

Aug. 3, 1954

T. S. WATSON
COMPRESSION EXTRACTOR

2,685,189

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2 Sheets-Sheet 1

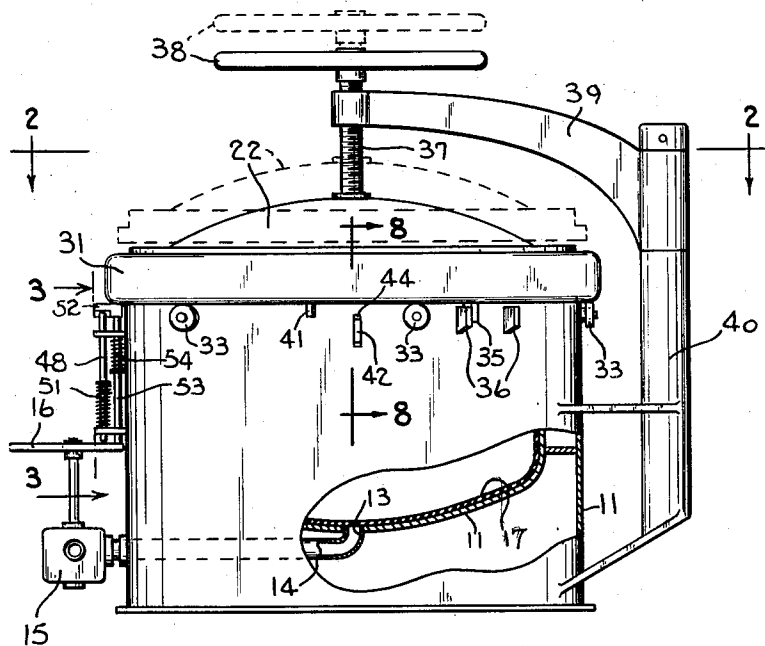


FIG. 1

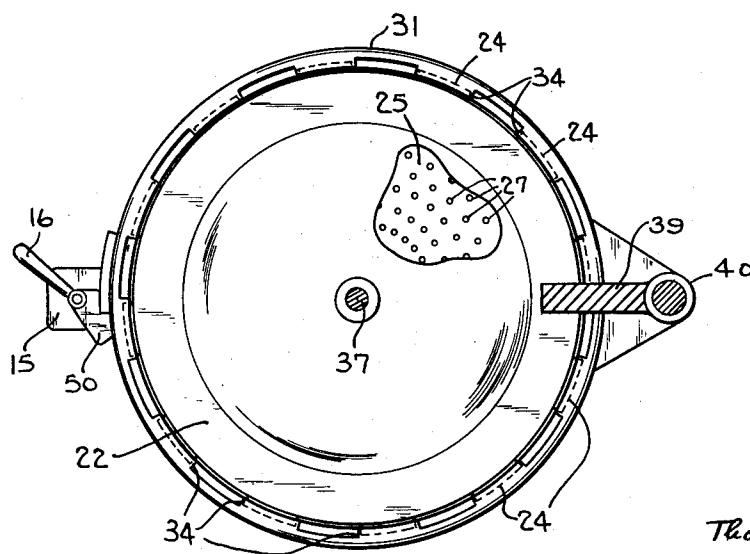


FIG. 2

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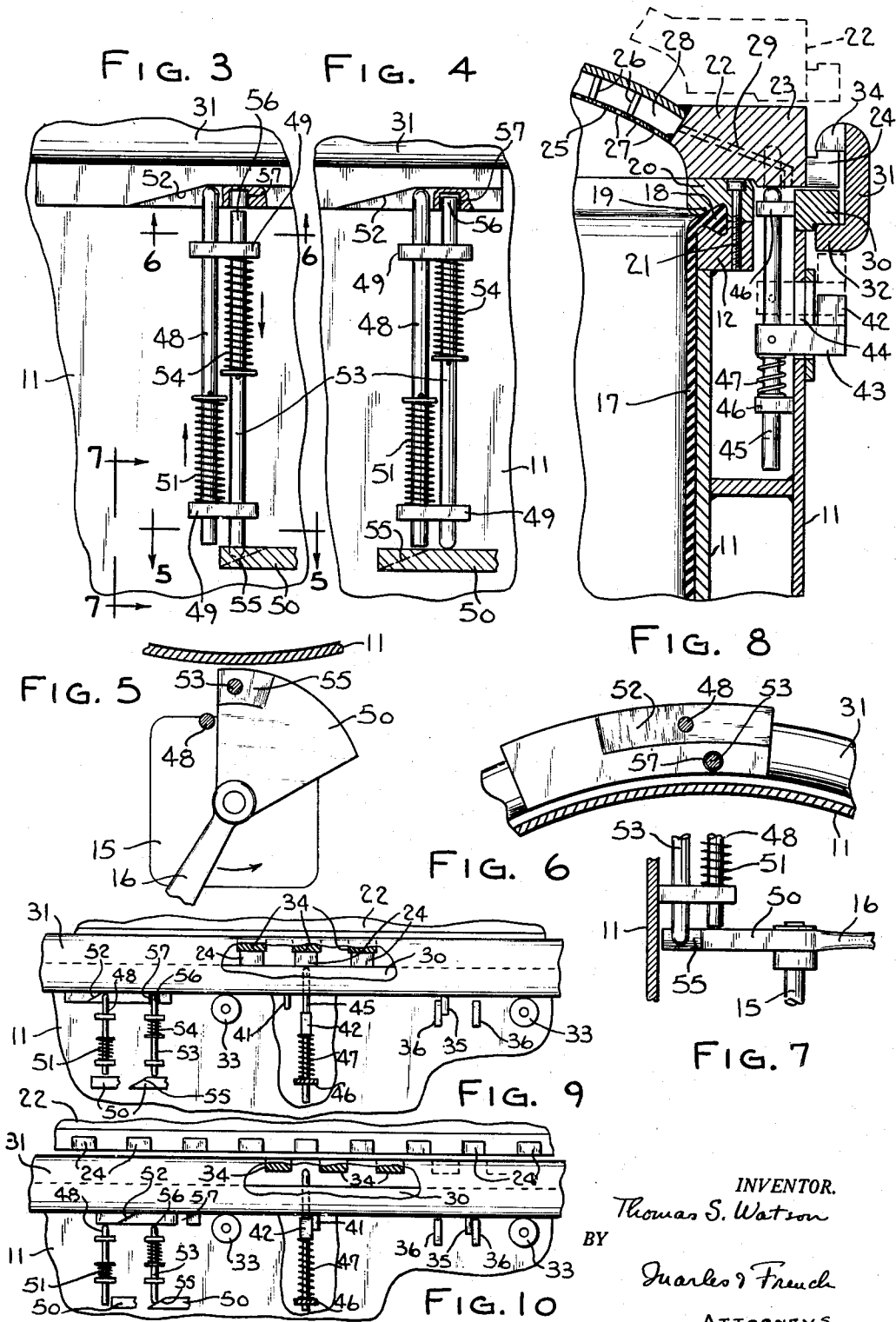
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COMPRESSION EXTRACTOR

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5 Claims. (Cl. 68-242)

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The invention relates to compression extractors or driers and more particularly to a drier of the hydraulic pressure flexible bag extractor type.

In flexible bag type extractors, the bag is mounted in a casing provided with a removable cover giving access to the bag which is mounted in the casing and receives the material. When pressure is applied to the loaded bag, the bag and its contents are forced upwardly and the material, such as clothes, is squeezed between the bag and the cover to extract the water therefrom. During the extracting operation the cover is locked in place, and if the hydraulic pressure is applied before the cover is locked, the bag, an expensive part of the equipment, may be ruptured. The object of the present invention is to provide control means associated with the cover and the hydraulic pressure control valve lever or actuator to prevent opening movement of the valve unless the cover is closed where the cover is locked in closed position by a locking ring, separate from the cover, and mounted to engage the cover and the fixed casing of the machine.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a front elevation view of a compression extractor provided with the control features embodying the invention;

Fig. 2 is a horizontal sectional view taken on the broken line 2-2 of Fig. 1, parts being broken away;

Fig. 3 is a detailed vertical sectional view taken on the line 3-3 of Fig. 1, showing certain parts in the closed position of the control valve;

Fig. 4 is a view similar to Fig. 3 showing the parts in open position of the control valve;

Fig. 5 is a detailed horizontal sectional view taken on the line 5-5 of Fig. 3;

Fig. 6 is a detailed horizontal sectional view taken on the line 6-6 of Fig. 3;

Fig. 7 is a detailed vertical sectional view taken on the line 7-7 of Fig. 3;

Fig. 8 is a detailed vertical sectional view taken on the line 8-8 of Fig. 1;

Figs. 9 and 10 are schematic views of the control embodying the invention showing the cover in locked and open position, respectively.

