May 22, 1928. 1,670,924

N. P. BACH

CAPPING MACHINE

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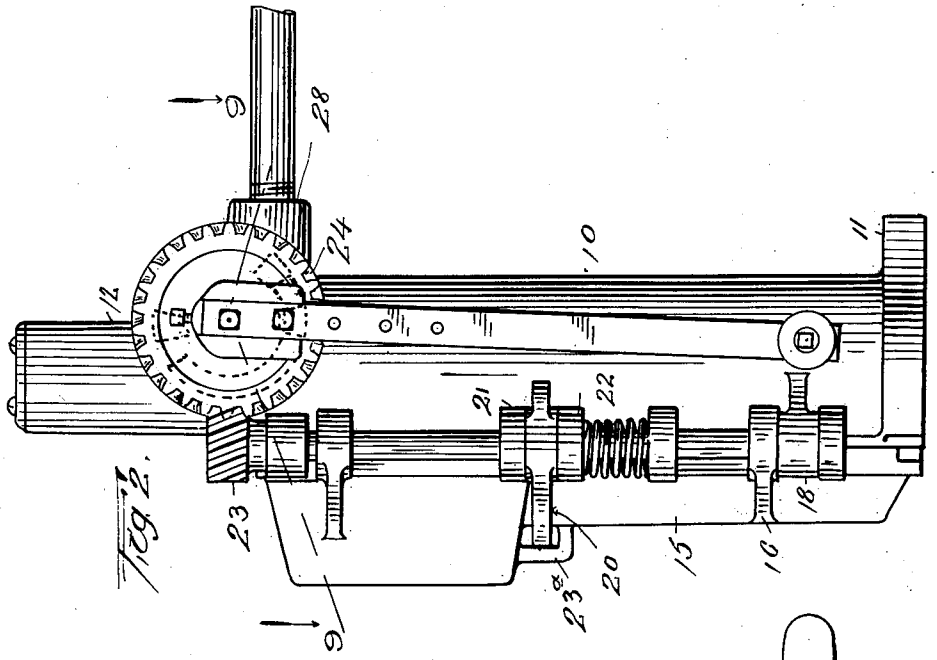


Fig. 2.

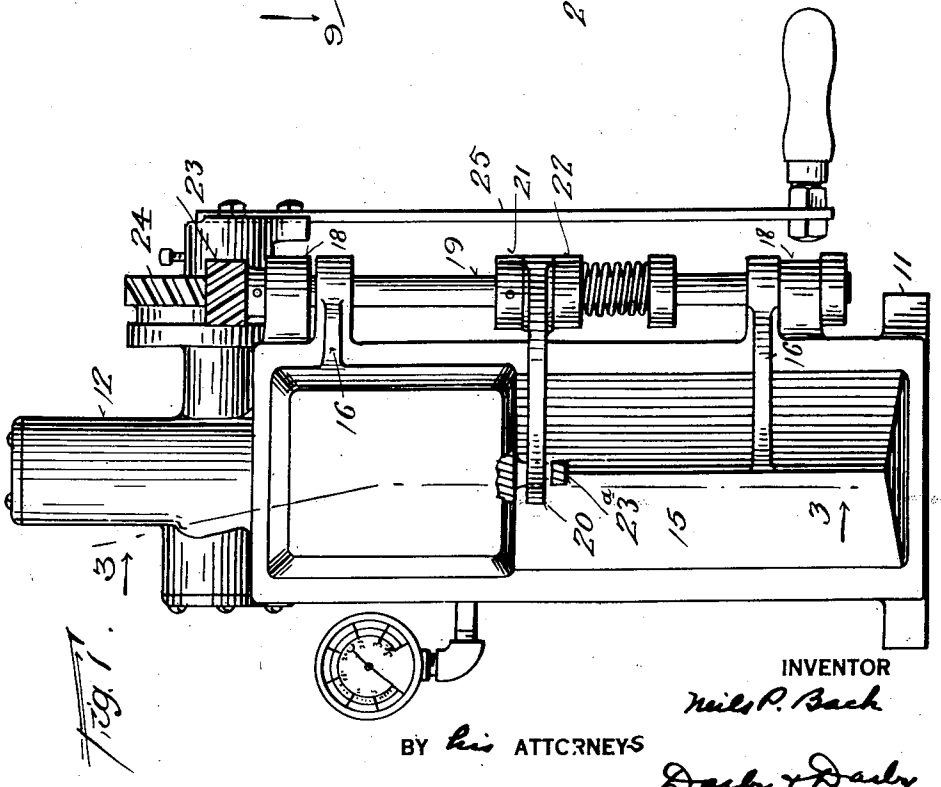


Fig. 1.

