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Filed Feb. 18, 1931 2 Sheets-Sheet 1

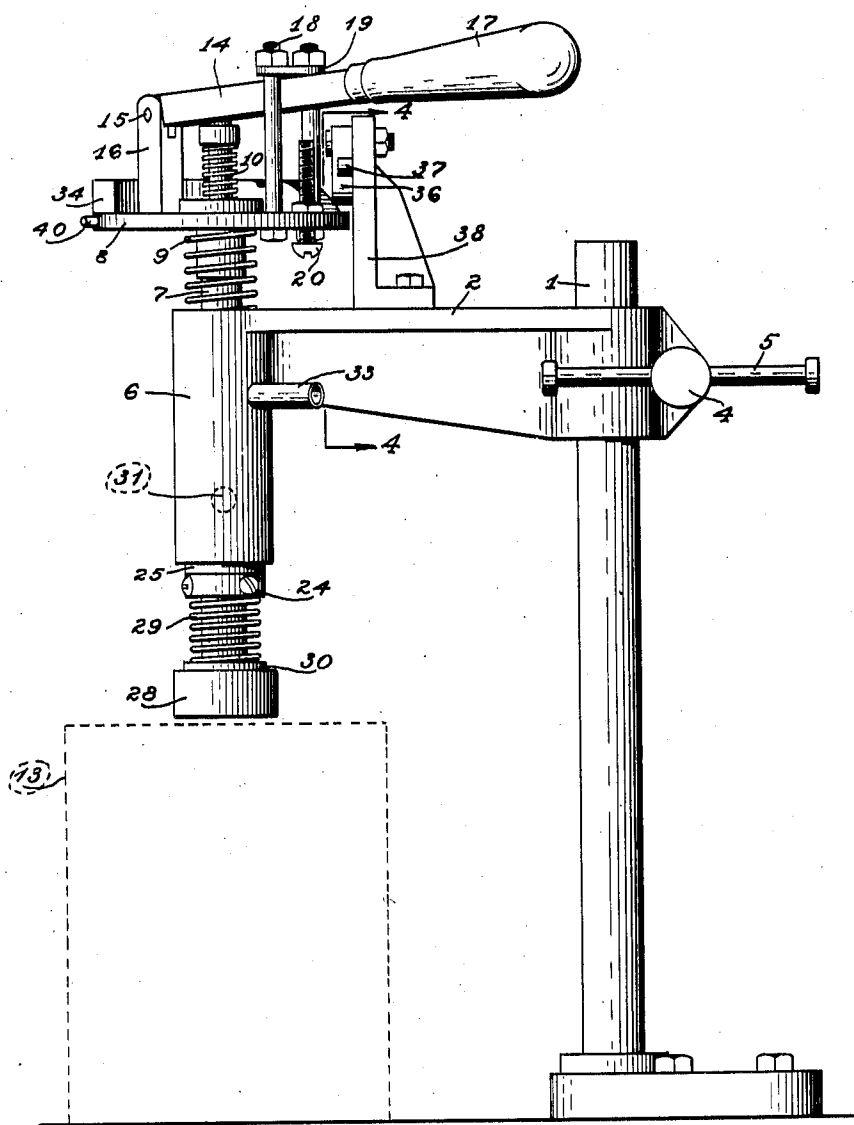


Fig. 1.

