No. 639,681. Patented Dec. 19, 1899.

# W. A. LORENZ.

## JAR SEALING APPARATUS.

(Application filed Aug. 5, 1899.)

(No Model.)

Fig. 1

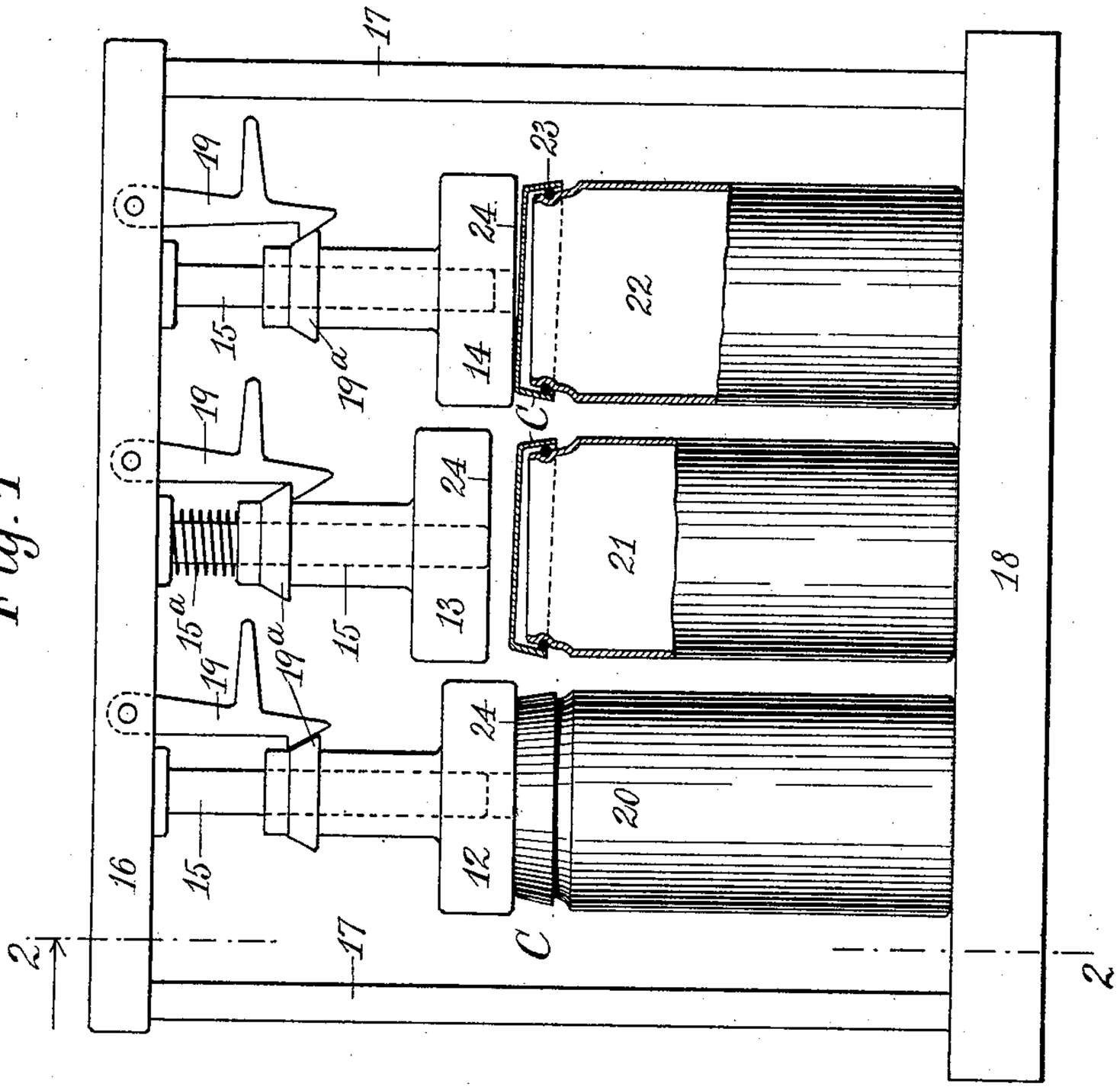
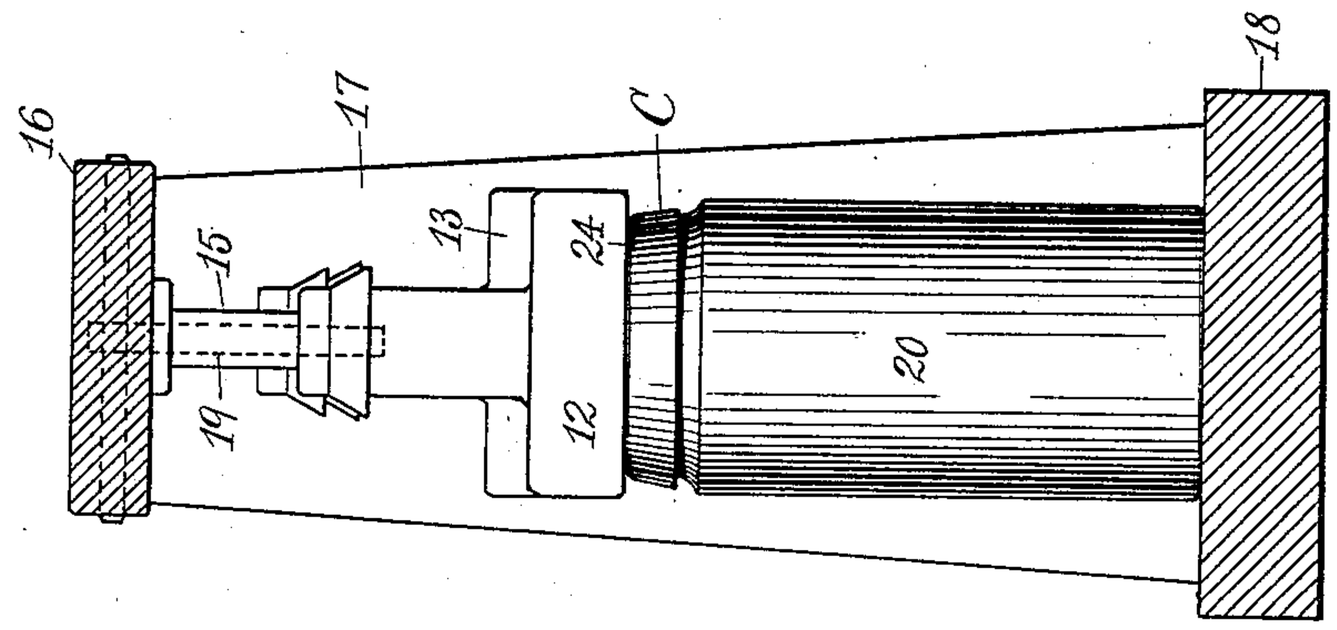