Referring to the drawings, the numeral 11 designates a metal walled container or housing having a grooved rim 12 at its top and an opening 13 in its bottom connected by a pipe 14 to a source of hydraulic pressure fluid whose entrance and exit through said pipe is controlled by the

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usual three-way rotary control valve 15 whose stem is provided with an operating handle 16.

A bag 17 of flexible material, usually a suitable rubber composition, fits within the container, and its rim 18 is adapted to fit in the groove of the rim 12 and a mating groove 19 in a clamping ring 20 secured to the rim 12 by a plurality of screws 21.

A cover 22 has a rim portion 23 that abuts the top of the ring 20 and extends beyond the same and on its periphery is provided with a series of radially disposed spaced locking teeth 24. The cover has a foraminous lining member 25 spaced from the main body parts of the cover by a series of spacers 26, this lining providing a series of holes 27 through which waste water from the clothes or other material may escape into the space 28 between said member and the top of the cover and drain to waste through suitable outlets 29.

The container 11 has an outer rim portion 30, and a cover locking ring 31 of channel section has its lower flange 32 mounted beneath said rim to turn on rollers 33 mounted on the sides of the housing or container. The upper flange of the ring projects over the toothed rim of the cover and is formed to provide a series of radially disposed spaced locking teeth 34 which clear the teeth 24 of the cover in its open position but which project over said teeth in the closed position of the cover. The rotary movement of the ring 31 to cover locking and cover open position is limited by a stop lug 35 on the ring working between limit stop lugs 36 on the housing. The cover 22 may be moved into and out of operative position by any suitable means, and for the purpose of illustration I have shown the cover provided with a jack screw 37, which at its lower end has a swivel mounting (not shown in detail) in the cover and a hand wheel 38 at its upper end. The screw 37 works in the outer end of a supporting arm 39 which is mounted to turn on the upper end of an upright 40.

With the above construction, the material to be treated is loaded into the bag 17, in the open position of the cover. Then the cover is swung over the loaded container and lowered down onto the ring 20 while the ring 31 is in its unlocked position, so that the teeth 24 of the cover pass down between the teeth 34 of the ring 31, the ring 31 is then turned to its locked position as shown in Fig. 9 with the teeth 34 over the teeth 24 of the cover. Then the valve 15 is opened to admit pressure fluid through the pipe 14 into the space between the bottom of the container 11 and the bag 17 with its contents is pressed

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upwardly toward the cover causing the water to be squeezed out of the material in the bag and be forced through the holes 27 to waste. Thereafter, turning of the valve 15 to closed position shuts off the pressure fluid and allows the fluid in the container to drain from the pipe 14 through the valve to waste. The ring 34 may then be turned back to unlocked position, and the cover is then raised and swung to one side for unloading the material from the bag.

With the above method of operation there is always the danger that a careless operator may open the valve 15 before the cover is in closed and locked position, and to prevent such an occurrence I have provided the control mechanism hereinafter described.

Referring to Figs. 1 and 8 to 10, means are provided to prevent left hand rotation of the locking ring 31 when the cover is removed, that is, movement of the ring 31 to a locking position. This means includes a lug 41 on the ring and a cover controlled lug 42 on the housing. The lug 42 is carried by a block 43 slidably mounted in a slot 44 in the outer wall of the housing and carried by a rod 45 vertically slidably mounted in guide brackets 46 on the housing and normally urged upwardly to a ring movement blocking position by a spring 47 interposed between said block 43 and the lower bracket. In its raised or blocking position the upper end of the rod 45 projects up above the ring 20, so that when the cover 22 is lowered onto the ring 20, it will strike the rod 45 and push it downwardly against the action of the spring 47 and lower the lug 42 out of blocking position relative to the lug 41, as shown in Fig. 8, so that the ring 31 may then be turned to the cover-locking position shown in Fig. 9.