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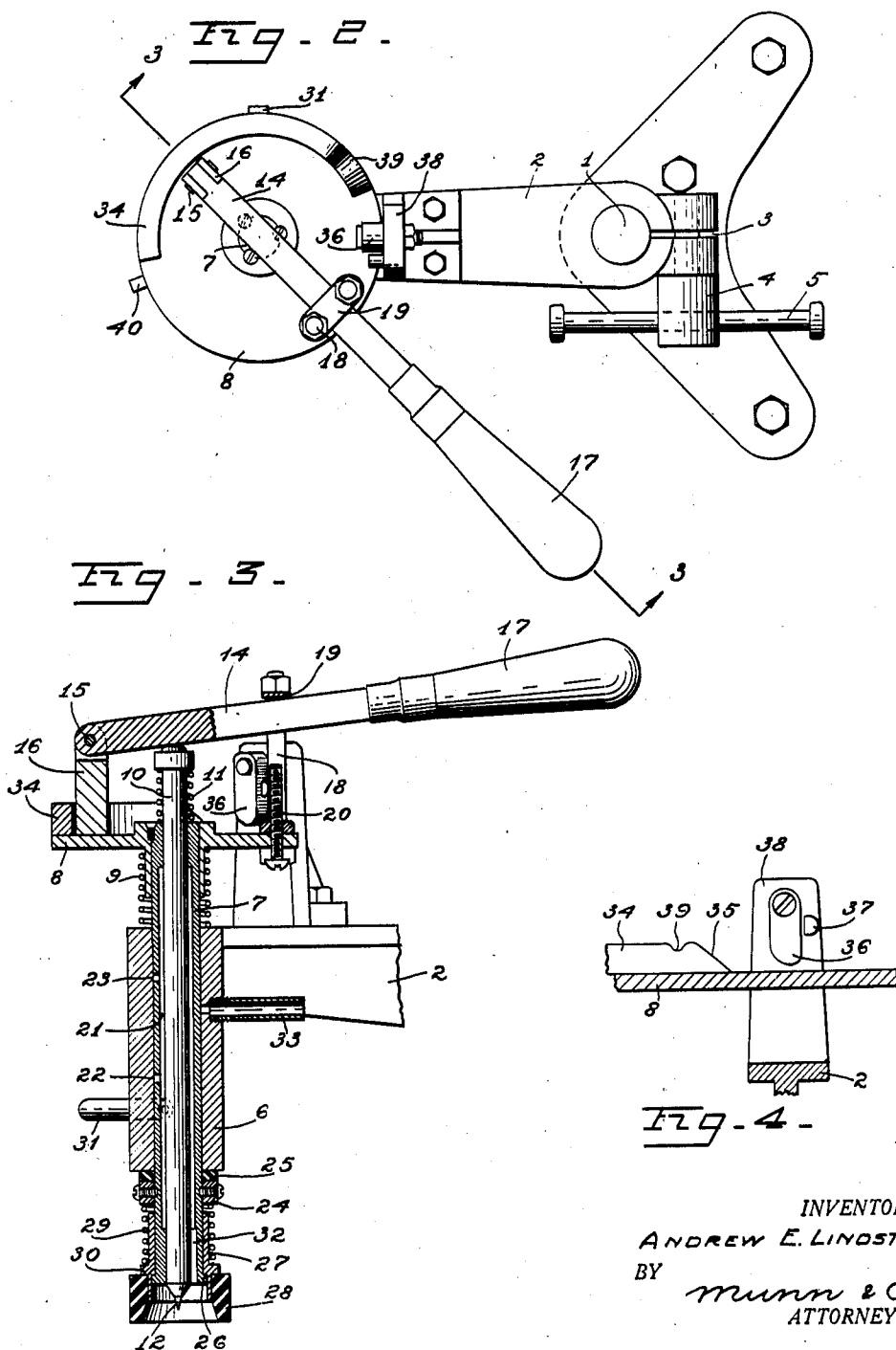
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UNITED STATES PATENT OFFICE

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APPARATUS FOR FILLING VACUUMIZED CANS WITH INERT GAS

Application filed February 18, 1931. Serial No. 516,818.

An object of my invention is to provide an apparatus for filling vacuumized cans with inert gas in which the operator by means of one handle can initially puncture the can, then by moving the handle cover the opening in the can with a air conveying passageway through which air is withdraw from the can, and then by further movement of the handle place the interior of the can in communication with a source of inert gas whereby the can is filled with gas.

The device is extremely simple in construction and may be adjusted to accommodate cans of various heights.

Other objects and advantages will appear as the specification proceeds, and the novel features of the device will be particularly pointed out in the claims hereto annexed.

My invention is illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the device;

Figure 2 is a top plan view;

Figure 3 is a section along the line 3—3 of Figure 2; and

Figure 4 is a section along the line 4—4 of Figure 1.

In carrying out my invention I provide an upright 1, upon which I adjustably mount a supporting casting 2. Figure 2 shows the portion of the casting 2 extending beyond the upright 1, as being split at 3, the two portions receiving a tightening screw 4 that may be actuated by a rod 5.

Figure 3 shows the casting 2 as having an integral bearing 6 in which a sleeve 7 is slidably mounted. The top of the sleeve 7 carries a disk 8 and this disk is yieldingly supported by spring 9, the spring bearing against the under surface of the disk and against the top of the bearing 6.

Within the sleeve 7 I slidably mount a plunger 10 and this plunger is urged upwardly by a spring 11. The plunger extends entirely through the sleeve 7 and terminates in a pointed end 12 which is used for puncturing the can 13 shown in Figure 1.

