

Oct. 29, 1935.

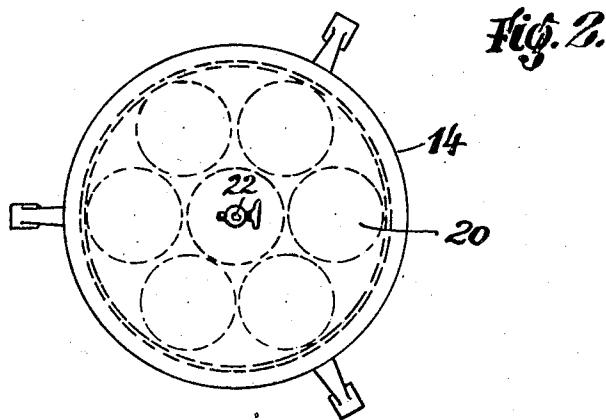
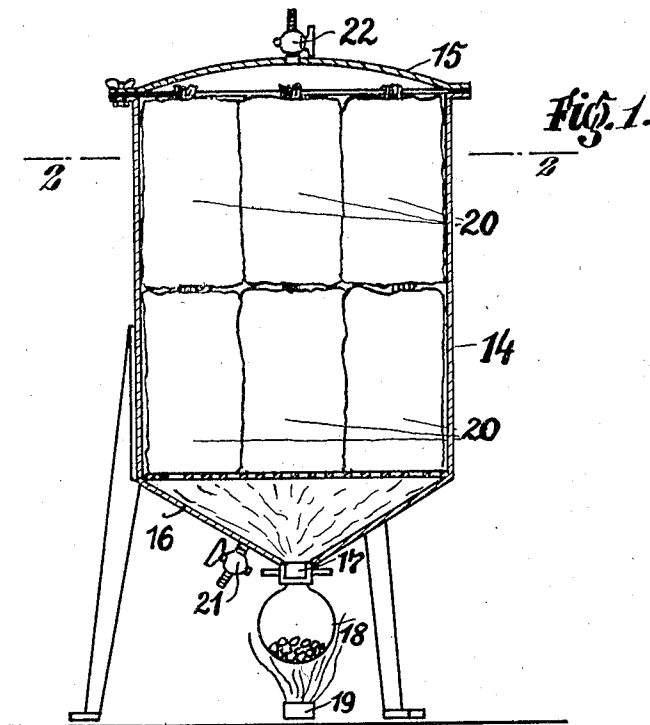
A. BÖHMER

2,018,992

SEALING OF VESSELS

Filed April 14, 1933

2 Sheets-Sheet 1



Inventor
Adam Böhmer
By Sommers & Young
Attys.

Oct. 29, 1935.