Fig. 2

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# UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF HARTFORD, CONNECTICUT, ASSIGNOR OF THREE-FOURTHS TO WILLIAM H. HONISS, OF SAME PLACE, AND BARTLETT ARKELL, OF CANAJOHARIE, NEW YORK.

## JAR-SEALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 639,681, dated December 19, 1899.

Application filed August 5, 1899. Serial No. 726,319. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. LORENZ, a citizen of the United States of America, and a resident 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 relates to improved apparatus for leveling the caps of hermetically-sealed jars and for closing them down squarely upon their respective jars during the sealing operation.

Figure 1 of the drawings is a side view of this improved apparatus, showing three jars in operative position therein. Fig. 2 is an end view in section taken on the line 2 2 of Fig. 1 of the apparatus of Fig. 1.

The hermetic sealing of jars of this class is accomplished by means of a rubber gasket which is seated upon a shoulder or in a groove upon the outside of the neck of the jar and by a flaring metallic cap which is pressed down upon the outside of the gasket during the cooking or air-exhausting operation, by means of which the air is expelled or withdrawn from the interior of the jar. After the air is thus expelled or withdrawn the cap is permanently held in sealing contact with the gasket by means of external atmospheric pressure.

This improved apparatus serves as a means for independently leveling the caps upon their respective jars and for maintaining them in this position while independently pressing each cap down to its sealing position, so as to prevent the caps from assuming the tilted position of the caps C of the two right-hand jars of Fig. 1. This tilting of the caps is objectionable both for the sake of appearance and for the more important reason that when sealed in this tilted position the ring or belt of contact between the circular gasket and the conical rim of the inclined cap is not a circle, but is approximately an ellipse, which does not conform accurately to the circular neck of the jar and therefore does not compress the gasket uniformly at all portions thereof. Furthermore, by reason of variations in the necks of the jars, the diameters of the caps, and the thickness of the gaskets the tops of the different jars are not at a uniform distance from the base of the jar when properly sealed, thus requiring that each cap in a series should be pressed down independently of the others. Still another difficulty is encountered in connection with the employment of a flaring cap for compressing the gasket. The necks of the jars or the rims of the caps, or both, are frequently distorted from circular form during manufacture or otherwise, so that their contact with the gasket and their consequent resistance to the downward pressure upon the cap are seldom uniform around its circumference. Hence the tendency of the cap under these circumstances to become tilted by that pressure alone even when placed in a level position in the first instance. Furthermore, when the flaring cap is in a level position its compressing angle or angle of contact with the gasket is uniform around the rim; but as soon as the cap becomes tilted that angle is lessened on the lowest side and increased on the highest side, thus correspondingly increasing the tendency of the cap to tilt still farther out of level.

The embodiment of this invention, which is herein shown and described, comprises an apparatus suitable for receiving three jars at a time, although the size of the apparatus may be varied so as to take any desired number of jars. The plungers 12, 13, and 14 are fitted to slide vertically on the studs 15, which depend from and are fixed in the cross-bar 16, so as to guide the plunger for movement in a direction substantially at right angles to the desired level of the caps. The bar 16 is connected, by means of the upright 17, with the base 18, upon which are placed the jars 20, 21, and 22, beneath the plungers 12, 13, and 14, respectively, the faces 24 of which are in a plane substantially at right angles to the longitudinal center of the jars. The plungers 12, 13, and 14 and their associated devices are alike and are independent of each other in their operation. They may be made sufficiently heavy to exert the required pressure

by their own weight, or that pressure may be obtained or supplemented by means of a spring, as 15ª, above each of the plungers. As a means for holding the plungers in an elevated position, clear of the jars, while changing the latter, the apparatus is provided with latches 19, which may be suspended from the cross-bar 16 and engage beneath the shoulders 19ª of the plungers, as illustrated by the middle plunger 13.

The plungers 12, 13, and 14 are adapted to engage with the highest portions of their respective caps when those caps are of the ordinary form shown in the drawings, in which the highest portion of a tilted cap would be substantially at or outside of the circle of the gasket. Otherwise the pressure of the plungers if applied at any considerable distance inside of the gasket-circle would operate not to push down the higher side, and thus level the cap, but to push down the side having the least resistance, either of contact or of angle of compression, with the gasket, thereby tilting the cap still more; or these plungers may be adapted to engage with the flaring rim, in which case they would still engage with the highest side of a tilted cap, although, perhaps, not with the highest point or portion of that side.

When this apparatus is employed in connection with a retort for exhausting the air from the interior of the jars, the plungers are let down upon the caps before placing the apparatus in the retort. If the caps C should be placed upon the jar in a tilted position, as upon the jars 21 and 22, the plungers thereof will rest upon the higher side, as represented by the plunger 14. During the air expelling or exhausting process the air escapes from the jar by slightly lifting that side of the cap which offers the least resistance, which in the case of the jar 22 would be the right-hand side thereof. Each time that the cap lifts it is subjected to a leveling tendency by the pressure of the plunger upon the higher side, so that when finally sealed the cap rests squarely upon the jar. This automatic leveling of the caps greatly facilitates the work of sealing these jars, and less care is required of the operator to place the caps squarely upon their respective jars. Furthermore, the automatic leveling is more reliable and certain than when performed manually by operators who are liable to become careless in this respect. The reliable sealing of these jars is highly important, especially in the treatment of food products, the preservation of which is dependent upon the complete exclusion of air.

I claim as my invention—

1. In a jar-sealing apparatus, a series of independent plungers supported for movement longitudinally of the jars for engaging with the highest side of the caps and leveling them upon the jars.

2. In a jar-sealing apparatus, in combination with means for supporting a series of jars, a corresponding series of independent plungers supported for movement substantially at right angles to the desired level of the jar-caps, and provided with faces for engaging with the caps substantially at or outside of the gasket-circle and leveling them upon the jars during the sealing operation.

3. In a jar-sealing apparatus, in combination with means for supporting a series of jars, a corresponding series of independent plungers, supported for movement substantially at right angles to the desired level of the jar-caps, and provided with faces for engaging with and automatically leveling the caps during the sealing operation, with means for independently pressing the plungers down upon the caps.

Signed by me at Hartford, Connecticut, this 4th day of August, 1899.

WILLIAM A. LORENZ.

Witnesses:
JOSEPH MERRITT,
W. H. HONISS.