INVENTOR
Niels P. Bach

BY his ATTORNEYS
Darby & Darby

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Fig. 3.

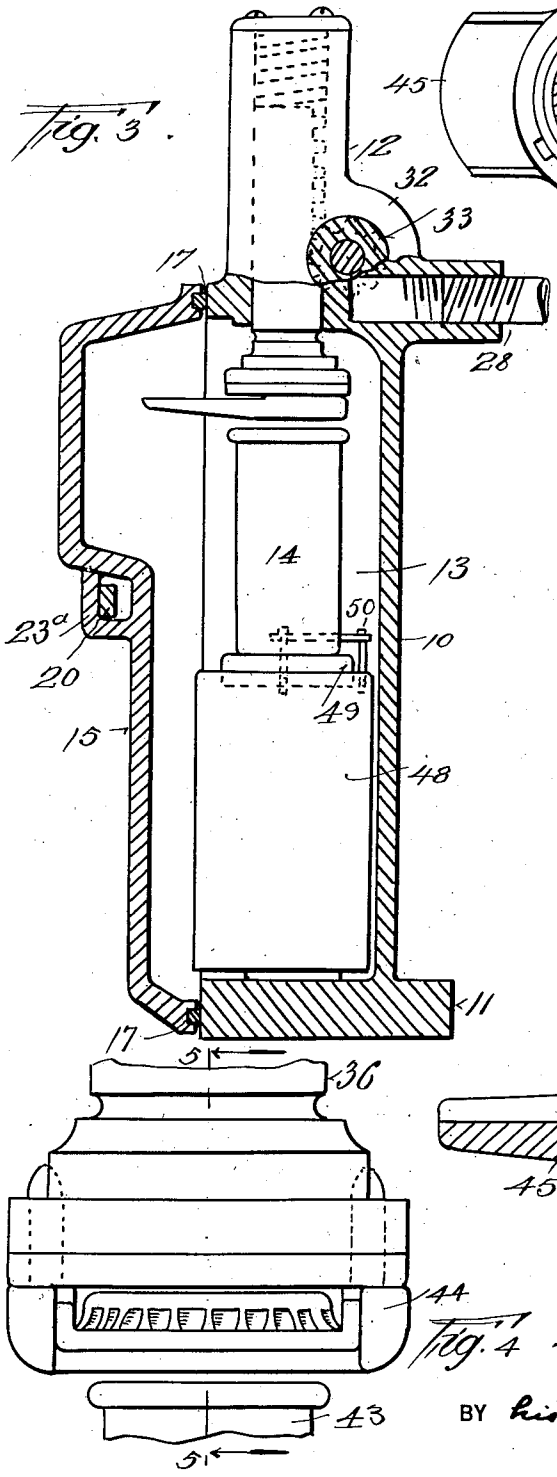


Fig. 7.

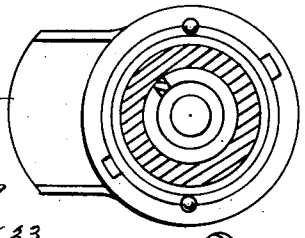


Fig. 5.