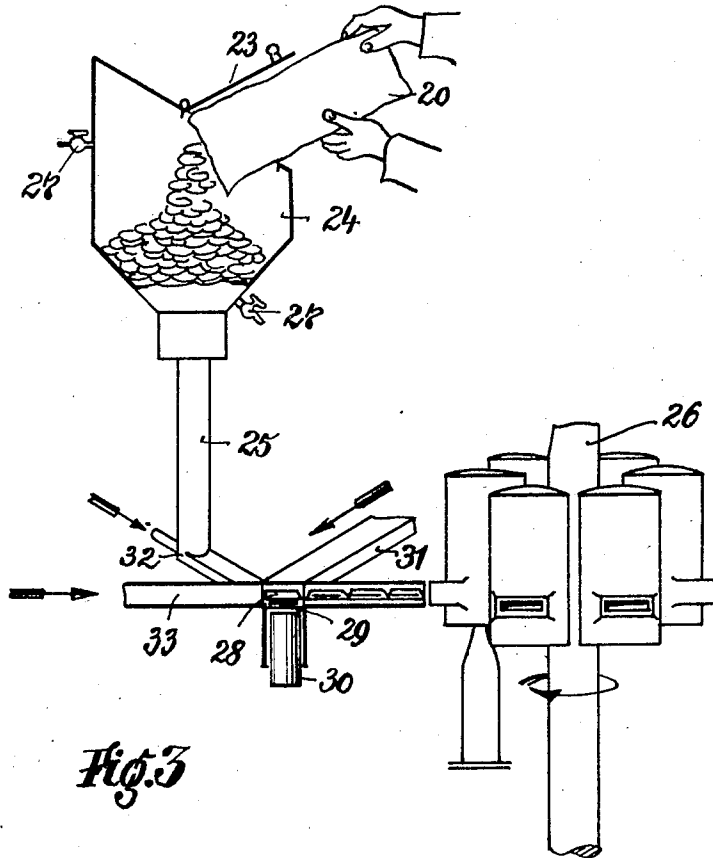
A. BÖHMER

2,018,992

SEALING OF VESSELS

Filed April 14, 1933

2 Sheets-Sheet 2



Inventor
Adam Böhmer
By Summers & Young
Attys.

UNITED STATES PATENT OFFICE

2,018,992

SEALING OF VESSELS

Adam Böhmer, Bad Kreuznach, Germany, assignor to Seitz-Werke G. m. b. H., Bad Kreuznach, Germany

Application April 14, 1933, Serial No. 666,207
In Germany May 17, 1932

2 Claims. (Cl. 226—88.1)

The present invention relates to a method and apparatus for sterilizing the closures of vessels and particularly for sterilizing crown corks and capsule closures for bottles.

5 In the known methods for filling and sealing vessels and more particularly bottles in a germ-free manner, the crown corks constituting the closure are normally sterilized in a supply drum and they then pass by way of a sorting device into a trough through which they are fed in succession to the closure position of the bottle closing machine.

10 In this method however there is the risk that in the said trough the corks may come into contact with the air and take up germs from the outside so that on closing the bottles these germs pass into the liquid contained therein.

15 In order to overcome this disadvantage it has already been proposed to effect a thorough further sterilization of the crown corks in the trough through which they are fed to closure position after they have been sterilized in the supply drum and have traversed the sorting device, for which purpose a sterilizing liquid is 20 sprayed through nozzles on to the inner surface of the crown cork which contains the cork disc which ultimately abuts against the mouth of the bottle.

25 However this method still has the disadvantage that due to the preliminary sterilization of the corks in the supply container by means of liquid sterilizing media, the metal caps in which the cork discs are accommodated are readily attacked by the sterilizing medium so that they rust and become unsightly, particularly in the case of sheet iron caps. If however the said preliminary sterilization of the corks in the supply container were dispensed with, then in continuous operation a complete sterilization could not invariably 30 be expected merely by sterilizing the closures by spraying the inside of the corks, because the time of operation is too short.

35 In order to overcome this disadvantage, according to the method of sterilization in accordance with the invention the corks in the supply container are treated with gaseous or vaporous sterilizing media and not with liquids.

40 In order that moreover the sterilized corks should not be reinfected with germs on the path to the closure machine, according to the invention all parts of the device which come into contact with the corks are shut off from the outer air and in addition a current of germicide gas or sterile air is continuously passed through the 45 supply container as well as through the sorting

drum and the channels through which the corks are passed. In this way corrosion of the metal caps can be prevented as far as possible and complete sterilization and maintenance of the sterile condition of the crown corks until they 5 are positioned on the vessels which have been filled in a germ-free manner can be attained.

Now in order to obtain a complete sterilization solely by means of the gaseous or vaporous disinfecting media, according to an embodiment of 10 the sterilizing method in accordance with the invention, it is possible to proceed in such way that the sterilization of the closure is carried through outside and prior to introduction into the supply container for the closures. In this way the 15 germicide means may be caused to act on the closures for any desired length of time, so that in every case the requisite sterilization is obtained.

Further in order to drive off the sterilizing 20 medium from the corks after the sterilization, according to the invention the closures can be treated with sterile air in the supply container so that there is then no longer any risk of small quantities of the sterilizing medium passing into 25 the filled vessels which are to be closed.

