

No. 711,220.

Patented Oct. 14, 1902.

W. A. LORENZ.
JAR SEALING APPARATUS.
(Application filed Jan. 5, 1901.)

(No Model.)

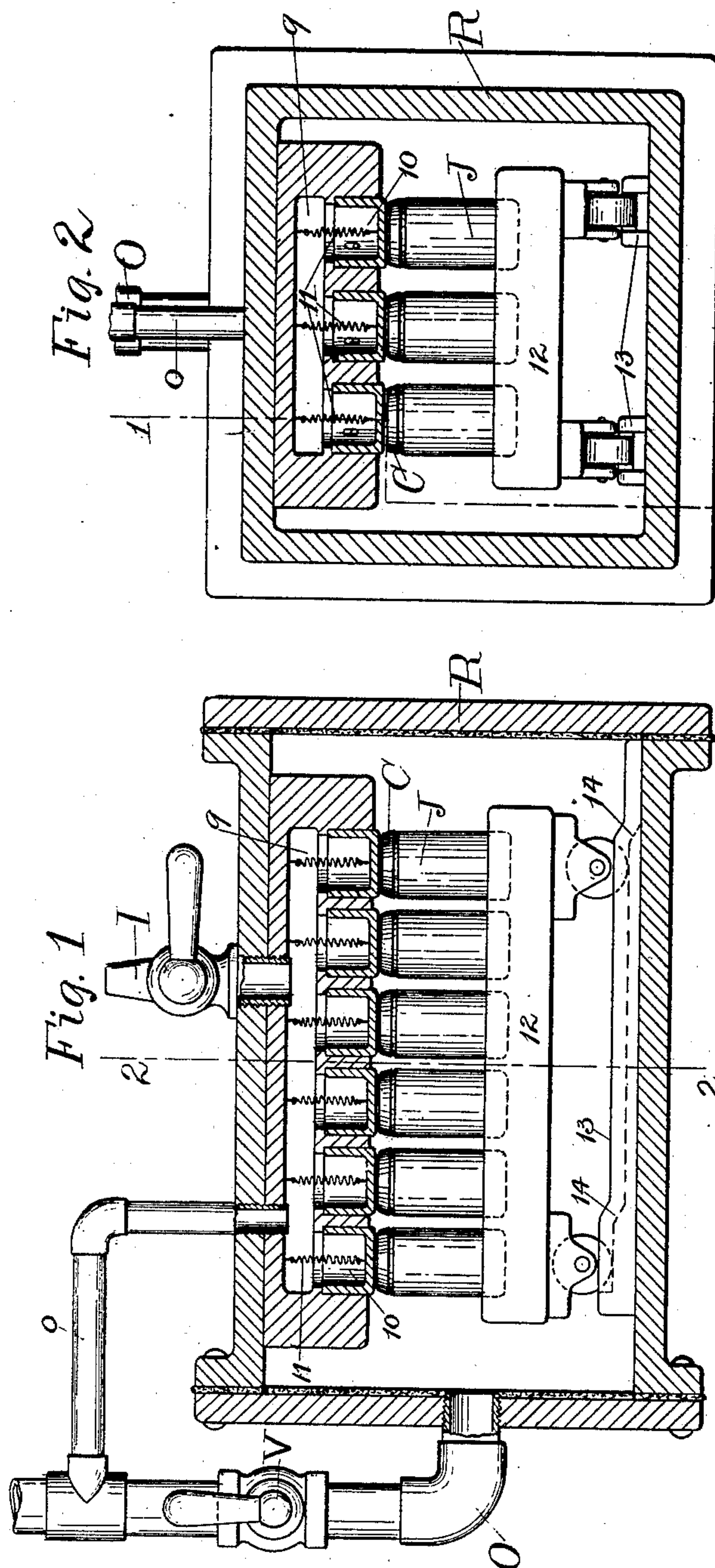