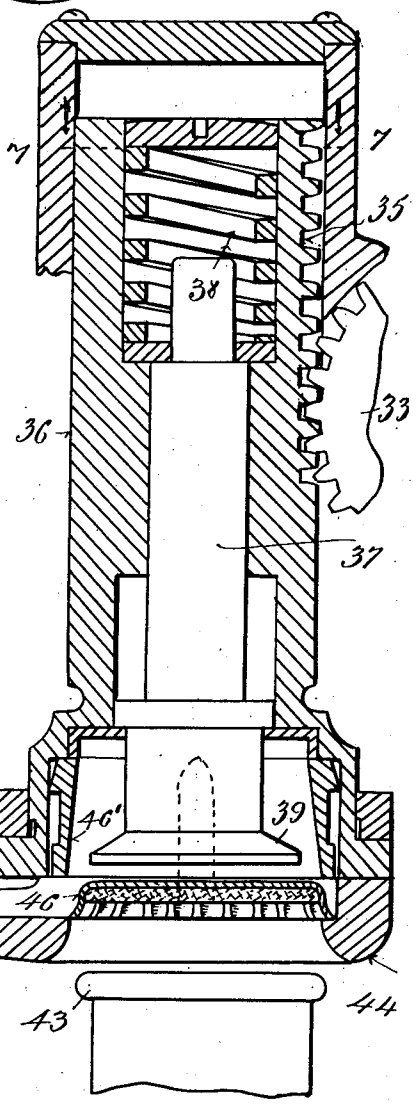


Fig. 4.

INVENTOR

Neils P. Bach

BY his ATTORNEYS

Daly & Daly

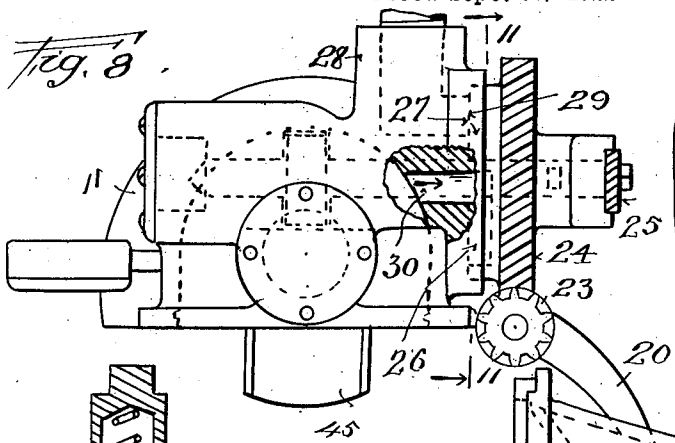
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N. P. BACH

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Fig. 8.



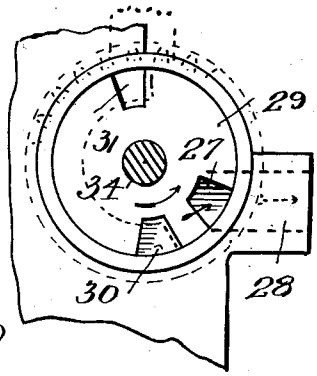


Fig. 10.

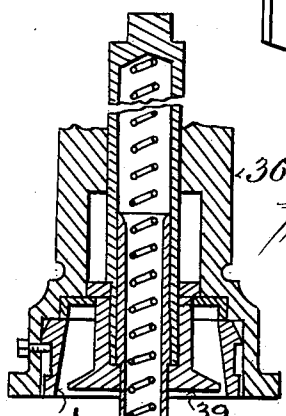
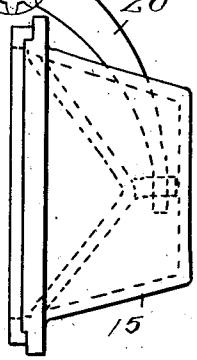


Fig. 6.



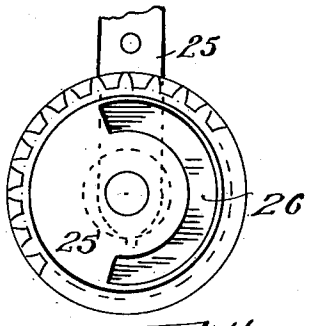


Fig. 11.

