Jan. 7, 1936. F. G. FOSS 2,026,523

APPARATUS FOR PACKING

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Fig. 1

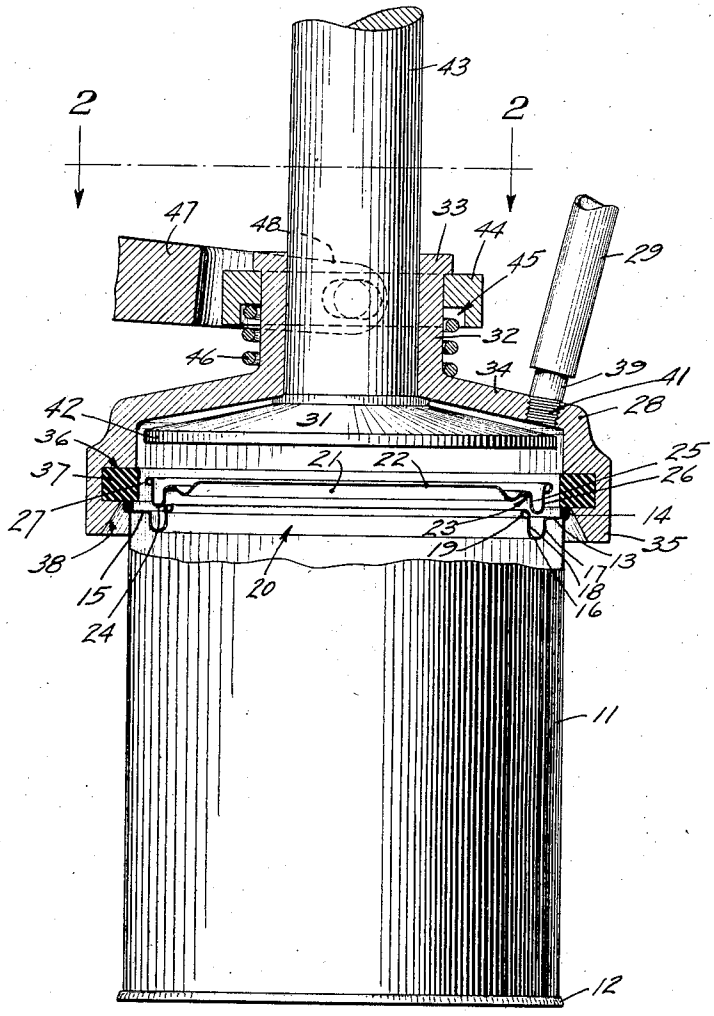
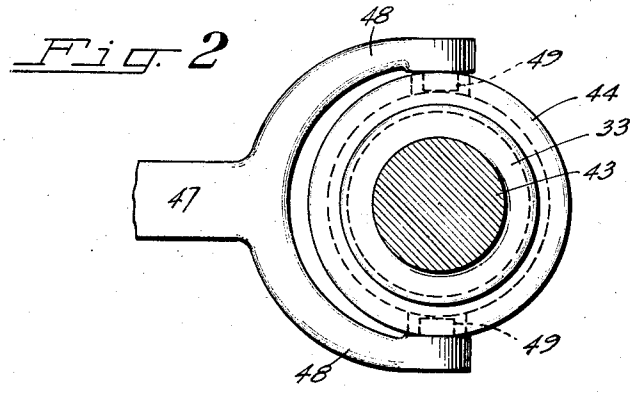


Fig. 2



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APPARATUS FOR PACKING

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2 Claims. (Cl. 226—82)

This invention relates in general to the art of packing paints, stains, and similar products and more particularly to a novel and improved method of packing paints under vacuum in containers of the friction top variety and to apparatus for carrying out the method.

A large percentage of the various kinds of paints are packed with oil and thinners in friction top containers, which are readily closed by means of simple pressure closing mechanism and are easily opened and reclosed.

Containers of this type cannot, however, be filled to capacity with paint, oil and thinners because of a certain amount of head space which must be left at the top. This head space is required because, under the ordinary methods of filling friction top paint containers, air entrapped between the top level of the paint and the friction closure or plug will cause an internal pressure, especially under temperature changes, greater than the outside atmospheric pressure, and this internal pressure is sufficient to force out some of the compressed air between the friction walls of the friction ring and friction plug, carrying with it oil and thinners. Once this flow of oil and thinners is started, it will continue by capillary action, and considerable oil and thinners are sometimes lost between the time the containers are filled and the time they reach the ultimate consumer.

In some cases, it also happens that the friction closure is entirely blown off and some or all of the contents are lost in shipment and other adjacent articles of shipment are damaged.

When a substantial head space of air remains in the filled paint container, as is necessary under present methods of packing, there is also a chemical reaction taking place between the oxygen of the entrapped air and the paint which results in the paint acquiring a layer of skin which is a total loss because not usable, besides interfering with smooth painting.

The principal object of my invention is the provision of a simple, inexpensive method and apparatus for vacuumizing filled paint containers to reduce internal pressure to a minimum under the most trying shipping, storing and temperature conditions and to substantially prevent the escape of the contents through the container closure; to substantially prevent oxidation; and to materially decrease the amount of head space, enabling the paint packer to utilize substantially the full capacity of the container.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is an elevational view showing a friction top container of the well known double tight variety and a simple vacuumizing and pressure closing mechanism for carrying out my improved method of vacuumizing and closing. This illustration is merely a preferred and simplified embodiment of my invention. Parts of the container and vacuumizing and closing mechanism are shown in cross section and other parts are broken away to more clearly and simply illustrate details of construction.

