Oct. 22, 1935. S. GARRETT 2,018,126

PRESS

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Fig. 1.

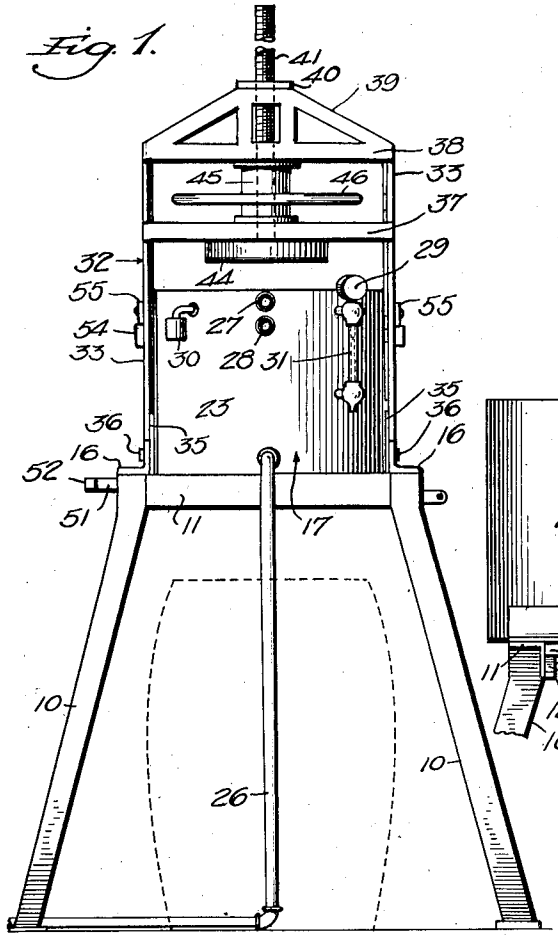


Fig. 2.

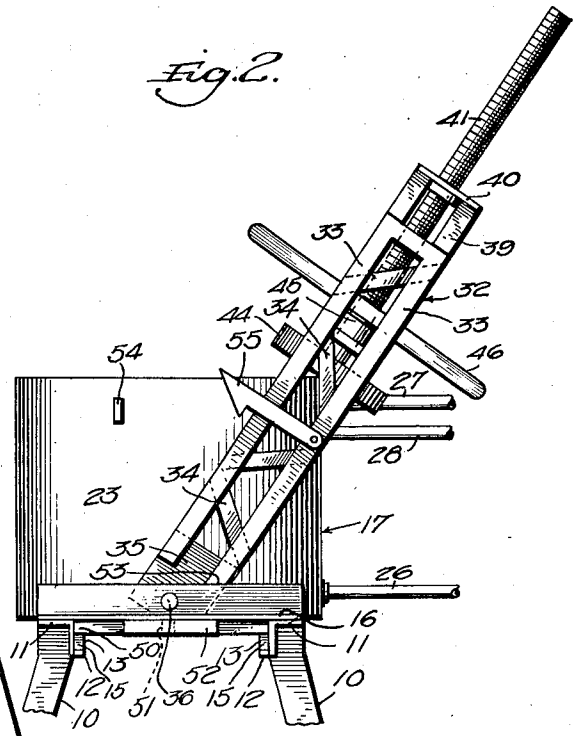
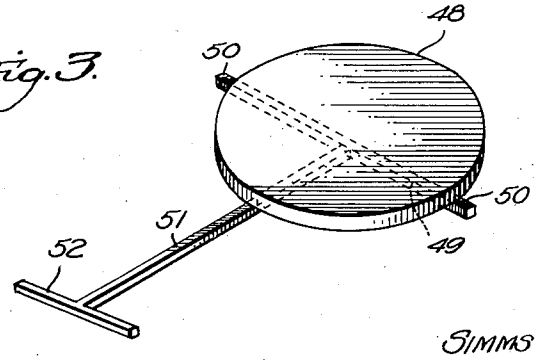


Fig. 3.