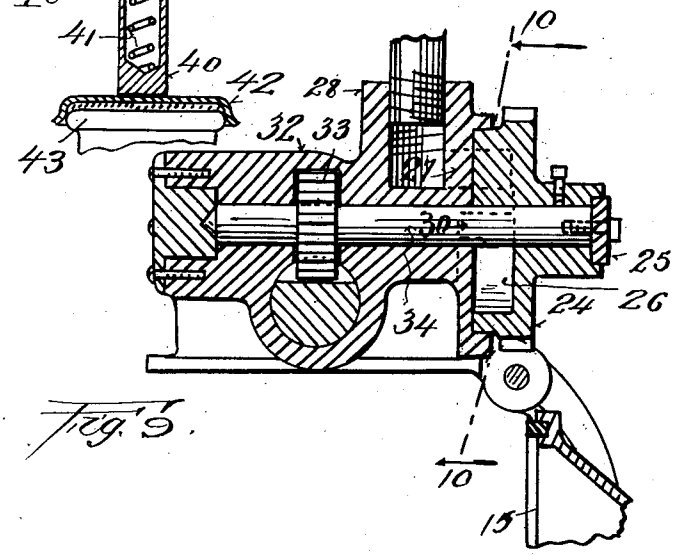


Fig. 5.

INVENTOR

Niels P. Bach

BY Lis ATTORNEYS

Daby & Daby

Patented May 22, 1928. 1,670,924

UNITED STATES PATENT OFFICE.

NEILS P. BACH, OF MILLBURN, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THERMOKEPT CORPORATION, A CORPORATION OF DELAWARE.

CAPPING MACHINE.

Application filed September 30, 1922. Serial No. 591,451.

This invention relates to a machine wherein bottles or jars are capped or sealed in vacuo, and it is my prime object to provide a simple, rugged and efficient mechanism which will produce the desired results with precision and unfailing certainty.

A further object includes the provision of a single operating mechanism whereby the several mechanical parts are placed into operative relation for establishing and releasing a vacuum in timed relation with a door opening and door closing mechanism, and with means for placing, holding and sealing the cover.

Another object includes the provision of means for temporarily holding a cap or cover in place on its receptacle during the time that a vacuum is established for final sealing.

Other objects will appear hereinafter, and I attain these objects by the mechanism disclosed in the accompanying drawing of which:

Fig. 1 is a front elevation;

Fig. 2 is a side elevation;

Fig. 3 is a view taken on lines 3—3 of Fig. 1;

Fig. 4 is a view of the capper head with the cap in position and ready to be placed on a jar or bottle;

Fig. 5 is a sectional view taken on lines 5—5 of Fig. 4 looking in the direction of the arrows;

Fig. 6 is a view similar to the view shown in Fig. 5, but having a different capping stem and head;

Fig. 7 is a view taken on lines 7—7 of Fig. 5;

Fig. 8 is a plan view showing the door in open position;

Fig. 9 is a view taken on lines 9—9 of Fig. 2;

Fig. 10 is a view taken on lines 10—10 of Fig. 9, showing one member of the vacuum control valve; and

Fig. 11 is a view taken on lines 11—11 of Fig. 8, showing the other member of the vacuum control valve.

Like numerals refer to similar parts throughout the several views.

In my preferred form of construction which is here given as an example merely of one form of embodiment of my invention, I provide a container or main support 10, having a base 11, and a dome head 12. The main support is provided with a chamber 13, for receiving a container 14, which is to be vacuumized and sealed in the manner described below. A door 15, supported on hinges 16, co-operates with a gasket 17 to form an airtight seal when the door is closed. Along one side of the main support or chamber are provided lugs 18, having holes for receiving an operating bar 19, and on which bar the hinges 16 swing in the manner well understood. A door operating arm 20 is frictionally held between the fastened collar 21 and the spring pressed collar 22. The arm is thus caused to move with the friction collars and its outer end engages an ear 23^a on the door for opening and closing the same. On one end of the operating bar is fastened a worm gear 23, which engages with worm 24, for swinging the bar back and forth to open and close the door in unison with the rocking of handle 25. Connected to worm 24 is one of the two vacuum valve control members which is best illustrated in Fig. 11. This member comprises a solid plate 25′ in which is formed an elongated slot 26, for co-operating with opening 27, leading to a vacuum pump (not shown) through the connecting pipe 28. As is best shown in Fig. 10 adjacent the opening 27 in the plate 29 of the second valve member, is an opening 30, and almost diametrically opposite this opening is a third opening or release port 31. Port 30 communicates with chamber 13, and port 31 communicates with the open air. Slot 26 is of sufficient dimensions to connect ports 30 and 31, for releasing the evacuated chamber, as is indicated in dotted lines in Fig. 10.

