March 25, 1930. A. K. MALMQUIST 1,751,643

VACUUM SEALING CHAMBER

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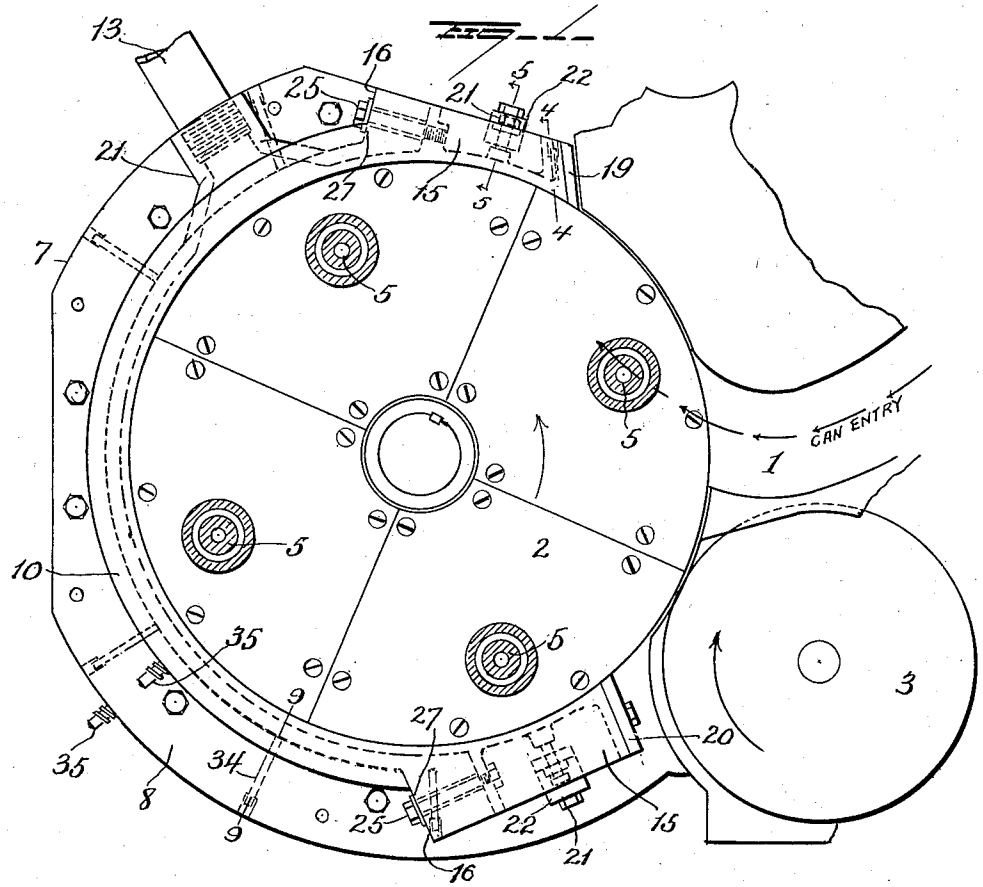
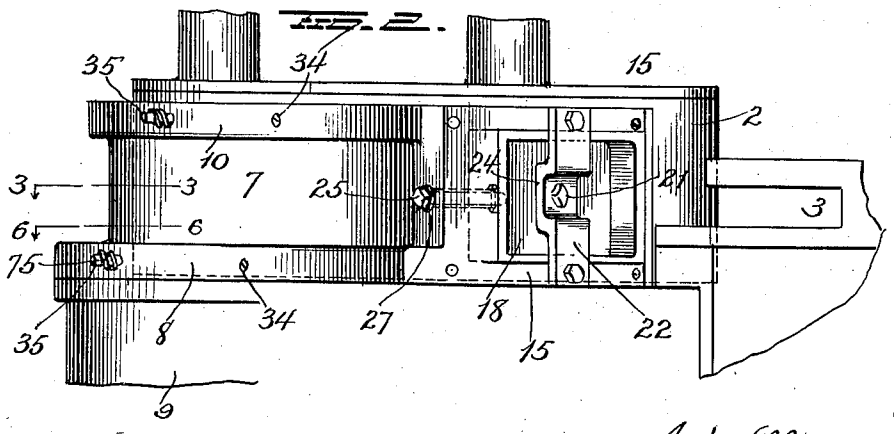


Fig. 2.



