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MEANS FOR SEALING CONTAINERS IN VACUO.

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1,362,203. **Patented Dec. 14, 1920.**

Fig. 2

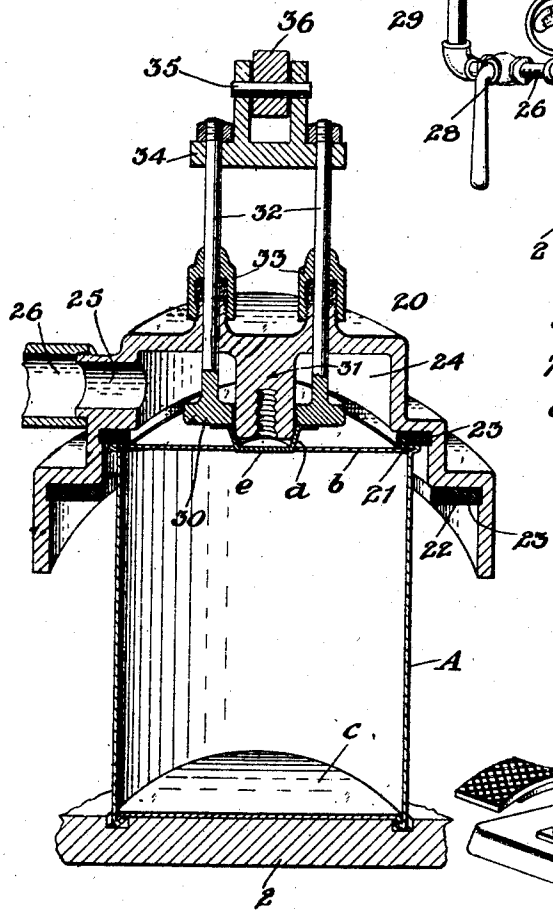


Fig. 1

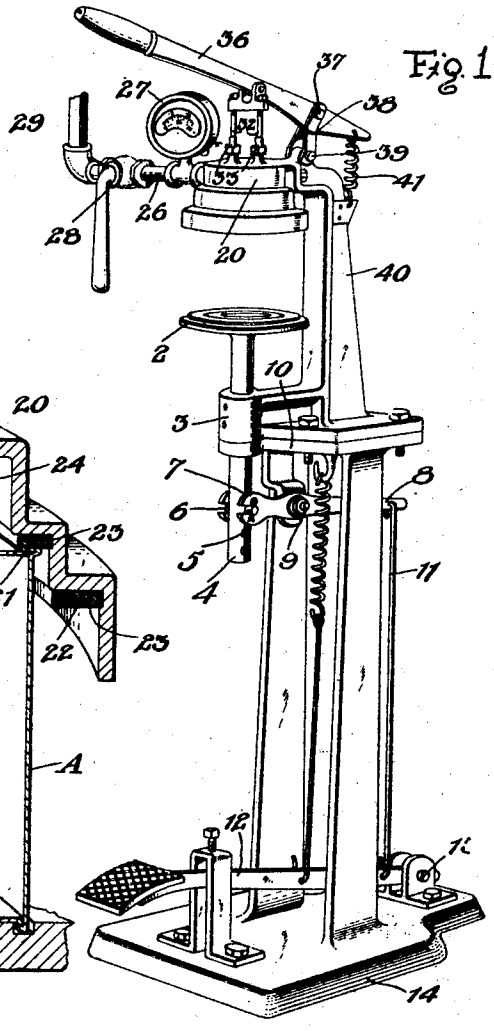
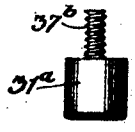


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR SEALING CONTAINERS IN VACUO.

1,362,203. Specification of Letters Patent. Patented Dec. 14, 1920.

Application filed February 21, 1918. Serial No. 218,507.

