Oct. 6, 1936. W. L. KAUFFMAN. 2D 2,056,466

EXPRESSOR

Filed Dec. 15, 1930 4 Sheets-Sheet 1

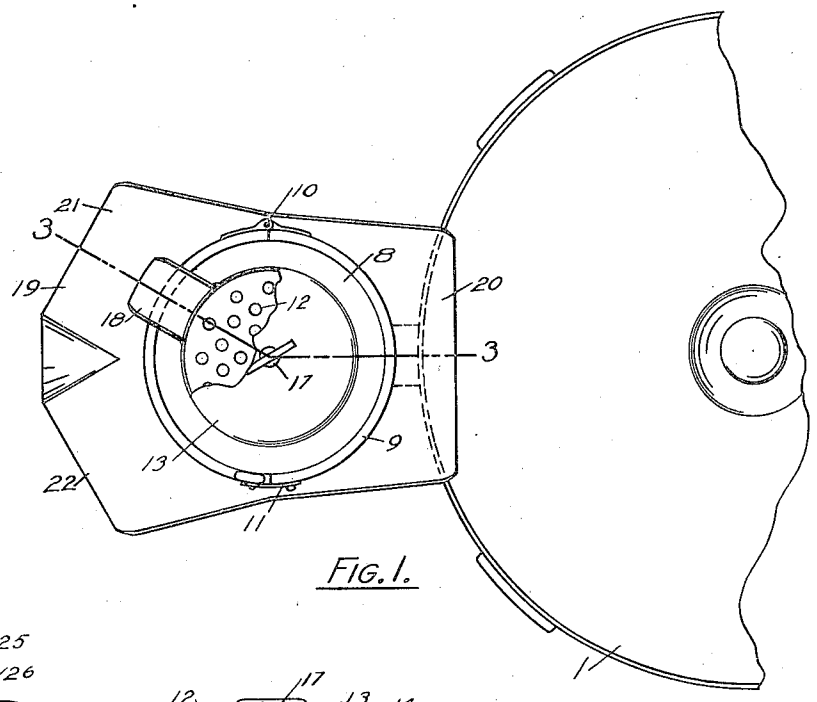


FIG. 1.

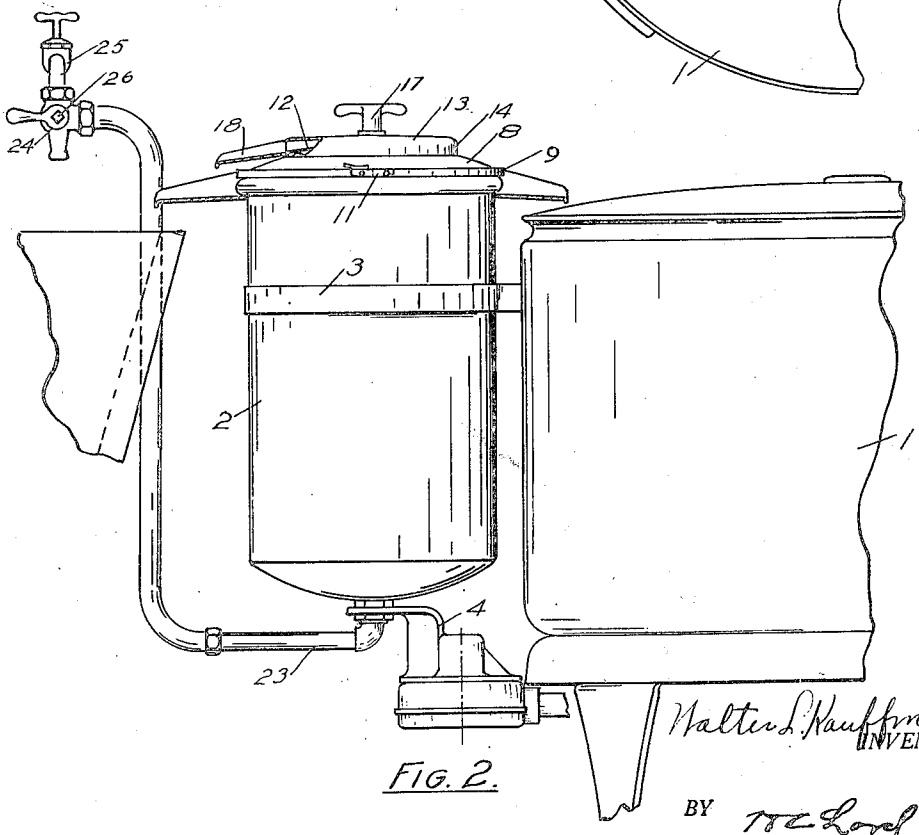


FIG. 2.