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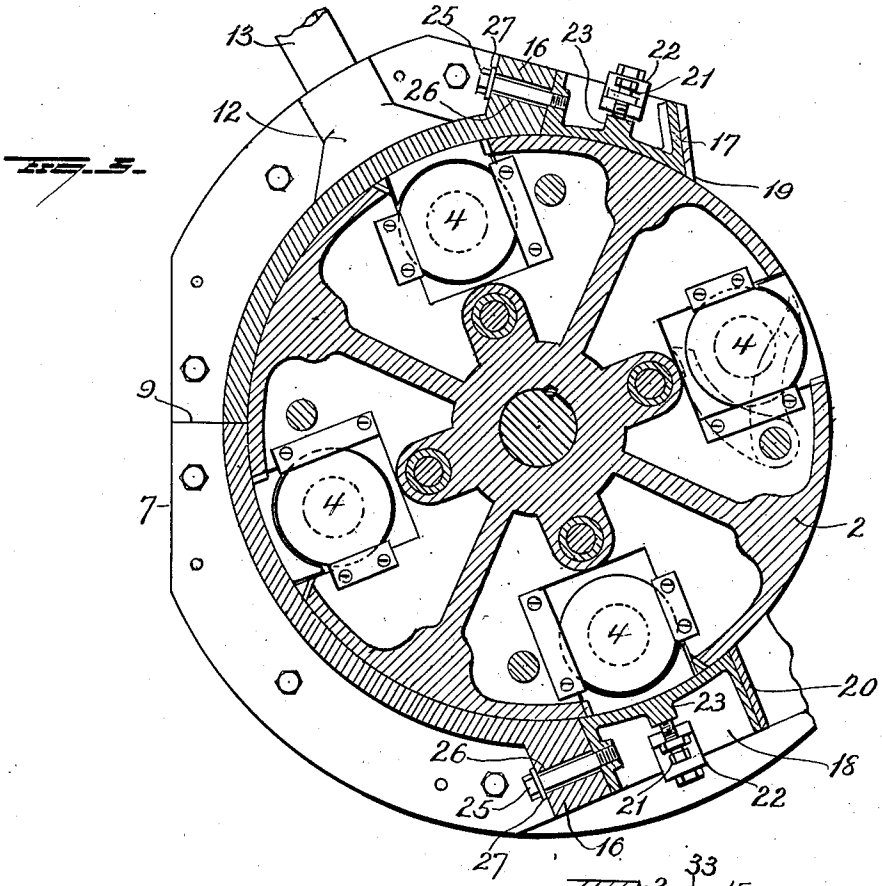


FIG. 5.

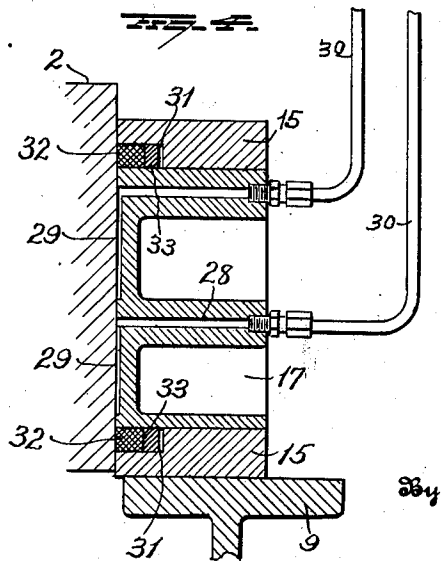


FIG. 4.

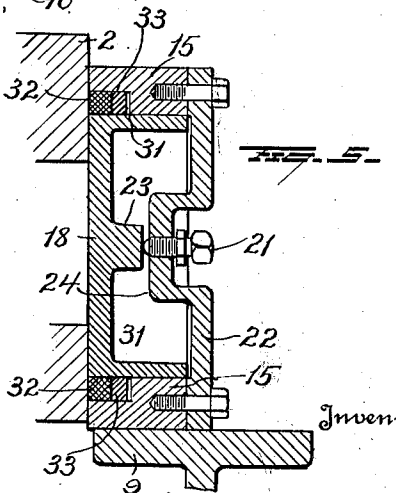


FIG. 5.