Fig. 2 is a top plan view, partly in cross section, taken along the line 2—2 of Fig. 1.

The friction top container comprises a cylindrical body 11, having a bottom end 12 double seamed or otherwise permanently secured thereto. A friction ring or annulus 13 is secured to the body 11 by means of a double seam 14. The ring 13 has a horizontal annular panel 15, a substantially U-shaped channel 16, providing annular friction walls 17 and 18, the latter terminating into an annular hollow head or curl 19, defining a filling opening 20.

A friction closure or plug 21 is adapted to frictionally engage the friction ring 13 and close the filling opening 20. The plug 21 comprises a raised central panel 22, an inner annular groove 23 and a U-shaped annular channel 24, providing friction walls 25 and 26 corresponding with the friction walls 18 and 17 respectively and adapted to make friction tight engagement with them. The outer friction wall 26 terminates into an outwardly curled hollow bead 27. The groove 23 is preferably provided with a gasket or lining compound.

The vacuumizing and closing mechanism or apparatus comprises generally a hollow annular head 28, a vacuum pipe 29 and a pressure closing chuck 31.

The head 28 is preferably cast and machined of one piece and consists of a perforated neck 32, having an annular top flange 33, a tapered annular shoulder 34, and a depending vertical wall or skirt 35, having an internal annular recess 36, rectangular in cross section, and adapted to receive a rubber ring or pad 37, also rectangular in cross section and adapted to engage the double seam 14. The vertical wall 35 is cut away internally adjacent its lower edge to provide an outwardly flaring wall 38 to facilitate centering of the container top.

The vacuum pipe 29, of which only an end is

shown, has a reduced end 39 which is threadedly connected through an opening 41 in the shoulder 34 of the hollow head 28. The other end of the pipe 29 (not shown) is connected with a suitable vacuum pump (not shown).

The pressure closing chuck 31 consists of a frusto-conical pressure plate 42, having a flat bottom surface of a diameter greater than the diameter of the friction plug 21, and adapted to engage the top surface of the plug 21, when the latter is to be pressed into the friction ring 13. Secured to the plate 42 or preferably integral therewith is a shaft or stem 43, circular in cross section and of a diameter accurately equal to the diameter of the central perforation of the neck 32, vertically movable therein, and making air tight contact therewith. The shaft 43 together with the pressure plate 42 are reciprocated vertically by any suitable and preferred mechanism not shown.

An annular sliding collar 44, having a recess 45, surrounds the circular neck 32 and is slidably movable thereon. A compression spring 46 also encircles the neck 32 and has its upper end seated in the recess 45 and its lower end supported by the shoulder 34. A bifurcated lever 47 has its prongs 48 connected with the sliding collar 44 at opposite points of the collar by means of short pins 49 taking transversely through the prongs and collar. A suitable lowering and lifting mechanism (not shown) connected with the other end of the lever 47 is adapted to lower and lift the lever 47, together with the head 28 when required.

When the container 11 has been filled with paint to the desired height, the friction plug 21 is loosely positioned over the friction ring 13 so that the U-shaped channel 24 of the plug rests lightly in the U-shaped channel 16 of the friction ring 13.

The hollow head 28 is then lowered over the container and plug by means of the lever 47, against pressure of the spring 46, so that the rubber ring 37 comes to lie over and engages the double seam 14 of the container. The pressure exerted by the lever 47 upon the collar 44, spring 46 and head 28 is sufficient to seat the rubber ring 37 tightly against the top of the container body to make an air tight connection therewith.

The vacuum pump is then set in motion and the air within the head is exhausted through the pipe 29. The suction created in the hollow head 28 is sufficient to raise or temporarily suspend the plug 21 over the container, as shown in Fig. 1 to permit exhaustion of the air in the head space in the container. Pressure is then applied to the shaft 43 by suitable pressure mechanism (not shown) and the plug 21 is pressed home into the friction ring 13, by pressure plate 42.

Owing to the tight frictional engagement between the walls 26 and 25 of the plug 21 and the walls 17 and 18 of the friction ring 13 and also owing to the compound lined groove 23 tightly engaging the bead 19 of the friction plug 13, a substantially hermetic seal is effected which will preserve the vacuum created in the container.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction, proportion and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a vacuumizing and closing machine for filled friction top containers, the combination of concentric heads or chucks, the outer head being hollow and annular and having means for engaging the top edge of the container body and forming a vacuum chamber in conjunction therewith, said outer head having a perforated neck and shaft bearing, a sliding collar engaging said neck, a compression spring encircling said neck and interposed between said collar and the top of the outer head, means for reciprocating said collar to lift the head or to apply the same to the container edge with a yielding sealing pressure, a pressure shaft slidably mounted in said bearing and tightly fitting within said neck and fixed to the inner head, and an exhaust pipe for withdrawing air from within the outer head, said shaft being movable to actuate the inner head to apply a sealing friction cover to the exhausted container body.

2. In a vacuumizing and closing machine for filled friction top containers, the combination of concentric heads or chucks, the outer head being hollow and annular and having means for engaging the top edge of the container body and forming a vacuum chamber in conjunction therewith, said outer head having a perforated neck and shaft bearing, means for engaging said neck, means for reciprocating said engaging means to lift the head or to apply the same to the container edge with a sealing pressure, a pressure shaft slidably mounted in said bearing and tightly fitting within said neck and fixed to the inner head, and an exhaust pipe for withdrawing air from within the outer head, said shaft being movable to actuate the inner head to apply a sealing friction cover to the exhausted container body.

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