May 25, 1937. M. C. REGAN 2,081,208

MEANS FOR CONTINUOUSLY CLOSING AND SEALING VACUUM JARS

Filed Dec. 19, 1933 2 Sheets-Sheet 1

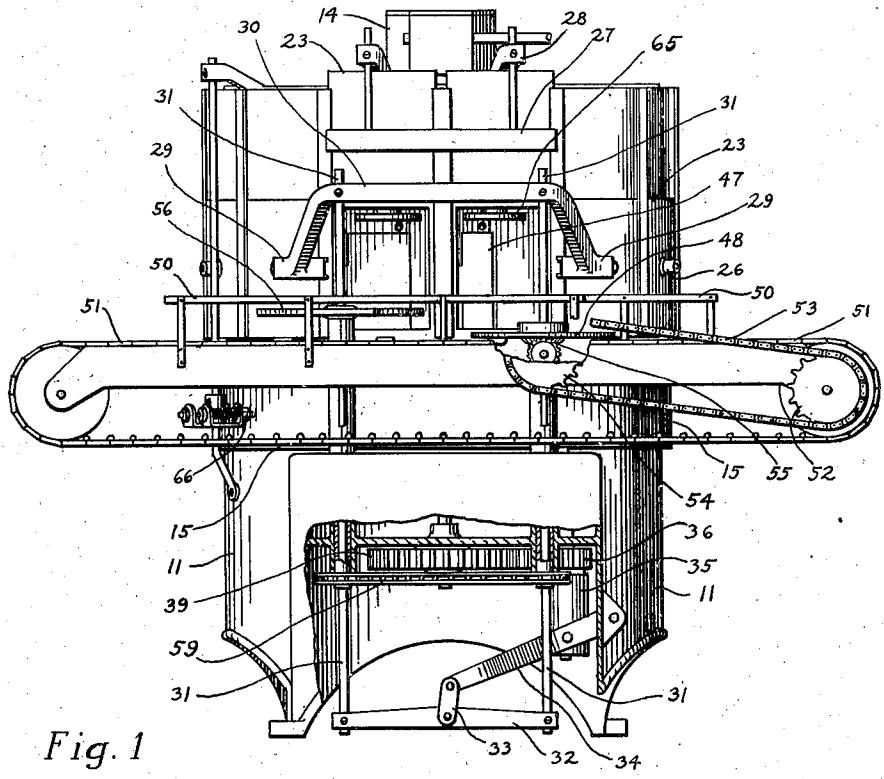


Fig. 1