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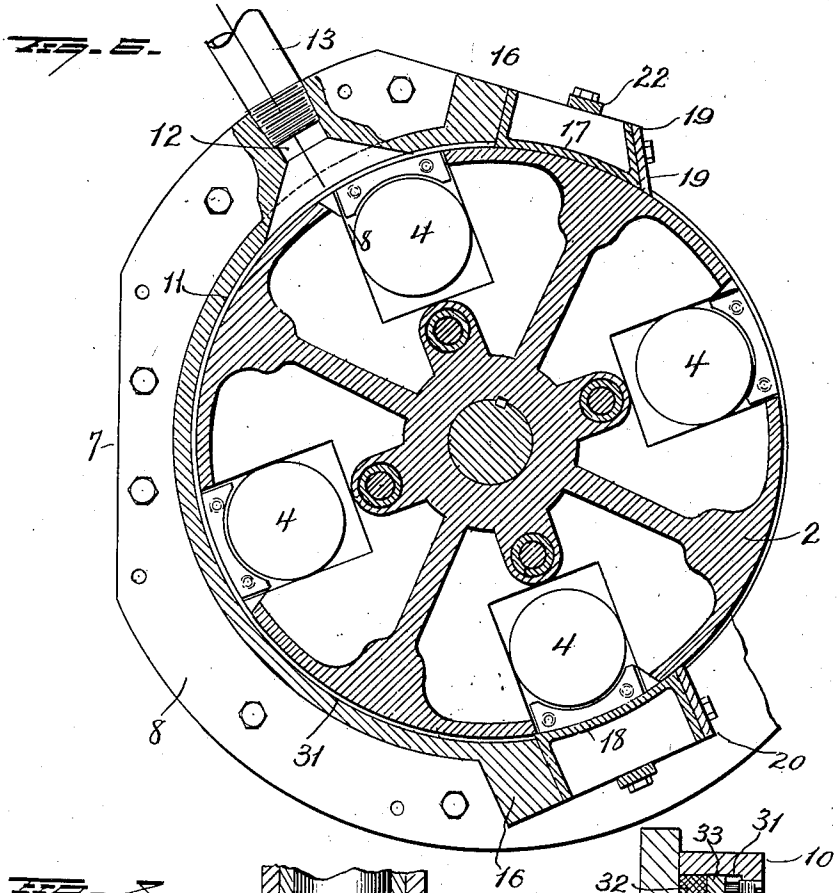
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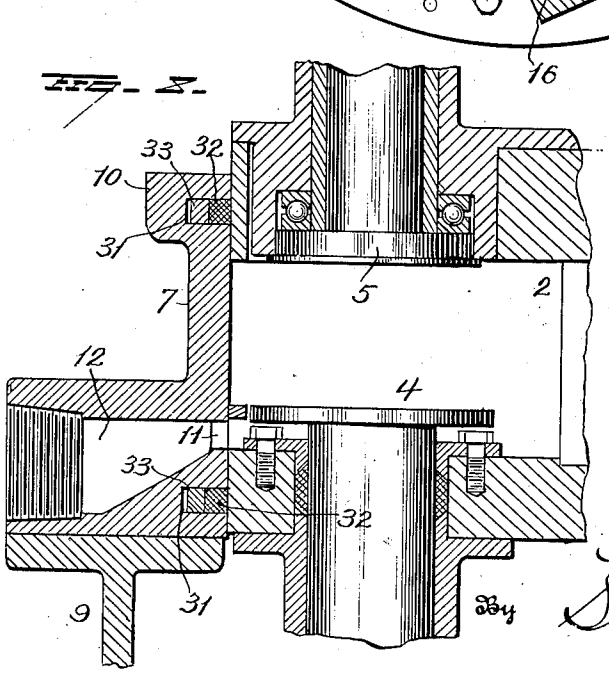
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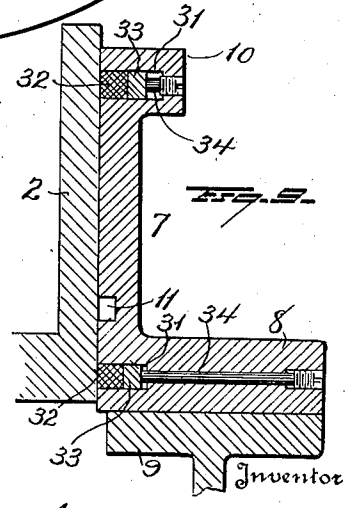
March 25, 1930. A. K. MALMQUIST 1,751,643