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EXPRESSOR

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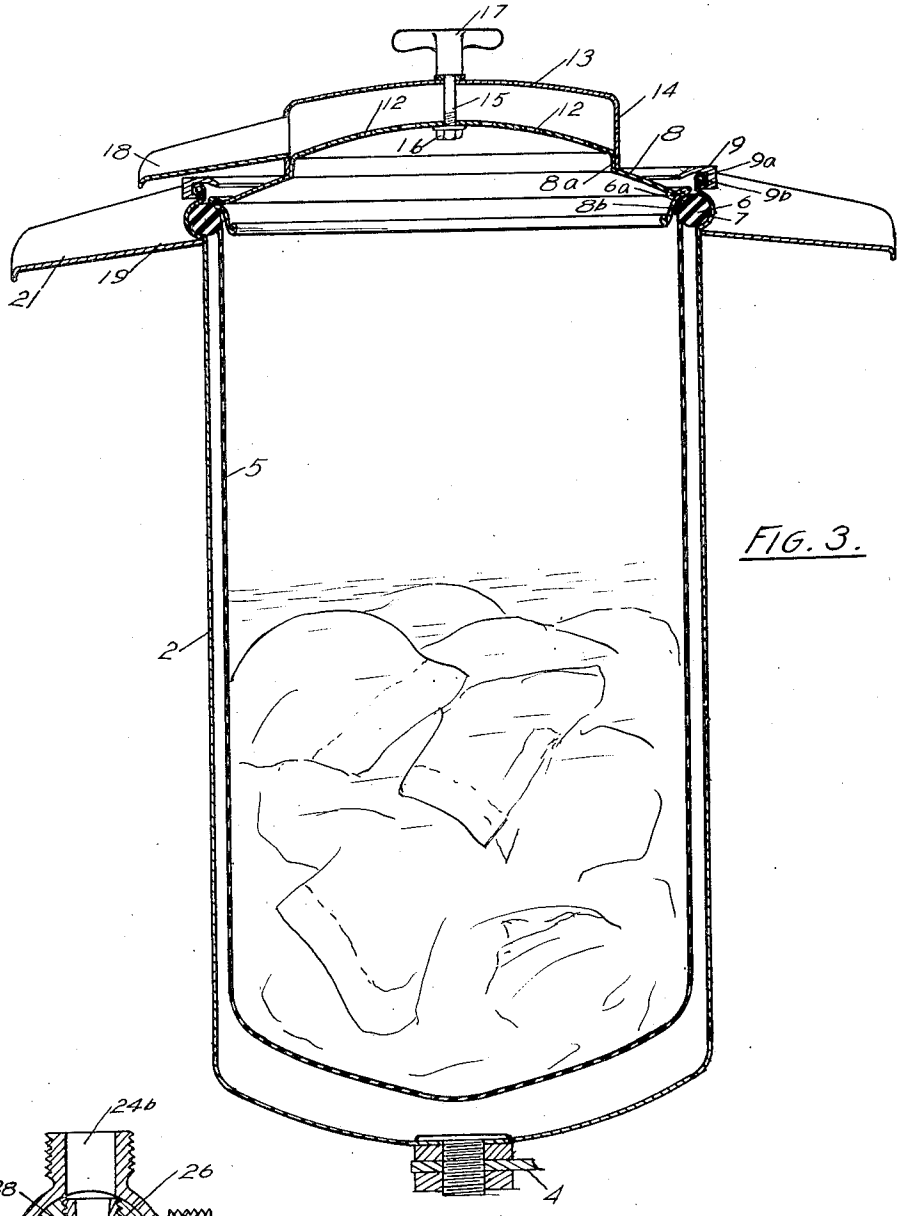


FIG. 3.

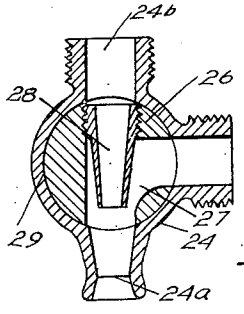


FIG. 2a.