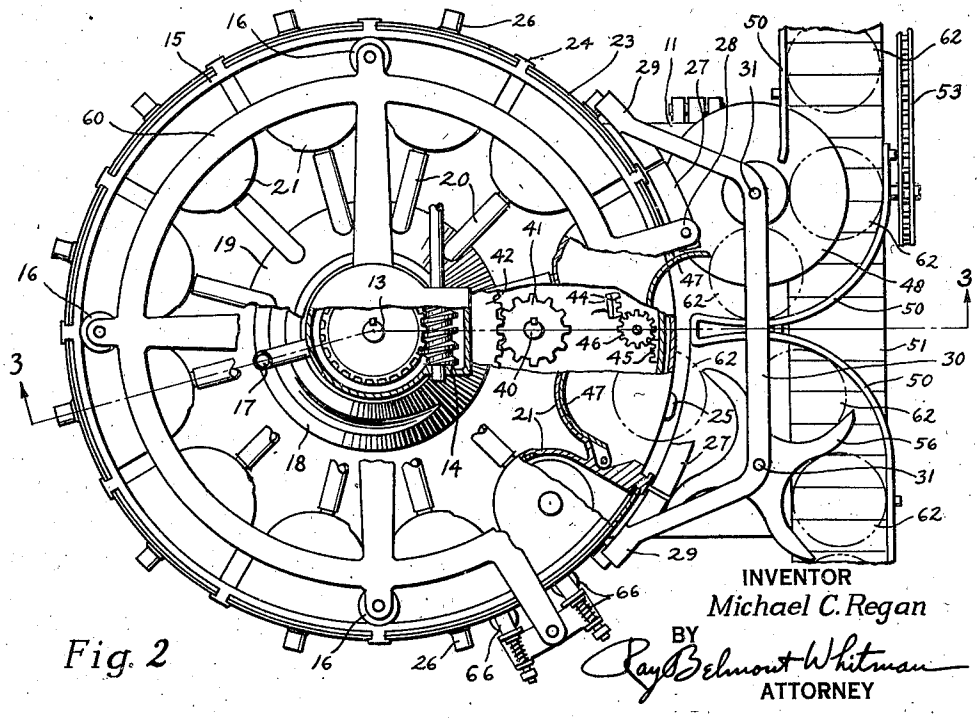


Fig. 2

INVENTOR
Michael C. Regan
BY
Ray Belmont Whitman
ATTORNEY

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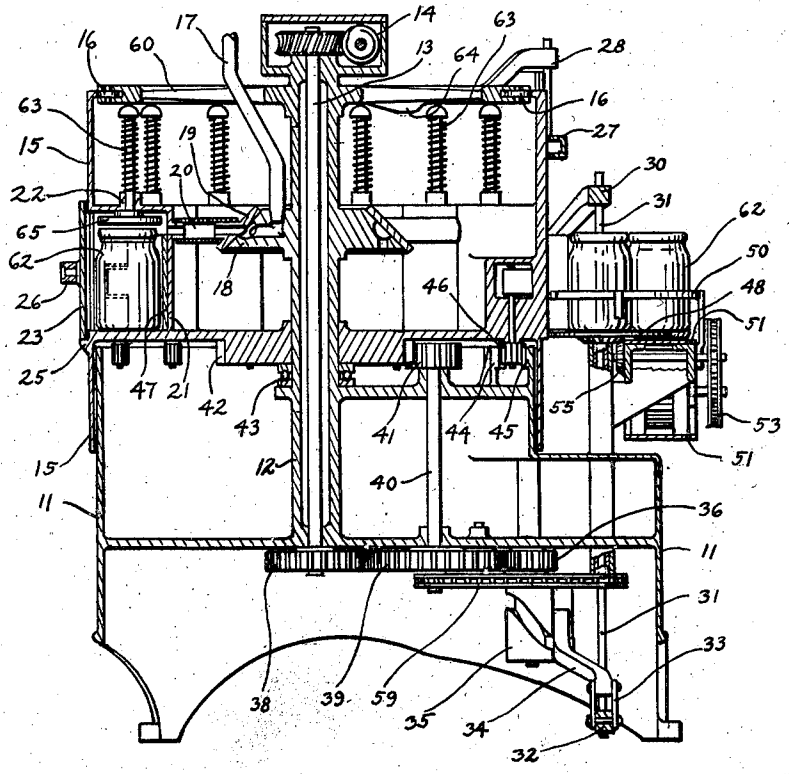