Fig. 2

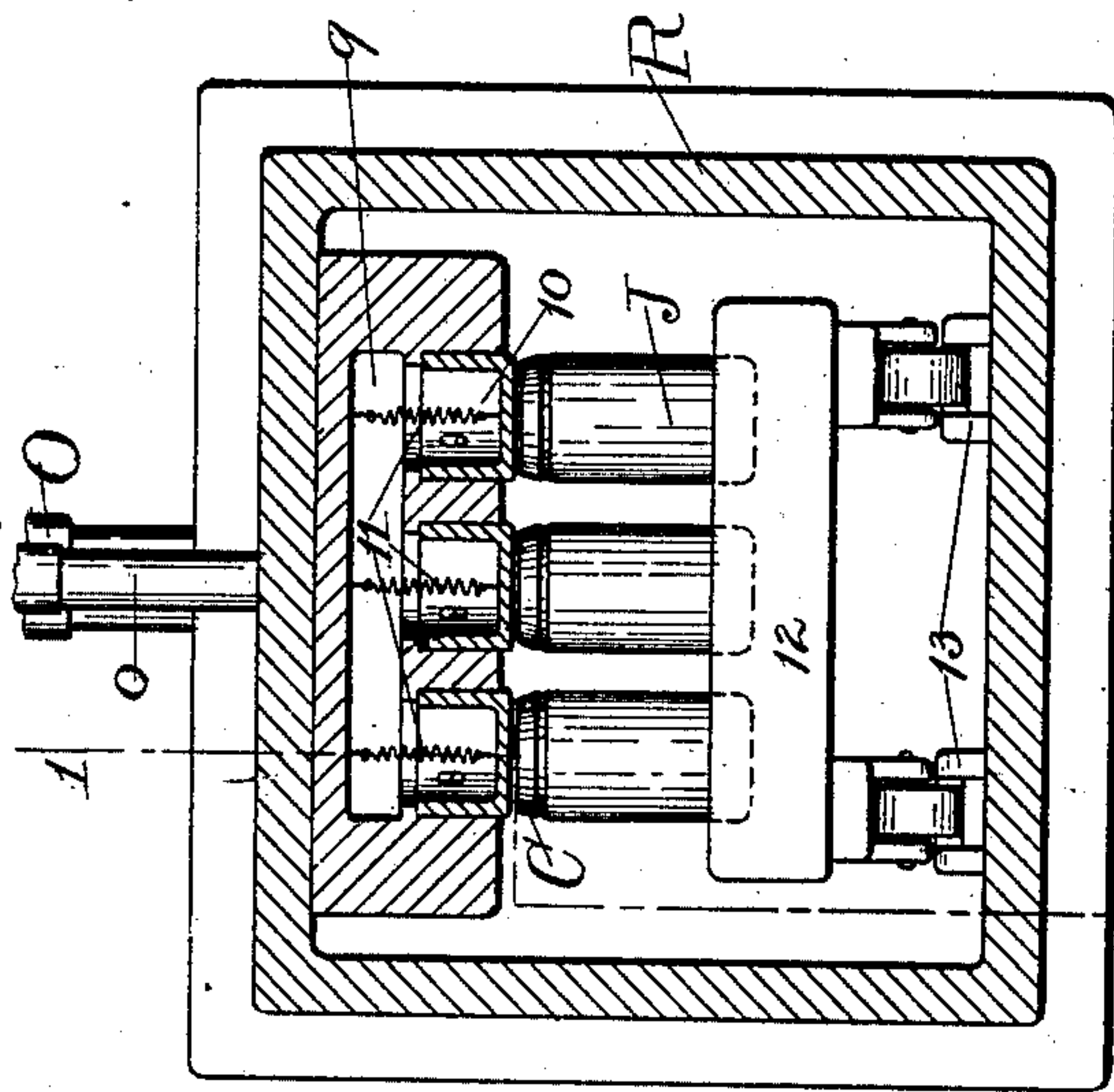


Fig. 4

