

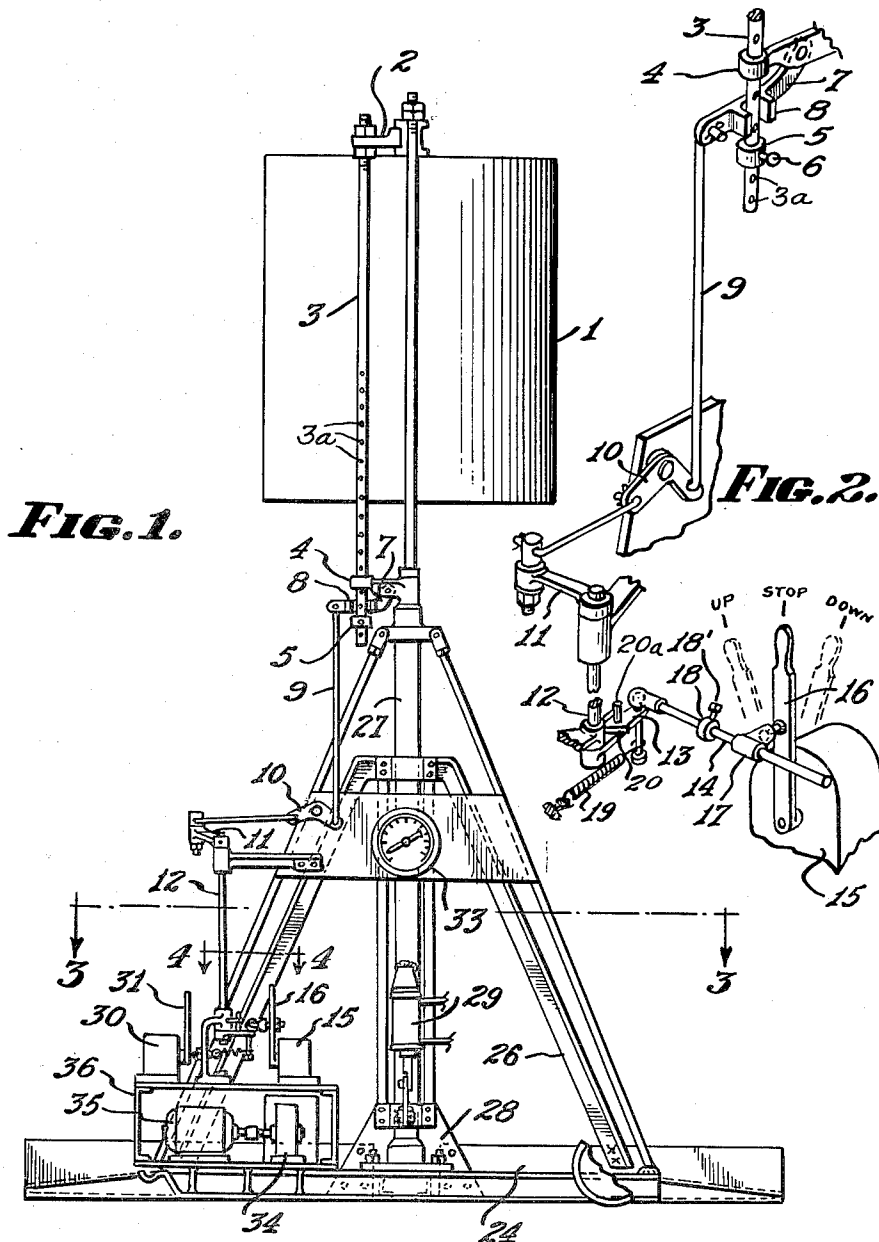
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H. G. BELL ET AL
COMPACTING PRESS

2,734,450

Filed Aug. 18, 1951

3 Sheets-Sheet 1



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FIG. 3.