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EXPRESSOR

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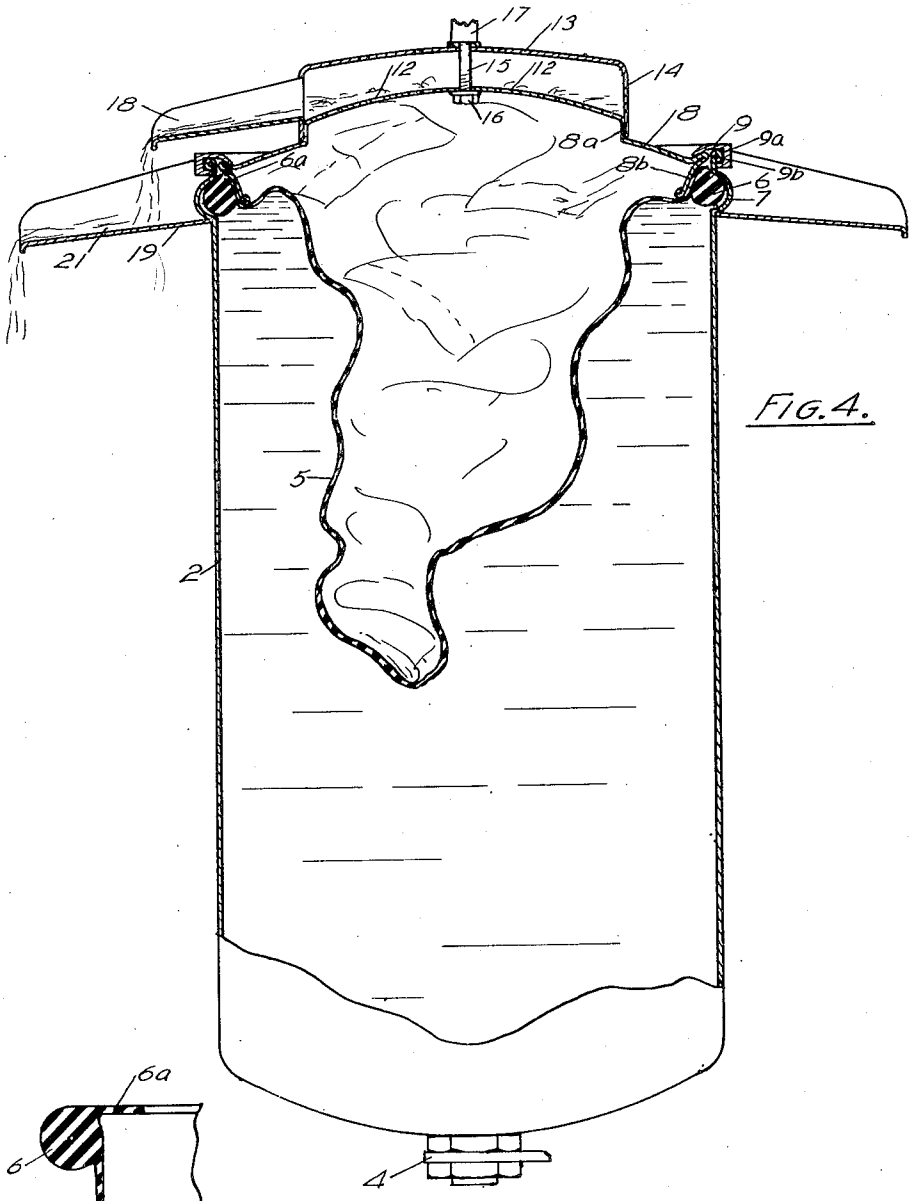


FIG. 4.

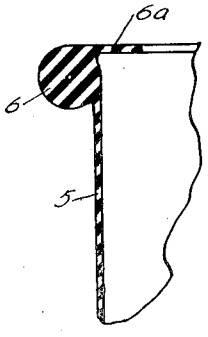


FIG. 5.

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EXPRESSOR

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FIG. 6.