VACUUM SEALING CHAMBER

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Inventor

A. K. Malmquist

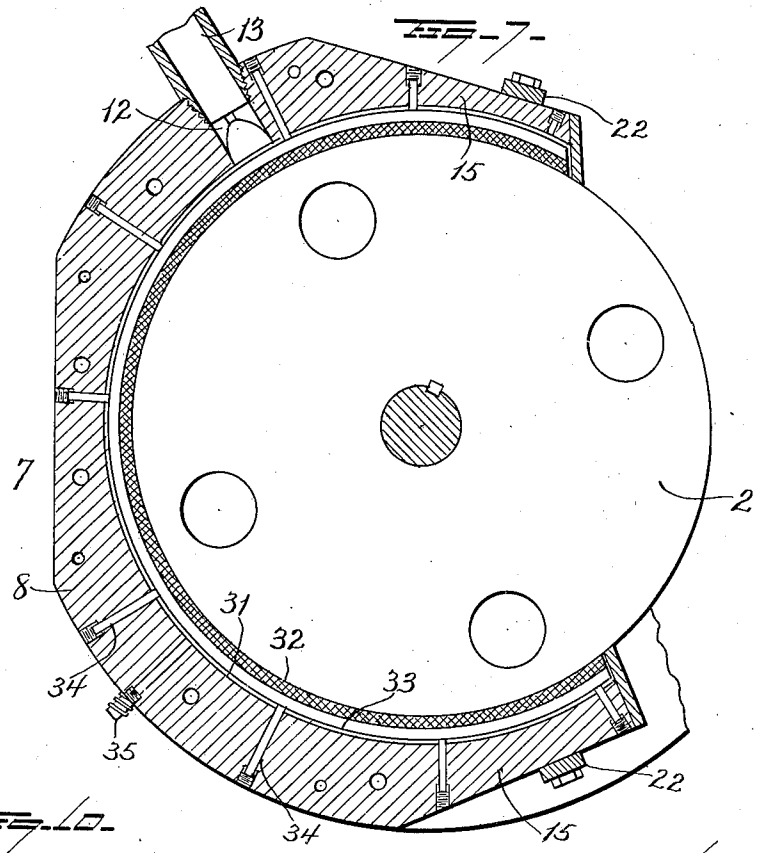
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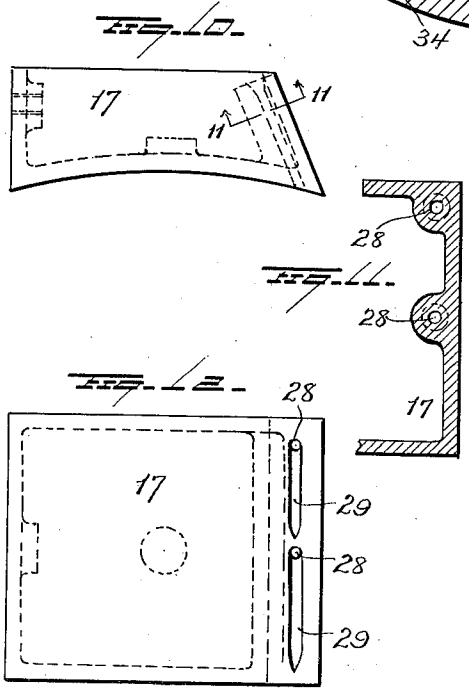
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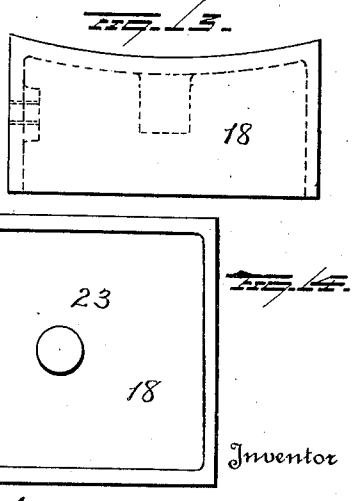
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VACUUM SEALING CHAMBER

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VACUUM SEALING CHAMBER

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Fig. 5.