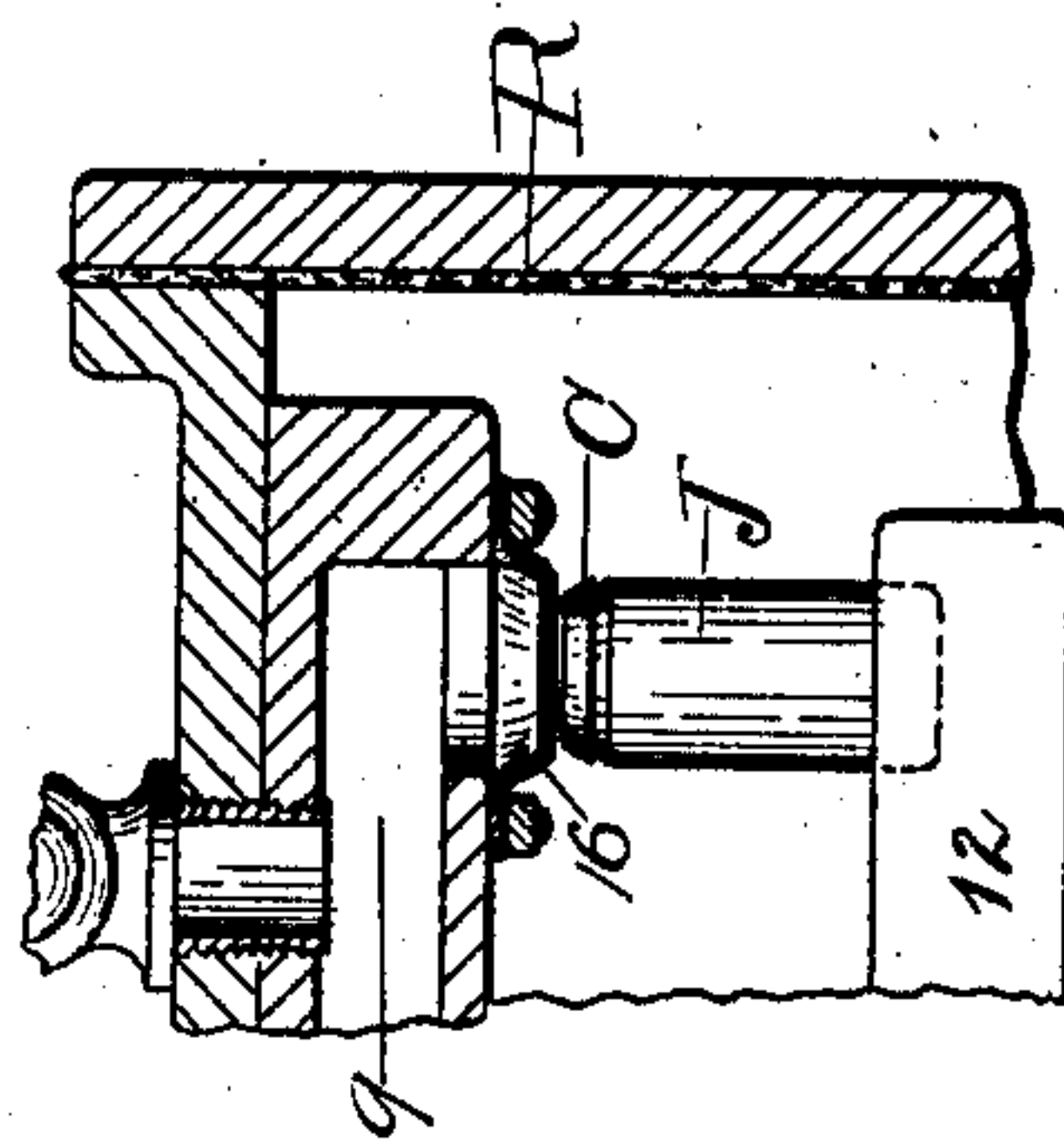
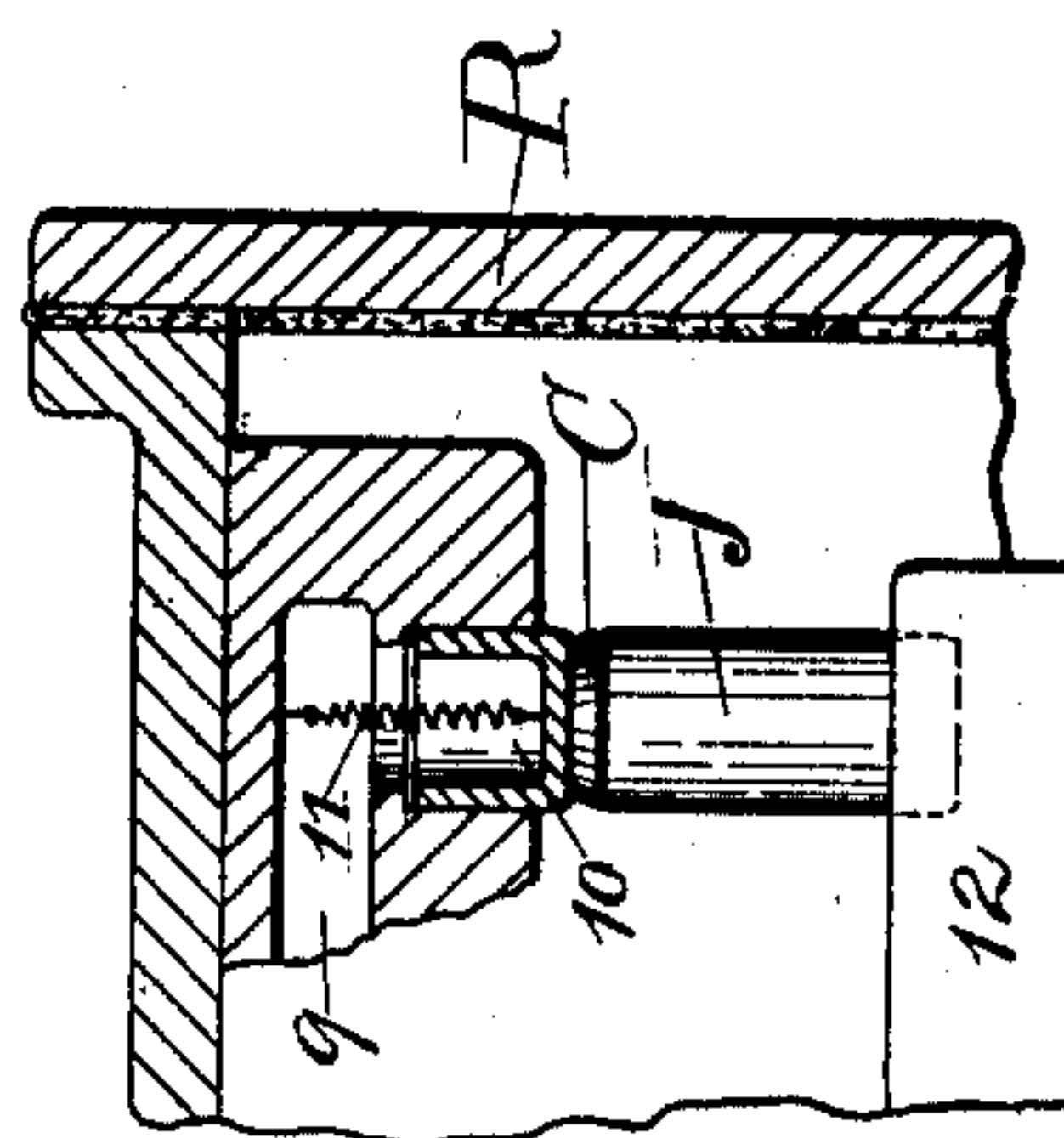