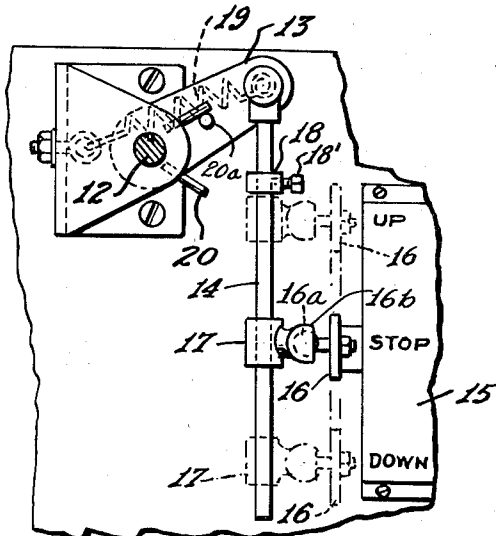
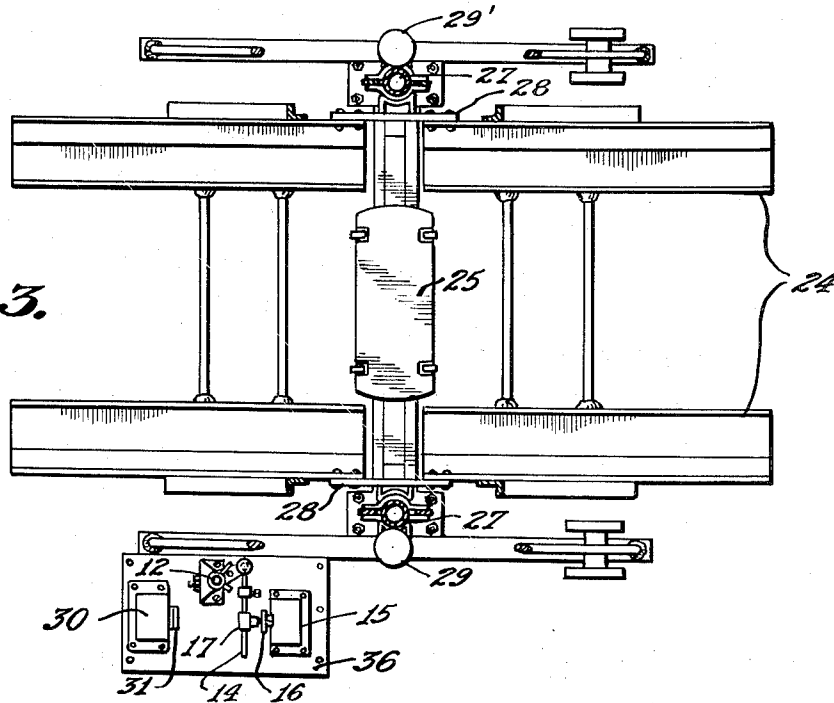


FIG. 4.

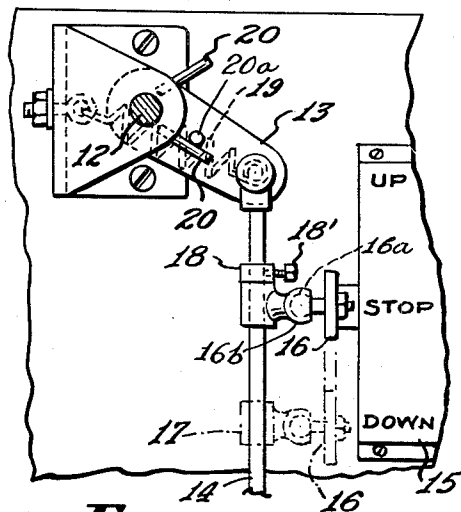


FIG. 5.

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3 Sheets-Sheet 3

FIG. 6.