The top of the plunger 10 is held in contact with a lever 14 and this lever is pivoted at 15 to a lug 16 carried by the disk 8. A handle 17 is mounted on the free end of the lever.

The lever is slidable between guides 18 and is held in contact with a cross piece 19 by the spring 11 and plunger 10. A set screw 20 adjustably carried by the disk 8 limits the downward movement of the lever.

The sleeve 7 has a recessed portion 21 surrounding the plunger 10 and openings 22 and 23 place the recess 21 in communication with the exterior surface of the sleeve 7.

The lower end of the sleeve 7 carries a collar 24 and a washer 25 is placed between the collar and the bearing 6. The lower end of the sleeve has a shoulder 26 for supporting a small sleeve 27, this sleeve having a shoulder bearing against the shoulder 26. The small sleeve 27 carries a resilient ring 28 which is designed to contact with the top of the can 13. A spring 29 bears against the collar 24 and against a shoulder 30 on the small sleeve 27.

A pipe 31 (see Figure 2) extends through the bearing 6 and its inner end is flush with the inner surface of the bearing. A downward and rotational movement of the sleeve 7 in a manner hereinafter described will register the opening 22 with the pipe 31. The pipe 31 leads to a source of vacuum and therefore the registration of the opening 22 with the pipe will draw air through the ring 28, passageways 32 in the lower end of the sleeve 7, the recess 21 and the opening 22.

A further rotational movement of the sleeve 7 while still held in its depressed position will register the opening 23 with a pipe 33 that is connected with a supply of inert gas. This gas will flow through the pipe 33, the opening 23, the recess 21, passageways 32 and on through the ring 28 and will enter an opening in the can 13 made by the point 12. In bringing the openings 22 and 23 into registration with the pipes 31 and 33 respectively the handle 17 is grasped and is swung through an arc in a clockwise direction when looking at Figure 2. Figures 2, 3 and 4 show the disk 8 as carrying a cam 34 and this cam has an inclined portion 35 which rides beneath a swingable stop 36 (see Figure 4). The stop can swing in a clockwise direction but is prevented from moving in a contra-clockwise direction by a pin 37. The stop 36 and the pin

37 are carried by a projection 38 which in turn is secured to the casting 2. The movement of the cam 34 beneath the stop 36 will cause the disk 8 to be lowered and to compress the spring 9. This movement will bring the ring 28 into contact with the top of the can 13. The cam 34 has a recess 39 for receiving the stop 36 and when the parts are in this position the opening 22 registers with the pipe 31. The can 13 is now placed in communication with a source of vacuum.

Further rotational movement of the handle 17 will rotate the disk 8 until a stop 40 carried by the disk strikes the upright 38 (see Figure 2). The parts in this position cause the opening 23 to register with the pipe 33 and the can 13 is now placed in communication with a source of inert gas. A return movement of the handle 17 will cause the pivoted stop 36 to swing in a clockwise direction and permit the spring 9 to raise the disk 8 into normal position. Further rotational movement of the disk will move the cam 34 until it frees the pivoted stop 36 whereupon the stop will drop into the position shown in Figure 4 by gravity.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

The casting 2 is adjusted on the upright 1 so as to position the ring 28 a slight distance above the top of the can 13. When the can is placed beneath the ring 28 the handle 17 is swung downwardly and the pin 12 will puncture the top of the can. The size of the puncture is determined by the movement of the lever 14 and this in turn is controlled by the adjustable stop 20.

After the puncture has been made the operator permits the handle 17 to move upwardly and now swings the handle through an arc in the manner described and this causes the disk 8 and sleeve 7 to be moved downwardly until the ring 28 yieldingly contacts with the top of the can. When the stop 36 enters the recess 39, the operator ceases to move the handle 17 until all of the air within the can 13 has been withdrawn through the pipe 31. The ring 28 seals the air exhausting passage-way to the top of the can. The operator now swings the handle 17 in the same direction until the stop 40 contacts with the upright 38, whereupon the interior of the can will be filled with an inert gas because the opening 23 registers with the pipe 33.

The operator now returns the handle to starting position and this permits the spring 9 to free the ring 28 from the top of the can 13. The can is now sealed before air has again a chance to enter it. It might be stated that the pressure of the inert gas is approximately the same as atmospheric pressure and therefore there will be no rush of air into the can as soon as the ring 28 is removed. The immedi-

ate sealing of the can prevents any air from subsequently entering.

Although I have shown and described one embodiment of my invention it is to be understood that the same is susceptible of various changes and I reserve the right to employ such changes as may come within the scope of the claims hereto annexed.