To all whom it may concern:

Be it known that I, ODIN VICK, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Means for Sealing Containers in Vacuo; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a method and apparatus for the closing of containers *in vacuo*. It is one of the objects of the present invention to provide for the economical exhaustion of air from the interior of a container such, for instance, as cans in which coffee or other commodities are to be dispensed and to provide for the effective closure of the containers while a state of vacuum is maintained in the interior of the container, and, it is a further object of the invention to provide a simple method and an inexpensive and practical mechanism whereby cans or containers of various sizes may be effectually presented to a vacuum producing apparatus which is capable of use upon cans or containers of various sizes and which enables the rapid exhaustion of air from the containers and the positive application of caps or closures to the openings of the containers through which the air has been removed.

With these and other objects in view which will be readily understood by those versed in the art, the present invention consists in the method and in the apparatus as more particularly set forth in the following specification relative to one form of the apparatus and to the preferred method of procedure for securing the desired results, such description being relative to the embodiment illustrated in the drawings wherein:

Figure 1 is a perspective view of the container clamping and vacuum controlling mechanism, and

Fig. 2 is a central vertical section through the vacuum head showing a can or container clamped in position to form an air-tight bearing upon the vacuum head.

Fig. 3 shows an auxiliary cap engaging hub.

This invention, while adaptable for the closing of cans or containers of various types of construction, and which may be used for various purposes, in the following specification is described in reference to the closure *in vacuo* of containers, such as coffee cans, one of which is shown at A, having top and bottom can ends *b* and *c* suitably secured thereto, one of which ends is provided with a filling or exhausting opening *d*, which is adapted to be closed by a metal cap *e*, preferably of soft metal, this cap being forced under pressure into the opening *d* to close the mouth of the can, while a vacuum is maintained in the latter. It is especially desirable in the marketing of certain commodities, for instance, as coffee, to exhaust the air from the can, so as to preserve the contents thereof and for this purpose, the present invention contemplates the adjustment of the can or container A after it has been filled with coffee, for instance, upon a bed-table or support 2, which is shown as slidably mounted in a suitable bearing 3, the support having a downwardly extending shank 4, which may be perforated as at 5 to receive a cross-pin 6, which is adjustable in the forked end 7 of a lever 8 pivoted at 9 to a table stand or other support 10, in front of or over which the can receiver 2 is conveniently disposed for access. The lever 8 may be operated by suitable mechanism either manually or mechanically and is here shown as connected by a link 11 to a foot treadle 12 pivoted at 13 at its rear end to a base 14 of the framework of the table 10, though it is to be understood, of course, that the can support 2 may be conveniently operated and mounted upon any appropriate support.

Cans of various lengths and diameters can be placed upon the can receiver 2 and this latter is adapted to be shifted upwardly so as to carry the top end of the can up into a vacuum head 20, which is shown as provided with a number of stepped shoulders 21 and 22 of different diameters and on which are respective gaskets 23 to receive the adjacent ends of cans A of different

diameters; these cans with the gaskets forming an air-tight joint when sufficient pressure is applied through means of the carrier or receiver 2. Within the vacuum head 20 and above the upper shoulder 21 against which small sized cans may be placed, there is formed a vacuum chamber 24, which is shown as provided at one side with an aperture 25 to which may be connected a pipe 26, which if desired, may be provided with a vacuum gage 27 and a control cock 28 beyond which suitable connection as by means of a pipe 29 is provided for connection to a vacuum producing plant, not necessary to be shown and described, but which, when the lever of the cock 28 is thrown to open position permits the establishment of a vacuum in the chamber 24 above the adjusted can A, whereby the air from said chamber 24 and the can is exhausted from the latter through the opening or mouth *d* above or adjacent to which the closure or cap *e* is loosely placed, so as not to interfere with the ready outward passage of the air when the vacuum is connected up.