Fig. 3

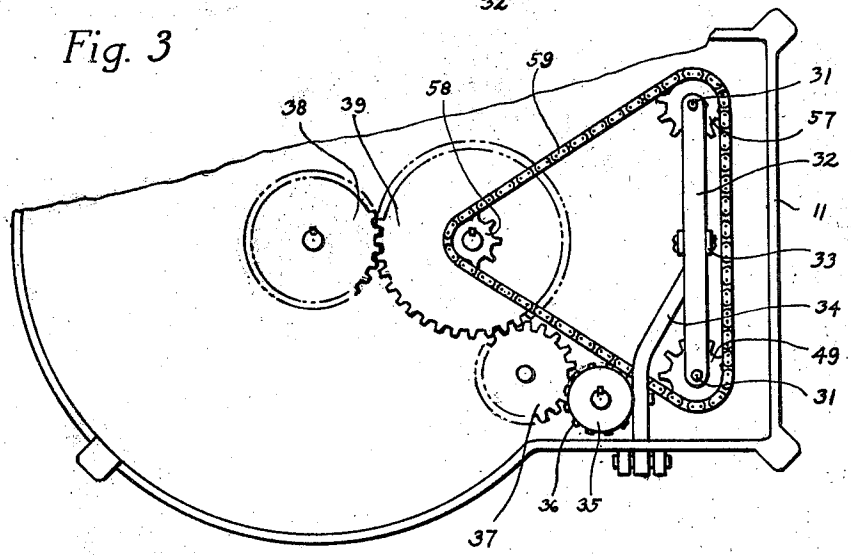


Fig. 4

INVENTOR
Michael C. Regan
BY
Ray Belmont & Whitman
ATTORNEY

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MEANS FOR CONTINUOUSLY CLOSING AND SEALING VACUUM JARS

Michael C. Regan, Califon, N. J.

Application December 19, 1933, Serial No. 703,103

1 Claim. (Cl. 226—82)

This invention relates to a method and means for vacuumizing glass jars and the like and more especially to a continuous method and a rotary turret-like means for vacuumizing a plurality of containers in succession, and sealing and ejecting them afterwards.

An object of the invention is to provide a highly efficient means, before filling the contents into containers such as glass jars, of extracting the air from the jars, then sealing the jars to prevent escape of the vacuum, and finally ejecting them from the machine.

Another object is to provide a vacuum sealing machine having a revolving turret which, while in motion, will permit a glass jar or like container to be admitted into a single chamber, then to close the door to that chamber, then to begin to exhaust the air gradually after a comparatively long interval of vacuumizing while the drum or turret is completing a full circle, then to break the vacuum connection and seal the jar, and finally to automatically eject the jar from the machine.

A further object is to provide such a machine which will permit the jars to be continuously inserted in the revolving turret to thereby assure vacuumization over a gradual and increasingly long interval.

All these and other objects as suggested here below are attained by the method and means now to be described, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevational view of the completely assembled device of this invention, partly broken away to show some of the interior details.

Fig. 2 is a top plan view, also partly broken away and slightly enlarged over that of Fig. 1.

Fig. 3 is a sectional vertical elevation taken through the line 3—3 of Fig. 2, but drawn to the scale of Fig. 1.

And Fig. 4 is a bottom plan view, partially broken away, and slightly enlarged to the scale of that of Fig. 2.

Like numerals refer to like parts throughout the several views.

In the embodiment disclosed there is shown a base member 11 from which rises a central tube 12 adapted to support the various stationary members of the device. Within tube 12 is a central drive-shaft 13 driven through a worm-and-gear drive 14, Fig. 3, at its top. A motor, or other source of power (not shown), is connected to the worm of the drive members 14 to actuate the device.

Concentrically positioned around the drive-shaft 13 is a revolving turret-like member 15 guided by rollers 16, (see Figs. 2 and 3) which are revolvably attached to a spider-like member 60 stationarily attached to the central tube 12.

A suction from the vacuum pump (not shown) which is connected to the upper end of vacuum tube 17 as in Fig. 3 draws air from a fixed valve 18 having a hole for breaking the vacuum, on which valve there turns a cover 19 with the revolving turret-like member, but which cover is vertically free to rest on the valve.

The rotating valve cover 19 is joined by a plurality of flexible tubes 20 to a like plurality of vacuum chambers 21 in the rotating turret-like body 15. In the top of each chamber is a sleeve 22 for the jar-sealing ram described hereafter.