Fig. 3



Witnesses:

Joseph Merritt
H. Mallon

Inventor:

William A. Lorenz.
By W. H. Honiss, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF HARTFORD, CONNECTICUT, ASSIGNOR OF THREE-FOURTHS TO BEECH-NUT PACKING COMPANY, OF CANAJOHARIE, NEW YORK, A CORPORATION OF NEW YORK, AND WILLIAM H. HONISS, OF HARTFORD, CONNECTICUT.

JAR-SEALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 711,220, dated October 14, 1902.

Application filed January 5, 1901. Serial No. 42,177. (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 is an improved apparatus for exhausting and hermetically sealing jars, cans, and similar receptacles.

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. Fig. 3 is a fragmentary side view of the apparatus of Figs. 1 and 2, showing one of the independent pressers in its downward or cap-closing position under the pressure of the readmitted air. Fig. 4 is a side view showing a modified form of independent presser in operation upon a single jar.

Hermetically-sealed jars and similar receptacles are ordinarily closed by means of a cap, the closure being made air-tight by the use of an annular gasket, of rubber or similar material. In order to insure a substantially uniform vacuum in all of the jars equal to that obtained in the receiver, it is desirable to have the caps rest lightly upon their gaskets during the exhausting operation, and while in this condition it frequently happens that the caps rest only upon the higher or larger portions of their gaskets, due to irregularity in the jar, the gaskets, or the caps. While thus supported the caps are not only liable to become tilted, but are liable to leave openings through the closure between the bearing-points of the cap. These openings, while facilitating the exit of the air from the jars during the exhausting operation, are liable to allow the subsequently-readmitted air-pressure to enter the jars to some extent before forcing the caps down hard enough or far enough to close those openings. Moreover, if the caps become tilted they do not finally bear with uniform pressure around the gaskets, even though

they may be forced down sufficiently to seal the jar for the time being. In such cases the caps are liable sooner or later to become unsealed, and thus allow the contents of the jar to be spoiled by contact with air.

The object of this invention is to provide an apparatus which will allow the caps to rest lightly upon their gaskets without becoming tilted during the exhausting operation and which will be operated upon by the readmitted air-pressure to force the caps squarely down upon their gaskets with uniform, ample, and positive pressure without allowing the readmitted air to return to the closure-joint.

In my 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 presser-chamber 9 is supported in any suitable or convenient way within the receiver R. The lower wall of this chamber, the side next to the receiver, is provided with a series of jar-pressers 10, corresponding and located substantially coincident with the positions of the jars to be operated upon, a separate presser being provided for each jar. The pressers shown in Figs. 1, 2, and 3 are in the form of pistons working vertically in suitable seats in the lower wall of the presser-chamber 9. The weight of these pressers may be partly or wholly supported by means of springs 11, depending from the upper wall of the chamber 9, so that little or no weight bears upon the caps during the exhausting operation. This presser-chamber is connected with the outlet-pipe O by means of a branch pipe o, 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 9 is also provided with an inlet-valve I, which is closed during the exhausting operation.

The jars J to be sealed are placed within the receiver R, one end of the jar, which is

usually the capped end, being, as herein shown, located substantially in the plane of the lower ends of the pressers 10. A convenient way of transferring these jars to and from the receiver is to load them upon a truck 12, which constitutes a receptacle for the jars and is provided with cells or partitions for locating the jars in position beneath their respective pressers. The wheels of these trucks rest upon tracks 13, which may be provided with inclines 14 for elevating the jars when in their operative position to a suitable relation to the pressers 10, the inclines leading to lower levels upon which the wheels travel while entering and leaving the receiver and which allow the jar-caps to clear the pressers.