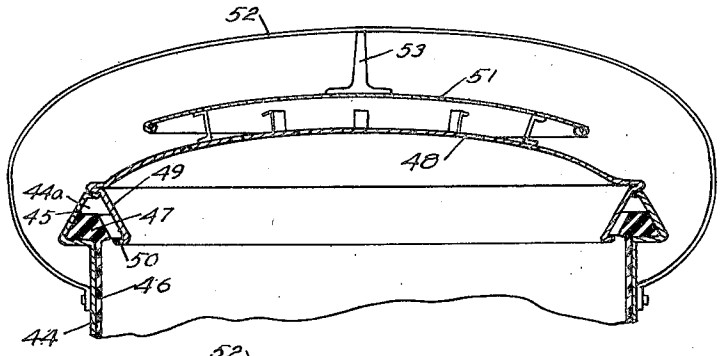
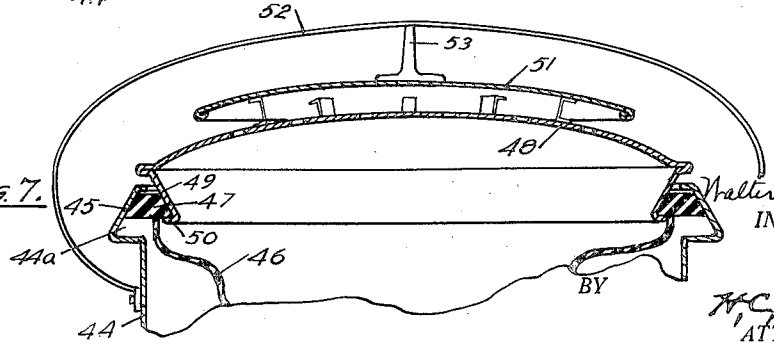


FIG. 7.



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Patented Oct. 6, 1936 2,056,466

UNITED STATES PATENT OFFICE

2,056,466

EXPRESSOR

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Application December 15, 1930, Serial No. 502,424

22 Claims. (Cl. 100—50)

This invention is directed to expressors, particularly such expressors as are designed to express water from clothes. With such expressors a flexible wall, or bag, has been proposed and this, operating with a receptacle, receives pressure from a pressure-exerting fluid, such as water from a spigot and exerts this pressure on the clothes, thus forcing the water from them and drying them. One of the problems of such expressors is the sealing of the flexible wall with relation to its seat and the present invention is designed to simplify this feature. Another problem involved in this structure is the manner of discharging the expressed liquid so that it may be readily directed to different directions. Another problem involved in this structure is the manner of securing and forming the cover and the present invention is directed to improvements as to this. Another problem involved in this structure is the supply and discharge of the pressure liquid from the receptacle in a convenient manner and the present invention is directed to improving this feature. Other features of the invention will appear from the specification and claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a plan view of the device.

Fig. 2 a side elevation of the same.

Fig. 2*a* a section of the supply and discharge controlling means.

Fig. 3 a sectional view of one half of the receptacle, in section, showing the bag and parts prior to the delivery of pressure fluid.

Fig. 4 a similar view showing a half of the receptacle in section indicating the position assumed after pressure is delivered to the bag.

Fig. 5 a sectional view of the peripheral rib on the flexible wall, or bag.

Figs. 6 and 7 show sections of alternative constructions in released and locked positions respectively.

1 marks a wash tub, 2 an expressor receptacle, 3 a ring around the receptacle secured to the tub, and 4 a bracket also secured to the tub structure and securing the receptacle. A flexible wall 5, preferably in the form of a bag, is suspended in the receptacle and receives the clothes from which moisture is to be expressed. This is provided with an annular rib 6 which is designed to initially rest in an annular recess 7 along the upper edge of the receptacle. The receptacle has a cover 8. This cover is secured with the walls of the receptacle by a locking ring 9. This locking ring has an annular groove 9*a* which engages an annular lip 9*b* around the upper edge of the receptacle wall. The ring is split having a hinge 10 at one side and a latch 11 at the opposite side.

The central part of the cover is perforated at 12 to permit the discharge of the expressed liquid. A collector 13, in the form of a dome, has vertical surrounding walls 14 which engage an annular shoulder 8*a* on the cover. The collector is secured and clamped in place by a screw 15 which extends through a nut 16. The screw is operated by a wing nut 17 which wing nut forms a handle for the cover. A spout 18 extends from the collector and delivers the discharge from the expressor. This spout preferably discharges to a fixed drain board 19 which surrounds the upper part of the wall of the receptacle. This drain board has one spout discharge 20 comparatively wide leading to the tub and two branch discharge ways 21 and 22. The discharge spout 18 may be rotated so as to direct the discharge to any one of these drain ways depending on where it is desired to direct the final discharge of the wash water extruded from the clothes.