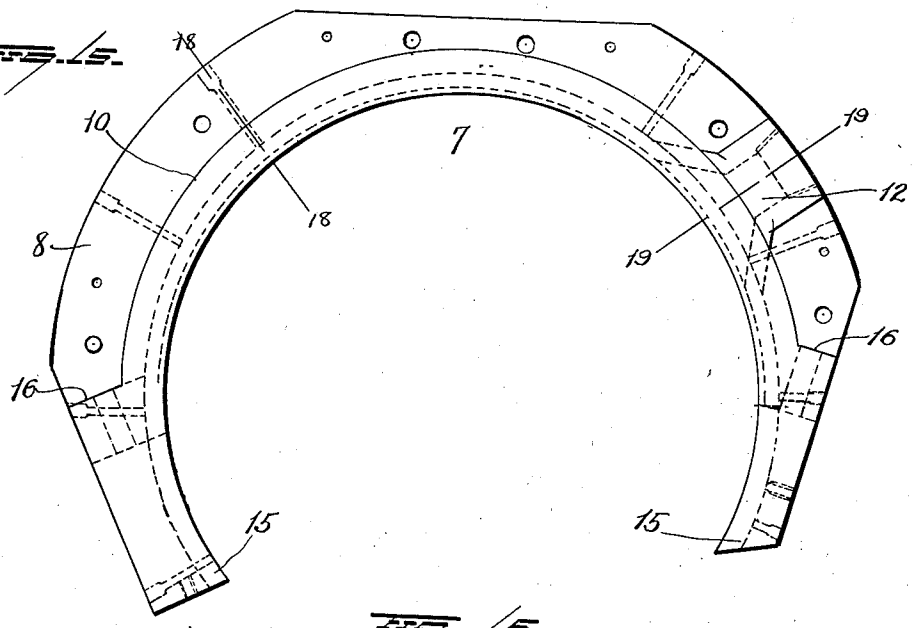


Fig. 6.

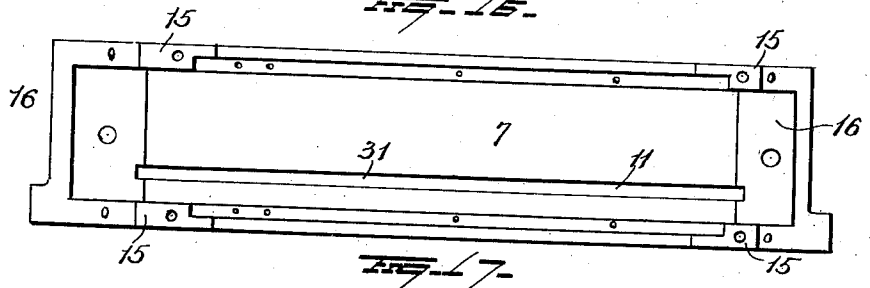


Fig. 7.

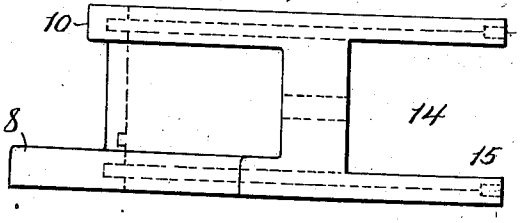


Fig. 8.

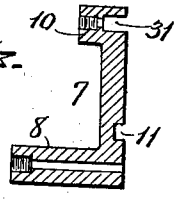
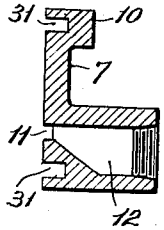


Fig. 9.



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UNITED STATES PATENT OFFICE

ADOLPH K. MALMQUIST, OF SOUTH BELLINGHAM, WASHINGTON

VACUUM SEALING CHAMBER

Application filed November 12, 1928. Serial No. 318,877.

This invention relates generally to canning machinery in which the cans are seamed in a vacuum, and has special reference to the sealing chamber, the object being to provide a simple structure which will prevent leakage of outside air to the valve or can carrier while permitting the carrier to move easily. Another object is to provide means for lubricating the contacting surfaces, and a further object is to simplify and generally improve the construction of the housing and facilitate the maintenance of sanitary conditions. The invention is illustrated in the accompanying drawings and consists in certain novel features which will be hereinafter first fully described and then more particularly defined in the appended claims.