To prevent the valve 15 from being opened, except when the cover 22 is in a closed position, a stop pin 48 is vertically slidably mounted in guide brackets 49 on the outer wall of the housing and is movable downwardly in blocking position relative to an arm 50 on the valve lever 15. Normally the pin 48 is urged upwardly by a spring 51, interposed between it and the lower bracket, so that it is out of blocking position, but when the locking ring 31 is turned to its cover open or unlocked position, a cam member 52 on said ring rides over the top of the pin 48 and forces it downwardly to a valve lever blocking position as shown in Fig. 10. Also at this time the lug 42 is in blocking position, so that the ring 31 cannot be turned to the left, as viewed in Fig. 10, to allow release of the pin 48 in its blocking position. As soon as the cover 22 is moved over and lowered on the ring 20, then the blocking lug 42 is pushed out of the way, and the locking ring 31 may then be turned clockwise or toward the left as viewed in Fig. 10 to the cover locked position shown in Fig. 9 which permits the spring 51 to move the pin 48 upwardly out of blocking position relative to the arm 50, and then the operator is free to turn the valve 15 to admit pressure fluid. Preferably, also to prevent any accidental movement of the ring 31 from its locked position when the cover is closed and the valve 15 is being moved, a locking pin 53 is also vertically slidably mounted in the brackets 49 and normally urged downwardly by a spring 54, so that its lower end may engage an inclined cam 55 formed on the arm 50 of the valve 15, so that as said lever is moved to open position, the pin 53 is forced upwardly against the pressure of the spring 54 to bring its upper end 56 into locking position with-

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in a locking recess or socket 57 formed in the lower face of the locking ring 34 and registering with said pin in the locked position of the cover as shown in Fig. 9, it being noted that in Figs. 9 and 10 the arm 50 is shown in sectional parts.

From the above it will be noted that in an extractor of the type having a locking ring mounted on its housing and rotatable into and out of locking engagement with its cover, that I have provided means, the locking pin 48, moved into a locking or blocking position by the movement of the locking ring 31 to its unlocked position to prevent movement of the valve 15 to its open position when the cover is unlocked and have also provided means for blocking the turning of the locking ring 31 to a locked position when the cover is removed and that I have also provided means for holding the ring 31 against rotation when the pin 48 is released and the valve 15 is being operated.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the appended claims.

What I claim as my invention is:

1. In a flexible bag type fluid pressure operated extractor of the type having a bag housing and a removable cover mounted on the bag housing, a rotatable locking ring mounted on the housing for locking the cover in closed position and co-operative stop means on said ring and housing to limit the rotatable movement of said ring to a locked and unlocked position, the combination with a valve for controlling the fluid pressure, of movable stop means moved by said locking ring during its movement to its unlocked position to a position to block the movement of said valve when said ring is in its unlocked position, a stop fixed to said ring, and a stop movably mounted on said housing and engageable with said fixed stop to block turning movement of said ring to its locked position when the cover is in its open position, said last named movable stop in its blocking position extending upwardly to engage the cover as it is moved to its closed position and be moved thereby out of blocking position relative to the stop fixed to said ring so that when the cover is closed, the ring can be turned to lock the cover in its closed position.

2. In a flexible bag type fluid pressure operated extractor of the type having a bag housing, a removable cover mounted on the bag housing, a rotatable locking ring mounted on the housing for locking the cover in closed position and co-operative stop means on said ring and housing to limit the movement of said ring to a locked and unlocked position, the combination with a valve and its actuator for controlling the fluid pressure, of movable stop means controlled by said locking ring during its movement to its unlocked position and moved thereby into the path of movement of a part of said actuator for locking said valve against an opening movement when said ring is in its unlocked position, cover released co-operative stop means on said housing and ring to hold said ring against turning movement in its locked position when the cover is in open position, and a spring released movable locking pin mounted on said housing for locking said ring against movement in its cover locking position, and operator controlled means for moving said locking pin to locked position.

3. The structure as defined in claim 2 wherein the means for moving the locking pin to lock the

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ring against movement in its cover locking position is a part mounted on the valve actuator.

4. The structure as defined in claim 2 wherein the means for moving the locking pin to lock the ring against movement in its cover locking position is a cam member mounted on the valve actuator. 5

5. In a flexible bag type fluid pressure operated extractor of the type having a bag housing, a removable cover mounted on the housing, a rotatable locking ring mounted on the housing for locking the cover in closed position, and cooperative stop means on said ring and housing to limit the rotative movement of said ring to a locked and unlocked position, the combination with a 10 15

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valve for controlling the fluid pressure, of movable stop means controlled by said locked ring during its movement to its unlocked position for blocking the movement of said valve when said ring is in its unlocked position, and cover released cooperative stop means on said housing and ring to lock said ring in its unlocked position when the cover is in its open position.

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