A supply pipe 23 leads to the receptacle. This is controlled by the following means: A valve and siphon body 24 is secured to the supply pipe 23. This body is secured to an ordinary house spigot 25. A valve plug 26 is arranged in the body. This has an angle way 27 and directs a discharge through the Venturi-shaped outlet 24*a*. The ejector action through the venturi is induced by a jet delivered through a way 28 in the cock opposite the Venturi opening when the cock is turned to discharge position. By turning the surface 29 of the valve plug over the inlet passage 24*b* the supply may be cut off.

The cover is provided with a complementary seat portion 8*b* which forms a beveled inner engaging surface, or seat surface for the rib. The rib is supplied with a lip 6*a* which initially engages the beveled surface 8*b*.

It will be understood that the rib 6 is normally of slightly greater circumference than the annular groove 7 so that there is a slight compression of this rib in placing it in the recess. This compression holds the rib in place initially in the operation of the device.

In operating the device, the clothes are placed in the bag 5, the cover set in place, the locking ring extended around the cover and secured by the latch. The discharge spout is adjusted to the right discharge way, if it is not already properly adjusted, and water under pressure is turned

into the bottom of the receptacle, thus delivering pressure against the bag. With the initial water pressure the liquid seeks an outlet back of the rib 6. There is also a slight tendency for a discharge of water past the lip 8b due to the initial compression of the clothes and the fact that the rib is slightly below the outlet openings in the top 12. With the initial pressure on the rib 6 it is rolled from the position shown in Fig. 3 to the position shown in Fig. 4 and this closes the annular clearance outlet slot, or opening, between the edge of the cover and the edge of the receptacle wall and this rib acting somewhat as a check valve is seated with greater pressure as the pressure of the operating fluid increases so that there is a sealing and seating of this peripheral rib automatically by the mere introduction of the pressure liquid.

The pressure liquid operating on the bag gradually compresses it and if this wall is of bag-shape this compression takes place largely in a radial direction. The liquid expressed is delivered through the perforated top 12 and finds a discharge from the spout 18. A slight interval is necessary to effect this discharge, apparently the capillary action of the water in the clothes resisting the expressing of the liquid.

While I have shown a manner of creating a preponderance of pressure by exerting a pressure above atmosphere at the outside of the bag, it will be understood that by reducing the pressure on the discharge side and utilizing atmospheric pressure on the bag that this difference of pressure in a measure may be accomplished in this manner. The sealing effect will be exactly the same, however this difference of pressure is created.

In the alternative construction shown in Figs. 6 and 7, the receptacle 44 has an annular recessed ring 44a around its upper edge. This ring has an interior inclined surface 45. A bag 46 is provided with a rib 47 at its upper edge. This rib has a beveled surface corresponding to the inclined surface 45 and is normally of slightly larger diameter than a recess in the ring 44a so that it springs through its resiliency into engagement with the beveled seat. A cover 48 has a downwardly extending lip 49. This lip has an inturned edge 50 which has a periphery which will just clear the inner edge of the rib 47. The lip 49 is slightly inclined in the opposite direction from that of the surface 45 and the rib 47 is slightly inclined on its inner surface to space it slightly from the lip 49 initially. The cover 48 has the usual perforations and when put in place rests initially on the upper edge of the ring 44a. A collector 51 is secured on the cover and operates in any well known manner.

In Fig. 6 the parts are shown with the cover in place prior to the introduction of pressure below the bag. Upon the introduction of pressure the initial action of this pressure is to force the rib 47 upwardly and this acting on the taper 45 immediately moves into engagement with the lip 49, the inward movement of the rib 45 being sufficient to bring the shoulder at the bottom of the inner periphery of the rib over the hook 50 so that the rib is engaged by this hook as the cover lifts through the indirect pressure exerted by the clothes. It will be understood that the water pressure acting at the outside of the rib gives a slight preliminary action which forms a positive lock. Thus the cover is not only locked by the rib acting under the pressure of the pressure fluid, or water, but the rib also completely seals the receptacle as against the pressure water and the bag with relation to the cover. Thus the whole operation is entirely automatic. This device will operate on any differential of pressure within the bag and the receptacle at the outside of the bag. As shown, preferably this is accomplished by the introduction of water under the bag, as indicated in Fig. 2.