In the drawings, Fig. 1 is a plan view of a sealing vacuum chamber with the can carrier therein, the top of the chamber being removed,

Fig. 2 is an elevation of the same with the top or cover of the chamber in place,

Fig. 3 is a horizontal section on the line 3—3 of Fig. 2,

Fig. 4 is an enlarged detail vertical section on the line 4—4 of Fig. 1,

Fig. 5 is a similar view on the line 5—5 of Fig. 1,

Fig. 6 is a horizontal section on the line 6—6 of Fig. 2,

Fig. 7 is a similar view taken in the horizontal plane of the lower packing ring,

Fig. 8 is an enlarged detail vertical section on the line 8—8 of Fig. 6,

Fig. 9 is an enlarged detail vertical section on the line 9—9 of Fig. 1,

Fig. 10 is a detail plan view of the casing seal block at the entrance end of the casing,

Fig. 11 is a section of the same on the line 11—11 of Fig. 10,

Fig. 12 is an elevation of the inner face of the same,

Fig. 13 is a plan view of the seal block provided at the discharge end of the casing,

Fig. 14 is an elevation thereof,

Fig. 15 is a plan view of the main casting of the casing,

Fig. 16 is a front elevation of the same,

Fig. 17 is an end elevation thereof,

Figs. 18 and 19 are sections taken respectively on the lines 18—18 and 19—19 of Fig. 15.

In the operation of vacuumizing canning machinery of the type to which the present invention pertains, the filled cans with caps placed loosely thereon are fed continuously and successively through a passage 1 into a rotating carrier or valve 2 which carries them through nearly a complete circle and then discharges them onto a delivery table 3 from which they are removed for labeling, storage or shipment. During the rotation of the valve or carrier, the cans are subjected to the vacuumizing influence of an air suction pump or similar device and is acted upon by seaming rollers by which the caps or covers are clenched onto the cans. As the cans and caps enter the valve or carrier they pass respectively onto a plunger 4 and under a chuck 5 which, by engagement with suitable cams, press the covers close upon the cans as the seaming rollers operate. Suitable cams are also provided to effect discharge of the sealed cans.

The present invention relates particularly to the construction of the housing in which the carrier is mounted. The greater portion of the housing is a single casting 7 arcuate in form, as seen in plan, and extending through about three-fourths of a circle to fit around the carrier and provide an opening through which the can may pass to and from the carrier. At its lower side, the casting or housing body is provided with an external flange 8 through which cap screws or bolts are inserted to secure the body upon a supporting frame, indicated at 9, and an upper flange 10 may be provided at the top of the body. In the inner concave face of the body 7, there is a groove or passage 11 which communicates directly with the nozzle 12 formed in the lower flange of the body and in which the end of the suction pipe 13 is secured, it being noted that the groove 11 and the nozzle are so located that any juices which may overflow or be drawn from the cans will drain into the nozzle and be drawn from the seaming chamber and cannot collect therein to corrode any of the parts or interfere with the

proper operation. The vertical web of the body terminates short of the ends thereof, leaving an open space 14 between upper and lower projections 15 which are laterally extended and are connected at their inner ends by vertical offsets or ribs 16 on the main web of the body. Fitted within the openings thus defined are sealing shoes 17 and 18, and to the free ends of the projections or arms 15 are secured gibs or guard plates 19 and 20 which prevent movement of the shoes outwardly between the ends of the arms, reenforce the arms, and protect the ends of the casing or housing against jamming or burring. The shoes 17 and 18 are of proper form to fit closely between the projections or arms 15 and they are adjusted into a close fit with the carrier by set bolts 21 mounted in yokes 22 and bearing upon central bosses 23 on the respective shoes. The yokes 22 are disposed vertically across the shoes and their ends are secured to the projecting arms or extensions 15 as shown, the central portions of the yokes being relatively inset as shown at 24 to bring the bearing of the set bolts close to the shoes and eliminate the liability of the bolts to bend. The shoes are further adjusted in place by set bolts 25 passing through horizontal slots 26 in the ribs or offsets 16 and having their ends threaded into the shoes. Washers 27 are fitted on the bolts between their heads and the ribs or offsets, and it will be seen that the slots 26 permit the bolts 25 to follow the adjustment of the shoes radially of the casing and the bolts 25 will lock the shoes in their set positions. The groove 11 constitutes an air outlet through which air is exhausted from the filled cans prior to and during the seaming operation, and it will be understood that the sealing shoes are adjusted into close contact with the carrier so that outside air cannot leak past the ends of the casing into a vaccum chamber of the carrier.