It is obvious that the handle 17 may first be swung for bringing the ring 28 down upon the can 13 before puncturing the can. After the ring 28 bears against the can, the handle 17 may be depressed for puncturing the can. The air will now be withdrawn and then the handle swung for connecting the pipe 33 with the interior of the can for filling it with an inert gas.

I claim:

1. In combination, a tubular support, a sleeve slidable and rotatable in the support, a collar carried by said sleeve and bearing against the underside of the support, a spring for yieldingly supporting the sleeve, a cam disc carried by the sleeve, a plunger slidable in the sleeve, a lever for swinging the disc, a spring for holding the plunger in contact with the lever, said plunger having a pointed end for entering a receptacle when the lever is depressed, a resilient ring yieldingly carried by the lower end of the sleeve, a stop engageable with the cam disc for causing a depressing of the sleeve during the initial swinging of the disc, a pipe for withdrawing air from the sleeve, said sleeve having an opening registrable with the pipe when the disc has been swung a predetermined distance, and a second pipe placed in communication with the interior of the sleeve upon the further swinging of the disc into a second position.

2. In combination, a tubular support, a sleeve slidable and rotatable in the support, a collar carried by said sleeve and bearing against the underside of the support, a spring for yieldingly supporting the sleeve, a cam disc carried by the sleeve, a plunger slidable in the sleeve, a lever for swinging the disc, a spring for holding the plunger in contact with the lever, said plunger having a pointed end for entering a receptacle when the lever is depressed, a resilient ring yieldingly carried by the lower end of the sleeve, a stop engageable with the cam disc for causing a depressing of the sleeve during the initial swinging of the disc, a pipe for withdrawing air from the sleeve, said sleeve having an opening registrable with the pipe when the disc has been swung a predetermined distance.

3. In combination, a tubular support, a sleeve slidable and rotatable in the support, a collar carried by said sleeve and bearing against the underside of the support, a spring for yieldingly supporting the sleeve, a cam disc carried by the sleeve, a plunger slidable

in the sleeve, a lever for swinging the disc, a spring for holding the plunger in contact with the lever, said plunger having a pointed end for entering a receptacle when the lever is depressed, a stop engageable with the cam disc for causing a depressing of the sleeve during the initial swinging of the disc, a pipe for withdrawing air from the sleeve, said sleeve having an opening registrable with the pipe when the disc has been swung a predetermined distance.

in communication with the interior of the sleeve for each position.

Signed at San Francisco in the county of San Francisco and State of California this 10th day of February, A. D. 1931.

ANDREW E. LINDSTROM.

4. In combination, a tubular support, a sleeve slidable and rotatable in the support, a cam disc carried by the sleeve, means for swinging the disc, a stop cooperating with the cam for lowering the sleeve, and a pipe placed in communication with the interior of the sleeve when the cam disc is swung into a predetermined position.

5. In combination, a tubular support, a sleeve slidable and rotatable in the support, a cam disc carried by the sleeve, means for swinging the disc, a stop cooperating with the cam for lowering the sleeve, and a pipe placed in communication with the interior of the sleeve when the cam disc is swung into a predetermined position, and a second pipe placed in communication with the interior of the sleeve when the cam disc is swung into a second predetermined position.

6. In combination, a tubular support, a sleeve slidable and rotatable in the support, a cam disc carried by the sleeve, means for swinging the disc, a stop cooperating with the cam for lowering the sleeve, and a pipe placed in communication with the interior of the sleeve when the cam disc is swung into a predetermined position, and a resilient ring carried by the lower end of the sleeve.

7. In combination, a tubular support, a sleeve slidable and rotatable in the support, a cam disc carried by the sleeve, means for swinging the disc, a stop cooperating with the cam for lowering the sleeve, and a pipe placed in communication with the interior of the sleeve when the cam disc is swung into a predetermined position, and a second pipe placed in communication with the interior of the sleeve when the cam disc is swung into a second predetermined position, and a resilient ring carried by the lower end of the sleeve.

8. In combination, a tubular support, a sleeve slidable therein, a cam disc secured to the sleeve, a stop pivotally connected to the support, a pin for preventing swinging of the stop in one direction, means for swinging the disc for causing the stop to depress the sleeve, said stop freeing the disc when the latter is moved in the opposite direction.

9. In combination, a sleeve, a plunger having a pointed end, means for actuating the plunger, said means designed to swing the sleeve into two positions, and a pipe placed

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