Inventor
SIMMS GARRETT

By C. R. Parker, Jr.
Attorney

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Fig. 4

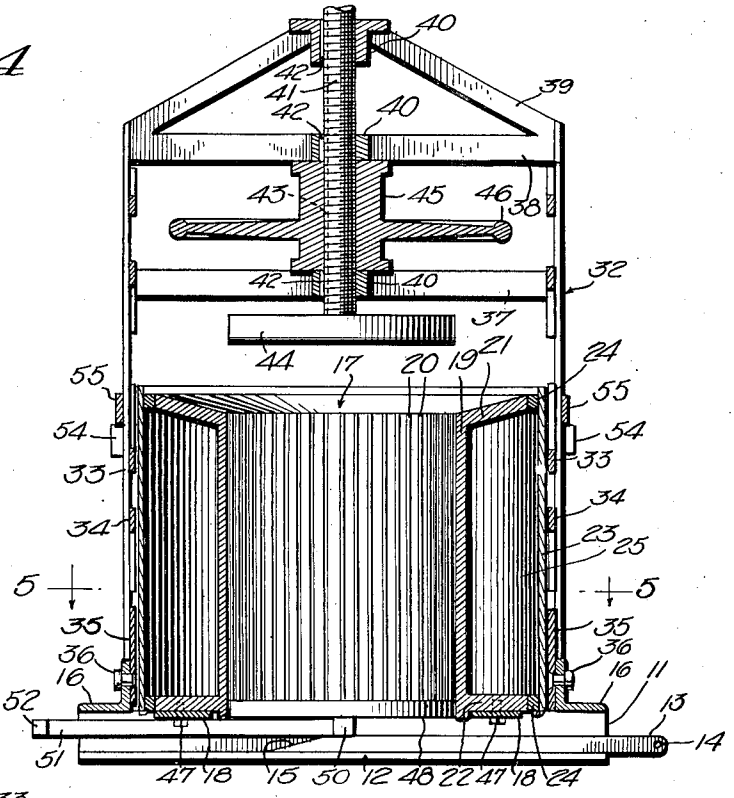


Fig. 5.

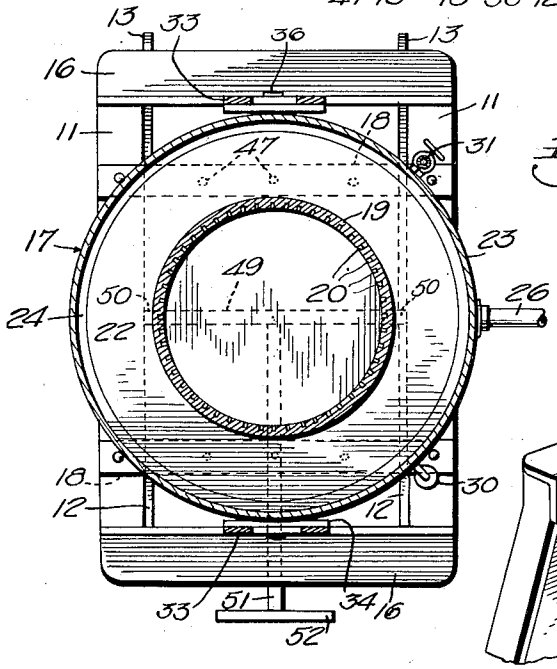
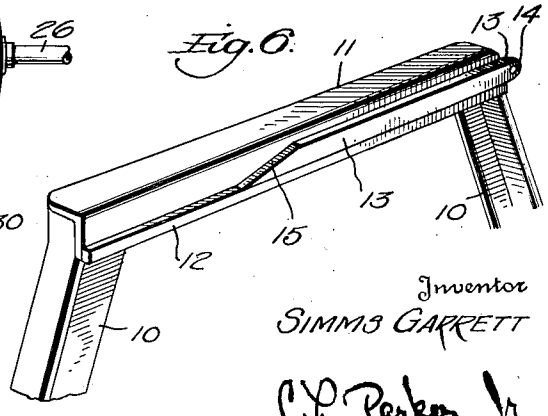


Fig. 6.



Inventor
SIMMS GARRETT

By C. P. Parker Jr.

Attorney

Patented Oct. 22, 1935 2,018,126

UNITED STATES PATENT OFFICE

2,018,126

PRESS

Simms Garrett, Charing, Ga.

Application August 23, 1933, Serial No. 686,455

8 Claims. (Cl. 100—44)

This invention relates to presses, and more particularly to a press for expressing rosin from cotton batting used for filtering purposes.

In the production of rosin, it is the usual practice to subject the sap to a distilling operation to distill off the turpentine spirits. The undistilled rosin is then passed through screens of progressively reduced mesh size to remove foreign material from the rosin. This operation, of course, takes place while the rosin is heated and in a fluid condition, and the final step of treating the rosin consists in passing the rosin through cotton batting. The resultant filtered product is then sold as a commercial rosin, and in accordance with the present practice, the cotton batting used in the filtering process is discarded. The cotton batting is impregnated with rosin which hardens in the batting, and can be recovered only by special chemical processes. It is the usual practice to permit the used cotton batting to accumulate for long periods of time and then to ship it to chemical plants where the rosin is recovered. The sale of the used cotton batting is very unprofitable to the rosin producers in view of the low price received therefor.