In the operation of this machine the filled jars, having their caps placed in position upon their respective gaskets, are placed in the receiver in the position shown in the figures. The front of the receiver is then hermetically sealed 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 9, 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 chamber 9, while excluding it from the interior of the receiver R, thus enabling the atmospheric pressure to have its full effect upon the pressers 10, which are thus forced down independently upon their respective caps with a pressure determined by the areas of the pressers, which should be substantially equal in order to put equal pressure upon all of the jars. Having thus safely closed all of the jars, the valve V is opened, so as to readmit the air into the interior of the receiver from the chamber 9 by way of the pipes o and O. The front of the receiver may now be removed, the truck 12 withdrawn, and the sealed jars replaced with a new lot, upon which the same operation is repeated.

Fig. 4 illustrates a modified form of the pressers 10 of the preceding figures. In this case a flexible diaphragm 16 is secured to the lower wall of the chamber 9, over each of the jars. 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 9, after which the air is readmitted first to the chamber 9 and then to the receiver.

Other modifications of this apparatus will suggest themselves to those skilled in the art to suit the number and kind of jars to be operated upon or to suit other existing conditions. Where the nature of their contents permits, the jars may be inverted or may be turned upon their sides. Under some circumstances it may be convenient to have the pressers bear against the bottom ends of the jars instead of bearing against the caps, as

herein shown, it being immaterial which end of the jar receives the pressure, so long as the effect is to press each jar and cap together with sufficient force to seal the jar before readmitting the air to the closure-joint. The valve V may be omitted if the size and length of the connecting-passage O o between the presser-chamber 9 and the interior of the receiver R be made of proportions which will prevent the air from reaching the jars until after the caps have been closed down.

I claim as my invention—

1. In a jar-sealing apparatus, the combination of a jar-chamber, a presser-chamber adjacent thereto, independently-movable jar-pressers interposed between the two chambers, means for exhausting air from both chambers, and means for readmitting air to the presser-chamber.

2. In a jar-sealing apparatus, the combination of a jar-chamber for receiving a series of jars, a presser-chamber adjacent thereto, provided with a corresponding series of independently-movable jar-pressers located adjacent to their respective jars, means for exhausting air from both chambers, and means for readmitting air first to the presser-chamber and then to the jar-chamber.

3. In a jar-sealing apparatus, the combination of a jar-chamber for receiving a series of jars, a presser-chamber adjacent thereto, provided with a corresponding series of independent piston-pressers located adjacent to their respective jars, means for exhausting air from both chambers, and means for readmitting air first to the presser-chamber and then to the jar-chamber.

4. The combination with an exhausting and sealing apparatus for jars, of a resiliently-supported jar-presser, and means for readmitting atmospheric pressure to operate the presser.

5. In a jar-sealing apparatus, the combination of a jar-chamber, a presser-chamber, a resiliently-supported presser interposed between the two chambers, means for exhausting atmospheric pressure from both chambers, and means for readmitting atmospheric pressure to the presser.

6. In a jar-sealing apparatus, the combination of a jar-chamber, a presser-chamber, a series of resiliently-supported pressers interposed between the two chambers, means for exhausting atmospheric pressure from both chambers, and means for readmitting atmospheric pressure to the presser.

7. In a jar-sealing apparatus, the combination of a jar-chamber, a presser-chamber adjacent thereto, independently-movable jar-pressers interposed between the two chambers, means for sustaining the jar-pressers, means for exhausting air from both chambers, and means for readmitting air to the presser-chamber.

8. In a jar-sealing apparatus, the combina-

tion of a jar-chamber, a presser-chamber, a
wall between the two chambers, provided with
a movable jar-presser, a receptacle for hold-
ing a jar in operative relation to the presser,
5 means for exhausting both chambers, and
means for readmitting air to the presser-
chamber.

Signed at Hartford, Connecticut, this 29th
day of December, 1900.

WILLIAM A. LORENZ.

Witnesses:

JOS. MERRITT,
WM. H. HONISS.