For the purpose of sealing or closing the cap *e* while a vacuum is maintained in the vacuum chamber 24 and in the can A, a suitable means is provided and operative within the vacuum chamber 24 to engage and level up and force the cap *e* to a tight-seating contact with the edge of the mouth or opening *d* in the can top *b*. Such a closing means is here shown as comprising an annulus or collar 30, the lower face of which is adapted to bear upon the flange of the cap *e*, the annulus surrounding a central hub or mandrel 31 projecting downwardly from the top of the head 20. This hub may be provided with a threaded bore, as shown in Fig. 2, by means of which an auxiliary hub 31^a, having a screw 37^b, may be attached to accommodate different sized caps. The annulus or collar 30 is provided with push rods 32 passing through packing glands 33 and being connected at its upper end to a follower block 34, which is pivotally connected as at 35 to an end lever 36, which is mounted on a floating fulcrum 37 formed by a pair of links 38 pivoted at their lower ends at 39 upon a convenient part of the head 20, which is shown in this instance as connected to or formed on the upper end of an upright or bracket 40 extending up from the support 10 of the column of the frame. A spring 41 may be connected to one end of the lever 36 to normally support the presser plunger 30 upwardly out of contact with the cap *e*, which is resting loosely on the can end *b* when the can A is first pressed against its gasket.

In operation of the device, the can A is placed upon its carrier 2 and this latter is elevated to force the upper end of the can against one or the other of the gaskets 23 according to the size of the can, and while an air-tight bearing is obtained, the cock 28 is opened and a vacuum produced in the chamber 24 and the can A, and while this is maintained, the lever 36 is pressed down to carry the presser plunger 30 against the cap *e* which latter is firmly seated in the opening *b* to close the can, while the vacuum is maintained therein and thus prevent admission of air, after which the vacuum is turned off and air admitted to the chamber 24 either by a further rotation of the valve plug of the cock 28 or by the positive withdrawal of the container A to break the vacuum. The removed can may then have its cap *e* hermetically sealed by the application of solder or otherwise around its edge to prevent leakage of air into the container.

What I claim is:

1. An apparatus for sealing containers, comprising a vacuum head, means carried by said head for forming an airtight joint with the rim of a container, a mandrel within said head for temporarily holding and locating a closure cap, and means slidable on said mandrel for sealing the container with said closure cap.

2. In a can sealing apparatus, a head connected to a vacuum pump and having packing means to engage a can top, a central hub in said head to frictionally hold and center a closure cap, a collar slidable on said hub and adapted to engage and depress said closure cap to hermetically seal the can, and means for depressing said collar.

3. In a can sealing apparatus, a vacuum head adapted to engage the top of a can, a central closure cap engaging hub in said head, a collar slidably mounted on said hub, and means for reciprocating said collar from without the vacuum head.

4. In a can sealing apparatus, a head connected to a vacuum pump and having packing means to engage a can top, a central hub in the head to frictionally hold a closure cap, a collar around the hub to engage and depress the cap to hermetically seal the can, piston rods connected to said collar, packing glands on the top of the head for said piston rods, and a lever connected to the rods to actuate the collar, and means for automatically retracting the lever and collar.

5. In a can sealing apparatus, a head connected to a vacuum pump and having packing means to engage the edges of a centrally apertured can top, a central hub in the head to frictionally hold a closure cap, a collar around the hub to remove said cap and press it into the central aperture of the top to hermetically close the same, means for operating said collar, comprising piston rods connected to said collar adapted to glide through packing glands extended upward

through the head, and to be operated by a lever, and means for automatically retracting said lever and collar.

6. An apparatus for sealing cans comprising a frame, a vacuum head fixed on said frame having a can engaging mouth, a closure cap carrying member, a collar slidably mounted on said cap carrying member to remove said cap therefrom and seal a can, a lever pivoted to said frame and connected to said collar by means of rods passing through glands in the head, and means carried by said frame for supporting a can and forcing same into sealing relation with said mouth substantially as specified.

In testimony whereof I affix my signature.

ODIN VICK.