An important object of the present invention is to provide a novel type of press from which rosin can be immediately recovered in the producing plant by expressing the rosin from the batting shortly after the filtering operation has been completed.

A further object is to provide a press of the character referred to wherein the plunger and associated parts may be readily swung out of operative position to permit the press to be filled, and then moved back to operative position to be locked in such position during the pressing operation.

A further object is to provide a press of the character referred to wherein the expressed rosin drips directly downwardly into barrels in which the rosin is collected.

A further object is to provide a novel base plate for a press of the character referred to which may be readily placed in position to permit the pressing operation to be accomplished, and which may be readily removed to permit the waste cotton batting to be removed from the press.

A further object is to provide an apparatus of the character just referred to wherein the means for moving the base plate into operative position is effective for supporting the base plate during the pressing operation.

A further object is to provide a novel pivoted framework for supporting the plunger and associated parts, having novel means for limiting the movement of the frame out of operative position when the press is being filled, and having novel means for limiting the movement of the frame to operative position and for latching it in such position.

A further object is to provide a novel press structure wherein the downward movement of the expressed rosin is facilitated to provide an efficient pressing operation.

A further object is to provide novel means for maintaining the press in a heated condition to keep the rosin in a fluid condition to permit it to flow downwardly into the collecting barrel or receptacle as the rosin is expressed from the cotton batting.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing:

Figure 1 is a rear elevation of the apparatus,

Figure 2 is a side elevation of the upper portion of the apparatus showing the plunger frame in inoperative position,

Figure 3 is a detail perspective view of the base plate,

Figure 4 is a central vertical sectional view through the upper portion of the apparatus looking in the same direction as Figure 1,

Figure 5 is a horizontal sectional view on line 5—5 of Figure 4, and,

Figure 6 is a detail perspective view of a portion of the supporting frame.

Referring to the drawings, the numeral 10 designates a plurality of supporting legs, preferably four in number, and the upper end of each pair of legs is connected by a horizontal angle iron support 11. The legs also are preferably formed of angle iron, although it will be apparent that they are not limited to such structure. Each of the horizontal supports 11 is provided at its lower inner edge with a rail 12, preferably welded thereto, and each of the rails 12 supports an operating bar 13, as shown in Figures 2, 4 and 6. One end of each bar 13 forms a projecting handle, while the other ends of the bars 13 are provided with inclined faces 15 for a purpose to be described. The ends of the pairs of supports 11 are connected by angle iron braces 16.

A press unit indicated as a whole by the numeral 17 is arranged over the supports 11 and rests upon flat bars 18. These bars rest upon the

horizontal flanges of the supports 11 and are secured thereto in any suitable manner. The press unit comprises a cylinder 19 vertically grooved internally throughout its length as at 20. The cylinder 19 is preferably formed of cast iron and is provided with upper and lower flanges 21 and 22. A steel jacket 23 surrounds the cylinder 19 in spaced relation thereto and is welded at its top and bottom to internal steel rings 24. These two rings are shrunk on the outer extremities of the flanges 21 and 22 to form a permanent unit therewith, and the cylinder 19, flanges 21 and 22, and jacket 23 form a heating chamber 25, as clearly shown in Figure 4.

The heating chamber 25 is employed for maintaining material in the press in a heated condition, and for this purpose it is provided with inlet and outlet pipes 26 and 27 respectively, connected to a heating coil in a suitable furnace or other heating apparatus to provide a thermosiphonic circulation of water or other heating liquid through the chamber 25. In practice, water is employed as the heating medium and the supply of water in the heating system may be replenished through a pipe 28 connected to a suitable source of water supply. The heating chamber 25 is preferably provided with a pressure gage 29, and blow off valve 30 and a water sight gage 31.

A plunger supporting frame is indicated as a whole by the numeral 32 and comprises pairs of bars 33 arranged on opposite sides of the unit 17. The bars of each pair 33 are suitably angularly braced as at 34, and the lower end of each pair of bars 33 is connected by a gusset plate 35. The gusset plates 35 are pivotally connected to the angle iron braces by bolts 36.