In order that the cover may resist any initial tendency to lift, I provide a yieldingly resilient bail 52 which is hinged on the receptacle and swung over a post 53 extending upwardly from the cover. It will be noted that the locking ring shown in Figs. 2 and 3 is tapered with an inclination tending to draw the ring toward closed position. Thus any simple latch may be used for closing it.

What I claim as new is:—

1. In an expressor, the combination of a receptacle having a cover; a bag including a flexible pressure wall having annular engagement with the receptacle; means delivering fluid under pressure to the receptacle; and a rubber ring on the bag exerting sealing pressure between the wall and receptacle and cover under the fluid pressure in the receptacle.

2. In an expressor, the combination of a receptacle including a cover, the receptacle having an annular recessed seat and the cover having an annular seat opposed to the recessed seat; a flexible wall in the receptacle having an annular rib at its periphery; said annular rib being resilient and expanding into said recessed seat initially and under action of a fluid pressure, having its seating pressure on the seat of the cover and the seat on the receptacle increased as the pressure in the receptacle increases thereby sealing the wall relatively to the receptacle.

3. In an expressor, the combination of a receptacle including a cover, the receptacle having an annular recessed seat and the cover having an annular seat opposed to the recessed seat; a flexible wall in the receptacle having an annular rib at its periphery; said annular rib being resilient and expanding into said recessed seat initially and under action of a fluid pressure, having its seating pressure on the seat of the cover and the seat on the receptacle increased as the pressure in the receptacle increases thereby sealing the wall relatively to the receptacle, and said rib having an annular lip initially seating on the seat of the cover.

4. In an expressor, the combination of a receptacle including a cover, said receptacle having an annular recessed seat and the cover having an opposing seat; and a flexible bag having a locking means at its upper end including a resilient locking ring between and axially opposing said seats and locking the cover on the receptacle through its action with relation to said seats when fluid pressure is applied to the bag.

5. In an expressor, the combination of a receptacle including a cover, said receptacle having an annular recessed seat and the cover having an opposing seat; and a flexible pressure wall having a locking and sealing means at its upper end including a resilient locking ring opposing said seats and sealing and locking the receptacle on the cover through its action with relation to said seats when fluid pressure is applied to the bag.

6. In an expressor, the combination of a receptacle including a cover, said receptacle having an annular recessed seat and the cover an op-

posing seat; means for supplying fluid under pressure to the receptacle; and a flexible pressure bag, having at its upper edge, locking means; said means including a locking ring positioned between said seats and movable with one seat for movement, under the action of the pressure fluid, into locking and sealing engagement with the other of said seats.

7. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing locking seats; a flexible wall in the receptacle having annular engagement with the receptacle; means for supplying fluid under pressure to the receptacle; and a resilient sealing and locking ring forming an annular rib on the flexible wall arranged between the seats on the cover and the receptacle, and automatically locking the cover on the receptacle, through its distortion and engagement with said seats, through the action of fluid pressure, said ring releasing the cover when relieved of distorting pressure.

8. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing locking seats; a flexible wall in the receptacle having annular engagement with the receptacle; means for supplying fluid under pressure to the receptacle; and a resilient sealing and locking ring forming an annular rib on the flexible wall arranged between the seats on the cover and the receptacle, and automatically locking and sealing the cover on the receptacle, through its distortion and engagement with said seats, through the action of fluid pressure, said ring releasing the cover when relieved of distorting pressure.

9. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing locking seats, the locking seat on the receptacle being tapered and the locking seat on the cover having an outwardly extending shoulder at its lower edge; and a flexible bag in the receptacle having at its upper edge means including a resilient sealing and locking ring arranged between said seats on the cover and the receptacle, and moving, through its distortion on the tapered seat on the receptacle into locking position over the shoulder, under the action of pressure in the receptacle, thereby locking the cover on the receptacle, said ring permitting the closing of the cover when relieved of pressure.

10. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing sealing and locking seats, the locking seat on the receptacle being tapered and the locking seat on the cover having an outwardly extending shoulder at its lower edge; and a flexible bag in the receptacle having at its upper edge means including a resilient sealing and locking ring arranged between said seats on the cover and the receptacle and moving through its distortion on the tapered seat on the receptacle, into locking position over the shoulder, under the action of pressure in the receptacle, thereby locking and sealing the cover on the receptacle, said ring permitting the closing of the cover when relieved of pressure.

11. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing locking seats, the locking seat on the receptacle being tapered and the locking seat on the cover having an outwardly extending shoulder at its lower edge; a flexible wall in the receptacle having annular engagement with the receptacle; and a resilient sealing and locking ring in the form of a rib on the wall, arranged between said seats on the cover and the receptacle, and moving, through its distortion on the tapered seat on the receptacle, into locking position over the shoulder under the action of pressure in the receptacle thereby locking the cover on the receptacle, said ring permitting the closing of the cover when relieved of pressure.

12. In an expressor, the combination of a receptacle including a cover, said cover and receptacle having opposing sealing and locking seats, the locking seat on the receptacle being tapered and the locking seat on the cover having an outwardly extending shoulder at its lower edge; a flexible wall in the receptacle having annular engagement with the receptacle; and a resilient sealing and locking ring in the form of a rib on the edge of the wall and arranged between said seats on the cover and the receptacle and moving, through its distortion on the tapered seat on the receptacle, into locking position over the shoulder under the action of pressure in the receptacle thereby locking the cover on the receptacle, said ring having a sealing inner surface engaging the cover and sealing the cover on the receptacle, and said ring permitting the closing of the cover when relieved of pressure.

13. In an expressor, the combination of a receptacle; a flexible pressure wall having annular seating engagement with the receptacle; a perforated cover for the receptacle having an annular seating wall; a collector having an annular seat engaging the seat on the wall of the cover; and a spout leading from the collector.

14. In an expressor, the combination of a receptacle; an expressing wall having an annular seat closing with the receptacle; a perforated cover for the receptacle; a collector seating on the cover and rotatively movable thereon; a spout leading from the collector; and a screw for seating the collector.

15. In an expressor, the combination of a receptacle; an expressing wall having an annular seat closing with the receptacle; a perforated cover for the receptacle; a collector seating on the cover and rotatively movable thereon; a spout leading from the collector; and a drain plate having ways receiving and directing the discharge from the spout.

16. In an expressor, the combination of a receptacle; a flexible pressure wall having annular engagement with the receptacle; and a perforated cover including a collector having a spout thereon and rotatable to different positions relatively to the receptacle.

17. In an expressor, the combination of a receptacle; a flexible pressure wall having annular engagement with the receptacle; a perforated cover including a collector having a spout thereon rotatable to different positions relatively to the receptacle; and a drain plate having ways receiving and directing the discharge from the spout.

18. In an expressor, the combination of a receptacle having a cover; a flexible pressure wall having a peripheral rib; means delivering fluid pressure to the receptacle; a seat on said receptacle; and a seat on said cover, said rib being exposed to fluid pressure and fluid-pressed into sealing engagement with said seats when fluid under pressure is delivered into said receptacle.

19. In an expressor, the combination of a receptacle having a cover; a flexible pressure wall

having a peripheral rib; means delivering fluid pressure to the receptacle; a seat on said receptacle; and a seat on said cover, said rib being resilient and expansible and expanding through its resiliency into initial sealing position on the receptacle seat and completing the seal on the seats through pressure of the fluid in the receptacle.

20. In an expressor, the combination of a receptacle having a cover; a flexible pressure wall having a peripheral rib; means delivering fluid pressure to the receptacle; a seat on said receptacle; and a seat on said cover, the joint between the cover and the receptacle being between said seats, said rib being exposed to fluid pressure and fluid-pressed into sealing engagement with said seats when fluid under pressure is delivered into said receptacle.

21. In a device of the class described, the combination of an open top receptacle; a flexible open top bag mounted in the receptacle and having an annular rib on its upper edge; a rigid sealing member adjacent to the rib, said member and receptacle forming annular seating surfaces for the rib at each side of the rib, and leaving a substantial portion of the rib opposite the seating surfaces exposed to liquid pressure, whereby fluid pressure between the receptacle and the bag acting on the rib will force the rib bodily against the sealing surfaces to form a fluid tight seal, and means for holding the sealing member against upward movement.

22. In an expressor, the combination of a receptacle having a cover; means delivering fluid under pressure to said receptacle, and a flexible bag having sealing means at its upper edge, including a ring of rubber of greater cross-section than the thickness of the wall of the lower portion of the bag, said sealing means seating on the receptacle and cover and sealing the bag and the receptacle at the cover against fluid in the receptacle, said ring having a substantial portion exposed to fluid pressure opposite its sealing surfaces and having its sealing engagement increased as the pressure of the liquid in the receptacle increases.

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