings of the said wall, means for supporting and locating jars in the jar-chamber with their caps closing the respective openings in the said packing, means for exhausting air from both chambers, and means for readmitting air first to the pressure-chamber and then to the jar-chamber.

10 5. In a jar-sealing apparatus, the combination of a jar-chamber, an atmospheric-pressure chamber, a wall between the two chambers supported against movement, and provided with openings, a flexible packing appurtenant
15 to the lower side of the wall, and provided with openings corresponding to those of the

said wall, means for supporting and locating jars in the jar-chamber beneath and substantially coincident with the openings, means for elevating the said jars to carry their caps 20 against and to close the respective openings, means for exhausting air from both chambers and means for readmitting air first to the pressure-chamber and then to the jar-chamber.

Signed at Hartford, Connecticut, this 1st 25 day of February, 1902.

WILLIAM A. LORENZ.
WM. H. HONISS.

Witnesses:

E. H. LORENZ,
JOSEPH MERRITT.