The frame 32 further includes transverse connecting members 37 and 38 and angular connecting members 39. Each of these three connecting members is provided with a bearing 40 to slidably receive a plunger screw 41. Each of the bearings 40 carries a key 42 engaging in a suitable keyway 43 formed in the screw 41. Thus it will be apparent that the screw 41 is axially slidable, but is prevented from rotating by the keys 42. In one position the screw 41 is in axial alinement with the cylinder 19 and carries a plunger 44 at its lower end movable into the cylinder 19 to press material therein. A hub 45 is threaded on the screw 41 between the bearings of the cross members 37 and 38 and these bearings act as thrust members to prevent axial movement of the hub 45. The hub 45 carries a hand wheel 46 whereby it may be rotated to effect axial movement of the plunger 44.

As previously stated, the press unit 17 is supported on the bars 18, although it will be apparent that they may be directly supported by the members 11. The use of the bars 18 however, is preferred because of the facility with which the apparatus may be assembled. The lower flanges 22 of the unit 17 rest directly upon the bars 18 and the flanges 22 are relatively thick. Thus it is preferred to secure the flanges 22 to the bars 18 and this is preferably accomplished by means of machine screws 47 threaded into the flange 22 but not extending entirely therethrough.

A base plate 48 is adapted to be arranged in the open lower end of the cylinder 19. The plate 48 is circular, as shown in Figure 3, and is of a diameter substantially equal to the internal diameter of the cylinder 19. Thus the plate 48 forms a support for the material in the cylinder 19 but does not close the lower ends of the slots 20. A cross bar 49 is welded or otherwise secured against the bottom face of the plate 48 and has ends 50 projecting beyond the plate 48. In this connection, it will be noted that the ends 50 are of a length substantially equal to the distance between the vertical flanges of the supports 11, and thus they overlie and are adapted to slide upon the rails 12. A bar 51 extends from one side of the apparatus and is secured against the bottom of the plate 48 by welding and a suitable handle 52 is carried by the end of the bar 51.

As previously stated, the plunger frame 32 is pivotally connected to the angle irons 16. The frame 32 is movable to the inoperative position shown in Figure 2 to permit the cylinder 19 to be filled with material, and means is provided for limiting the movement of the frame 32 in inoperative position. As shown, one bar 33 of each pair is angularly cut off as at 53 to rest upon the upper edge of the vertical flange of the adjacent angle iron 16. Thus the frame is prevented from turning beyond the position shown in Figure 2. Likewise, means is provided for limiting the movement of the frame 32 to operative position and for latching it in such position. Each side of the jacket 23 is provided with a lug 54, preferably welded thereto and adapted to contact with the adjacent bar 33 of each pair to limit the turning movement of the frame 32 to its operative position. A latch member 55 is carried by each side of the frame 32 for engagement with the corresponding lug 54 to latch the frame 32 in operative position.

The operation of the apparatus is as follows:

The turpentine is distilled off from the rosin and the latter, in a fluid condition, is subjected to the usual screening operation and then filtered through cotton batting. The batting, instead of being stored for relatively long periods during which it hardens, is deposited in the cylinder 19 shortly after the screening operation is completed, and before the rosin has had sufficient time in which to "set".

In order to permit the filling of the cylinder 19, the latches 55 are released and the frames 32 moved to the inoperative position shown in Figure 2 thus leaving the upper end of the cylinder 19 unobstructed to permit the pieces of batting to be fed into the cylinder. When a sufficient quantity of the batting has been placed in the cylinder, the frame 32 is swung upwardly to its vertical or operative position, and when such position is reached, the lugs 54 prevent further movement of the frame and the latches 55 engage the lugs 54 to lock the frame 32 in operative position with the screw 41 in axial alinement with the cylinder 19. The hand wheel 46 is then rotated, and since axial movement of the hub 45 is prevented while rotation of the screw 41 is likewise prevented, it will be apparent that rotation of the cam wheel 46 in the proper direction will cause the screw 41 to be moved downwardly. This operation moves the plunger 44 downwardly into the cylinder 19, and this operation is continued until the batting in the cylinder is placed under substantial compression.

As the rosin is expressed from the batting, the hand wheel 46 is turned from time to time to further compress the batting until the greater proportion of the rosin has been expressed from the batting. It will be apparent that the rosin in the batting will be maintained at an elevated temperature whereby the rosin remains in a sufficiently fluid condition to permit it to be expressed from the batting. In this connection,

it will be noted that a body of water is maintained in the jacket 25 and is circulated through a furnace heating coil by means of the pipes 26 and 27. Water may be replenished, when necessary, by opening a suitable valve (not shown) connected in the pipe 28 leading to a source of water supply. The rosin, as it is expressed from the batting, flows downwardly through the grooves 20, and since these grooves are formed at the point where the temperature of the apparatus is the highest, it will be obvious that the rosin will be maintained at a fluid condition during its flow downwardly through the grooves. At the bottom of the apparatus, the rosin flows from the lower ends of the grooves 20 directly into a receptacle, such as the barrel indicated in dotted lines in Figure 1.