Each chamber 21 has a vertically sliding door 23 held in guides 24 and resting on a stop 25 when closed. Rotatably mounted on a horizontal bearing on the outside surface of each said door is a roller 26 which runs in a fixed track 27 when the door is opened. This track extends part way around the outer revolving body member and is arc-shaped and parallel to said revolving body. The track 27 is positioned by means of adjustable supports 28. The rollers and doors are raised to the fixed track 27 and lowered again into closed position by running through a cam-shaped reciprocating track 29. The two oppositely-disposed reciprocating tracks 29 are joined by a beam member 30 adjustably fixed to push-rods 31 which move together. These rods are joined at the bottom by beam 32 which is connected by link 33 to the actuating lever 34. This lever 34 is oscillated by a pin or roller in the groove in cam 35 which is attached to gear 36 and rotates therewith.

Gear 36 is driven through idler gear 37 from an intermediate gear 39. A pinion 38 at the bottom of the central drive-shaft 13, and keyed thereto, drives this intermediate gear 39 on its intermediate shaft 40.

Shaft 40 turns its pinion 41, keyed at the top, which in turn drives gear 42 attached to the revolving body 15.

The revolving body 15 is suported by a ball-bearing member 43 immediately beneath gear 42.

A rack 44 to project and a rack 45 to return the ejector are attached to the base 11. They engage each ejector gear 46 as it passes during the rotary operation of the device. Through the joining shaft the gear swings the ejector 47 out from its cavity in the back of the chamber and returns it. The ejector pushes the sealed jar or container onto the revolving carrier disc 48. This

carrier is turned by sprocket 49 at the bottom of its hollow shaft through which one push-rod passes. The jar is swept off the disc 48 by a part of the guide rail system 50, onto the conveyor belt 51. This belt is driven by sprocket 52 through chain 53 from sprocket 54 which is driven by bevel gears 55, one of which is attached to the carrier disc or its shaft. When the ejector is returned, a container is carried into the empty chamber from the conveyor belt by means of the star wheel 56, aided by the guide rails 58. This star wheel is turned by sprocket 57 at the bottom of its hollow shaft. Sprocket 58 on the intermediate shaft drives the carrier and star wheel sprockets through chain 59.

The glass jar or container being operated upon by the machine is shown at 62, Fig. 2. There is of course a succession of these jars in the compartment of the device and a number of them are shown entering and leaving it.

Rams 63, Fig. 3, extending through openings 22 serve to accomplish the sealing of the jars by being forced downwardly by cam rail 64 on member 60, which presses them down successively to press the lower disc 65 on ram 63 over jars 47. Spring-pressed-wheel guides 66, Fig. 2, help to retain the jars in position in the chambers when partly open.

It will be noted that this device eliminates the stationary pocket closing member, as now largely used on machines of the rotary type, to thereby eliminate frictional chattering with its consequent breakage. This helps to reduce the power needed to a minimum and permits a fair speed for vacuumization.

Since this machine is of light weight and therefore readily portable, and also because of its low power consumption, it has a valuable field in time of war, or during periods of epidemics, as a delousing and sterilizing machine; also for agricultural use, it may be used for gassing or otherwise exterminating bugs or other insects. For instance, one hundred pound sacks may be inserted in the machine with cereals and the bugs exterminated instantly. Likewise clothing may be inserted for the extermination of moths.

The valve construction, of course, will be such as to be self-acting on a predetermined pressure.

Having now described the invention, what is claimed as new and for which Letters Patent of the United States is desired, is:

In a vacuum sealing machine, a revolving turret, a plurality of vacuum chambers, an opening in each chamber for admitting a container, means during the motion of the turret whereby a container may be admitted to a single chamber, means for closing the chamber, flexible tube connected means for exhausting the air during the balance of rotation of the turret, means having a hole for breaking the vacuum, cam-operated means for sealing the container, and rack-and-gear operated means for ejecting the container from the machine, a fixed track and an outer revolvable body member, each chamber having as the chamber closing means a vertically-sliding door held in guides and resting on a stop member when closed, each door having a roller rotatably mounted on a horizontal bearing on its outside surface, each said roller being adapted to run in said track when the door is open, said track being arc-shaped and extending partly around and parallel to said revolvable body member.

MICHAEL C. REGAN.