The sealing shoes 17 at the receiving or entrance side of the casing is formed with oil passages 28 which open at their inner ends into vertically disposed grooves or recesses 29, and in the outer ends of which are secured the ends of pipes 30 leading from a conveniently located oil container whereby lubricant may be supplied to the inner face of the shoe for the purpose of overcoming frictional resistance to the movement of the cans into the housing. The shoe 18 may be also equipped for lubrication but ordinarily there is no necessity for lubrication at the discharge side of the housing.

In the inner side of the main body 7, adjacent the top and bottom thereof, are longitudinal grooves 31 receiving packing which consists of a strip 32 of some yieldable compressible material, such as felt, and a backing strip 33 of harder material, such as metal. Mounted radially in the main body casting 7, at suitable intervals are adjusting and securing screw pins 34 which abut against the outer packing strip 33 so as to adjust the packing to the valve or can carrier and effect the desired sealing contact to prevent flow of air, except the exhaust suction through the passage 11. Force feed devices 35 are also mounted in the body casting in the horizontal planes of the respective grooves 31 to supply lubricant to the packing strips, so that while the valve or can carrier will be effectually sealed in the casing it may rotate easily so that the vacuumizing and seaming operations may be successfully and expeditiously performed. The packing strips extend to the sealing shoes so that there is complete seal between the casing and the can carrier through the entire extent of the working travel of the latter.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have provided a very simple construction by which the valve or can carrier will be protected against excessive atmospheric pressure while being permitted to rotate freely.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a vacuum sealing mechanism for canning machinery, the combination of a rotary can carrier, a casing having an arcuate vertical wall partly encircling the carrier and extending the full height therefrom, and sealing shoes mounted in the ends of the casing to bear upon the carrier.

2. In a vacuum sealing mechanism for canning machinery, the combination of a rotatable can carrier, a casing partly encircling the carrier and having upper and lower extensions at its ends, sealing shoes fitted between said extensions to bear upon the carrier, and guard plates secured to and extending between the ends of said extensions.

3. In a vacuum sealing mechanism for canning machinery, the combination of a can carrier, a casing partly encircling the carrier, sealing shoes mounted in the ends of the casing to bear upon the carrier, and means for supplying lubricant to the inner face of a shoe.

4. In a vacuum sealing mechanism for canning machinery, the combination of a can carrier, a casing partly encircling the carrier and having upper and lower longitudinal extensions at its ends, sealing shoes fitted between the extensions, yokes secured to the extensions and extending across the respective shoes, and means carried by the yokes for adjusting the shoes to the carrier.

5. In vacuum sealing mechanism for canning machinery, the combination of a casing, a can carrier rotatable therein, packing seated in the casing and bearing against the carrier, and means for supplying lubricant to the packing.

6. In vacuum sealing mechanism for canning machinery, the combination of a casing, a can carrier rotatable therein, packing seated in the casing and bearing against the carrier, and means mounted in the casing to adjust the packing to the carrier.

7. In vacuum sealing mechanism for canning machinery, the combination of a casing, a can carrier rotatable therein, packing seated in the casing and bearing against the carrier, and an exhaust passage extending longitudinally of the casing between the packing.

8. In a vacuum sealing mechanism for canning machinery, the combination of a can carrier, a casing partly encircling the carrier, sealing shoes mounted in the ends of the casing to bear upon the carrier, and packing strips extending longitudinally of the casing between the sealing shoes.

9. In vacuum sealing mechanism for canning machinery, the combination of a rotatable can carrier, a casing partly encircling the carrier and having longitudinal grooves in its inner face at its top and bottom, an inner packing strip of flexible material and an outer packing strip of hard material seated in said grooves and securing screws mounted radially in the casing and bearing against the outer packing strips.

In testimony whereof, I have signed this specification.

ADOLPH K. MALMQUIST.