After the expressing operation has been completed, the hand wheel 46 is revolved to move the plunger 44 upwardly, whereupon the base plate 48 is removed from the bottom of the apparatus. The projections 50 rest upon the bars 13 when the apparatus is assembled, and when the base plate 48 is to be removed, the bars 13 are withdrawn, whereupon the base plate drops downwardly until the projections 50 are supported upon the rails 12. Under such conditions, the base plate 48 will be free from all of the stationary parts of the apparatus and readily may be removed by pulling outwardly upon the handle 52. The batting thus will drop from the bottom of the cylinder 19 into a suitable receptacle, whereupon the apparatus is ready to be assembled for further use.

The operator replaces the base plate 48 by pushing inwardly on the handle 52 until the base plate is in registration with the bottom of the cylinder. The bars 13 are then inserted from the opposite side of the apparatus. These bars slide over the rails 12 until the inclined faces 15 engage beneath the projections 50, whereupon these projections will be elevated to move the base plate 48 upwardly to operative position. The bars 13 are moved inwardly a sufficient distance to support the projections 50 upon the horizontal upper edges of the bars 13, whereupon the base plate will be firmly supported in position ready for the next expressing operation.

It has been found in practice that the present invention operates very efficiently for expressing rosin from the cotton batting employed for filtering the rosin, particularly when the expressing operation takes place promptly upon completion of the filtering operation and before the rosin has an opportunity to "set". The apparatus is comparatively simple in construction and is very cheap to operate, and it has been found profitable to recover rosin from the cotton batting with the present apparatus. Only a small percentage of the rosin is not recoverable, and the loss from such rosin is negligible.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, means for supporting said closure member in operative position with respect to the lower end of said cylinder, and means for supporting said last named means for lateral movement with respect to said cylinder to permit its engagement with said closure member and its disengagement from said closure member to permit the removal thereof.

2. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, means for supporting said closure member in operative position with respect to the lower end of said cylinder, and means for guiding said supporting means for lateral movement with respect to said cylinder to disengage it from said closure member whereby the latter may be removed from said cylinder.

3. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, a supporting bar, and means for guiding said supporting bar for lateral movement with respect to said cylinder, said bar having an inclined face engageable with said closure member to move it upwardly into operative engagement with the lower end of said cylinder upon inward movement of said bar laterally with respect to said cylinder.

4. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, a pair of rails extending transversely of the cylinder, said closure member being slidable laterally on said rails wholly beneath said cylinder, and means for elevating said closure member from said rails into operative position with respect to the lower end of said cylinder.

5. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, a pair of rails extending transversely of the cylinder, said closure member being slidable laterally on said rails wholly beneath said cylinder, and a pair of supporting rods slidable on said rails and having beveled faces engageable with said closure member for elevating the latter to operative position with respect to the lower end of said cylinder.

6. A press comprising a vertical cylinder having discharge passages therein, a plunger movable downwardly in the upper end of said cylinder, a closure member for the lower end of said cylinder, said closure member having radial projections therebeneath, a pair of supporting rails spaced beneath the bottom of said cylinder and spaced from each other a distance greater than the diameter of said cylinder, said projections being slidable on said rail, and rods slidable on said rails and having portions engageable with said projections for elevating said closure member into operative position with respect to the lower end of said cylinder.

7. A press comprising a vertical cylinder having internal vertical grooves extending to the lower extremity of said cylinder, a plunger movable downwardly into the upper end of said cylinder, a circular closure plate adapted to be arranged in the lower end of said cylinder and being of a diameter substantially equal to the internal diameter of said cylinder, and supporting means for said closure plate movable laterally inwardly into engagement with the bottom of said plate and movable laterally outwardly to release said

plate whereby it may be removed from the lower end of said cylinder.

8. A press comprising a vertical cylinder having internal vertical grooves extending to the lower extremity of said cylinder, a plunger movable downwardly into the upper end of said cylinder, a circular closure plate adapted to be arranged in the lower end of said cylinder and being of a diameter substantially equal to the internal diameter of said cylinder, a pair of rails extending transversely of said cylinder and spaced therebelow, said rails being spaced apart a distance greater than the internal diameter of said cylinder, said plate having portions slidable on said rails, and supporting rods slidable on said rails and engageable with said portions of said plate to elevate it into operative position within the lower end of said cylinder.

SIMMS GARRETT.