Within the base 32 of head 12 is an operating gear 33, which is fixedly mounted on a drive shaft 34, and is also operated by handle 25. Gear 33 engages the rack bar 35 of the cap fixing stem 36. Within this stem is held the stopper, or cap affixing plunger 37, which is held in a depressed position by a spring 38, and may terminate in a capping head 39, as is best shown in Fig. 5. In place of a solid plunger there may be provided a hollow plunger with a resiliently telescoping cap-holding member 40, operating therein. The latter member is depressed by a coiled spring 41, and serves to hold the cap 42 in position on the jar or container 43, while vacuum is established and before the container is sealed. From Fig. 5 it is obvious

that in place of the auxiliary or resiliently extending cover holder a fixed cover holder 44 may be provided. This holder is fitted with a guide 45 for placing the cover 46 within the member 44. A flaring cover shaping and sealing member 46′ is provided wherein the lower diameter is substantially that of the cap to be sealed, and the upper diameter is sufficiently smaller to properly crimp and seal the cover onto the receptacle or jar 43, as the stem 36 is depressed. As shown in Fig. 3, the container may be supported at any desired or proper elevation within the chamber, by any suitable means, as a member 48, which member may be provided with a suitable pad 49, and a positioning rail 50.

From the disclosure herein given, the operation of mechanism is evident. Where the fixed cap holder, shown in Fig. 5, is used, the cover is put into position when the container is placed within the chamber. This is accomplished when the door is open and the capper head is withdrawn to its retracted position. Where the telescoping cap holder is used, the cap is loosely put on the container before it is placed into the chamber. The latter cap holder is preferred when light fluffy materials are to be vacuumized and sealed, as they prevent any loss of material and afford suitable means for sealing milk powder, cocoa or other materials. In either case is the door opened or closed, the vacuum established or released and the cap fastened in place to seal the container in vacuo by simply rocking the handle or equivalent operating mechanism back and forth. With the cap and container in position, as is indicated, for example, by Figs. 5 and 6, and the door in open position (Fig. 8), the movement of handle 25 will cause the gear and worm 23 and 24, respectively, to rotate, thereby causing the door to be closed. When the door is closed, and as the parts connected to the handle, or equivalent operating mechanism, continue to move, connection is established between chamber 13 and the vacuum pump (not shown) through ports 30 and 27, channel 26 and pipe 28. A suitable vacuum is thus established in chamber 13, and also within the container, for the reason that the cap is either brought to, or held loosely on, the mouth of the container during the first stages of the operation. As the movement of the handle, or operating mechanism proceeds, stem 36 is depressed by means of gear 33 engaging rack 35, thereby causing the stem, plunger and capping head to descend, and forcing the cap and container neck into the cap crimping and sealing member 46′ due to the resiliency of spring 38, which permits the plunger to retract at the proper moment. When the seal is completed, the motion of the operating mechanism is reversed. This causes the capping mechanism to be elevated and plunger 37 and head 39 to again assume their normal position. The rotation of the valve also causes the vacuum port to be shut and the release port to be opened in successive order, thus releasing the vacuum. After the seal is broken, the door is opened. The sealed container may be removed, a new one put into place and the operation repeated.

From the disclosure thus far given it is apparent that the entire operation is continuous and proceeds without interruption or loss of time or material. The apparatus is moreover very simple, and it will not readily get out of order, and can be easily operated.

What I claim, therefore, as new and useful, of my own invention, and desire to secure by Letters Patent, is:

A vacuum sealing apparatus comprising a vacuumizing chamber for receiving a container, a door mounted to swing for opening and closing said chamber, an arm for swinging said door, friction members engaging said arm for moving the same, a head for said chamber, a reciprocable member in said head for engaging and sealing a cover, an operating member in said head for swinging the door arm and for moving the reciprocable member to seal the container and for controlling the vacuumization.

In testimony whereof I have hereunto set my hand on this 27th day of September, A. D. 1922.

NEILS P. BACH.