In order however to prevent a new infection of the closures occurring on the path from the supply container to the closure machine, the 30 closures which have been rendered free from germs must be directed along the said path through spaces which can be maintained free from germs by the introduction of sterile air.

In the drawing an embodiment of the arrangement by means of which the closures can be 35 sterilized and fed to the closure machine in a manner free from germs is shown by way of example, and referring thereto:

40 Figs. 1-3 show an embodiment of the sterilizing device by means of which all kinds of closures such as natural corks, capsule closures, e. g., crown corks or aluminium cap closures or cardboard discs and the like can be sterilized and in particular,

45 Fig. 1 shows a partial section through the sterilizing device,

Fig. 2 shows a section through the sterilizing device on the line 2-2 of Fig. 1.

50 Fig. 3 shows a partial section through the supply container of the closures, the closure machine and the arrangement by means of which the cork discs are introduced into the shaped caps.

In carrying out the sterilization, the closures enclosed in packings of any suitable porous material are placed in a larger container of sheet 55

metal, wood or the like which is adapted to be closed and there they are subjected to the action of the vapours of a sterilizing medium, such as formaldehyde vapours. Sacks of nettle, linen or cotton have been found to be very suitable as packings for receiving the closures. The closures, for example crown corks, are introduced into the sacks in numbers from 2000-3000, the sacks closed in the normal way and then 20 to 30 sacks are stacked together in the sterilizing container in which the closures are subjected to the action of the sterilizing medium.

The container for sterilizing the closures consists of a cylindrical sheath 14, of sheet iron for example, with a cover 15 and a conical base 16 at the lower connection 17 of which is provided a retort 18 for receiving the disinfectant medium which is to be evaporated for example the paraformaldehyde. The contents of the retort 18 are vaporized by means of a spirit lamp 19 or the like positioned beneath it so that the formaldehyde vapours rise in the sterilizing chamber and penetrate the sacks 20 which are stacked therein and which contain the closures.

After about 12-24 hours the closures are completely sterilized. Thereupon sterile air is blown into the sterilizing container through a tap 21 in order to drive off the formaldehyde vapours which escape through the tap 22.

The closures sterilized in the manner specified are then transferred from the sacks into the supply container 24 which is adapted to be closed by a cover 23 and from which they are then fed through the conduit 25 to the closure machine 26.

In order to keep the corks in the supply container 24 in the sterile condition, sterile air or another sterile gas is passed through the container through the tap 27 on introducing the closures so that no detrimental germs can penetrate into the container from the outside. After the closures have been introduced into the supply container the latter is closed in a germ-tight manner by means of the cover 23.

The method described above can also be used in machines in which the closures 28 are stamped continuously from a metal band of aluminium for example and the cork discs 29 serving as sealing discs are automatically inserted into the shaped closure caps in known manner by a separate device 30. In this case only the cork discs are sterilized in the sterilizer 14 in the manner specified above and then are brought into the supply container 24 from which they are finally fed through the conduit 25 to the caps 28 coming through the feed trough 31.

In order to prevent the corks or other closures becoming infected with germs on the path from the supply container to the closure machine, the channels through which the closures pass on their path to the closure position e. g., the channels 25, 32 and 33, are traversed by sterile air or another sterile gas. At the same time the sterile air can also be used for feeding the closures to the closure machine.

I claim:—

1. A method for sterilizing closures of vessels, comprising first sterilizing the closures in porous packings such as sacks, the said packings being subjected to the action of gaseous disinfectants in a closed container whereby the closures are rendered free from germs, transferring the closures from the packings into a supply container of the closure machine, maintaining said supply container free from germs by introducing a sterile gas, and feeding the closures from the supply container to the closure machine through a germ-free conduit.

2. A method as claimed in claim 1, wherein the closures which are rendered free from germs are subjected to a stream of sterile gas on their path from the supply container to the closure position for the purpose of maintaining the freedom from germs.

ADAM BÖHMER.