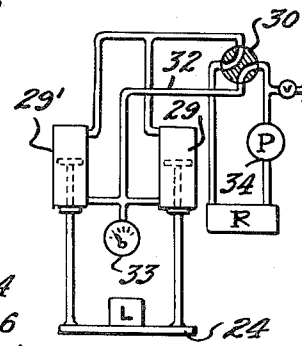
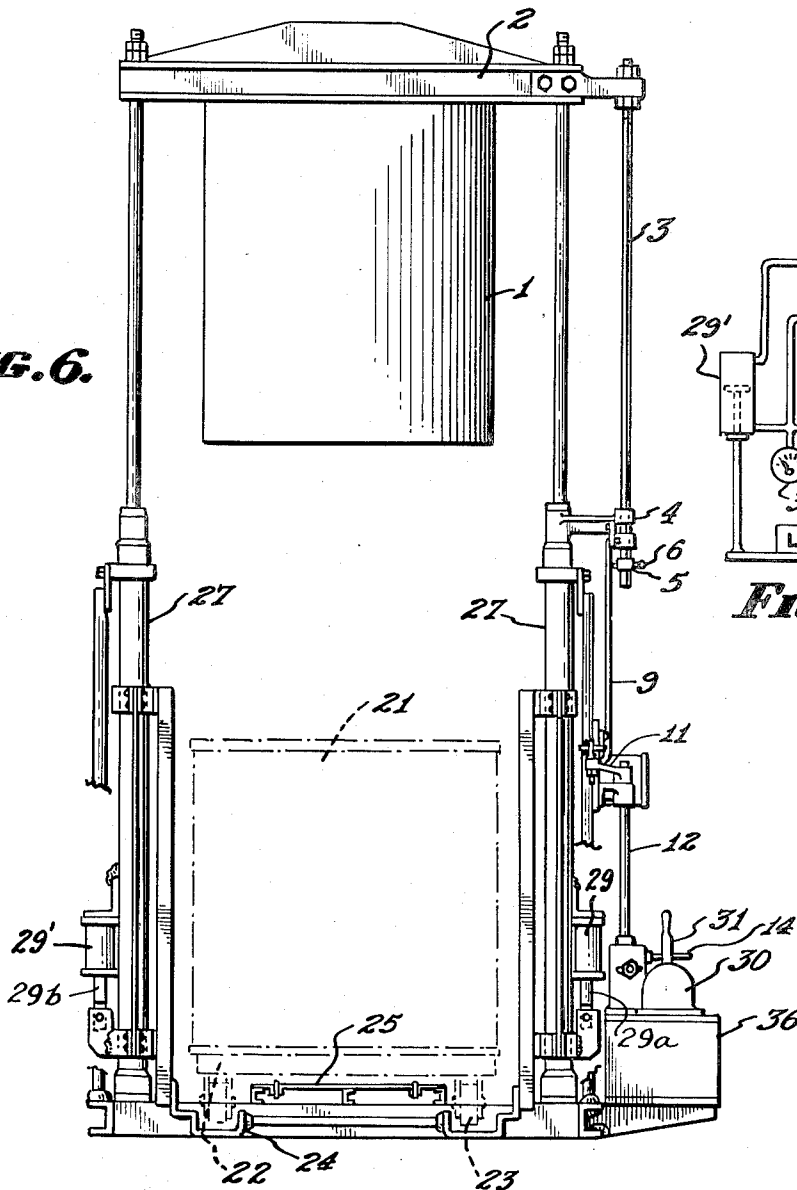


FIG. 7.

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COMPACTING PRESS

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Application August 18, 1951, Serial No. 242,552

9 Claims. (Cl. 100—99)

Our invention relates to a compacting press of the type which is primarily used for compacting tobacco in an open hogshead, although the press may be used for compacting other material.

As an example of the type of press to which our invention relates, reference is made to our copending application Serial No. 97,264 filed June 4, 1949, now Patent No. 2,605,697, for a Compacting Press and also to our copending application Serial No. 232,628, filed June 20, 1951, and entitled Hogshead Loader and Compacter.

In the type of press referred to above, the ram must be raised to a sufficient height to permit the hogshead containing the material to be compacted to be inserted under the ram. In some instances, hogsheads of different heights are used and, therefore, the height of the raised ram may vary. Also in the actual compacting operation wherein the ram reciprocates upwardly and downwardly it is faster and more efficient to merely raise the ram slightly above the load instead of running it to the ultimate top of its stroke.

The control of the reciprocation of the ram in a hydraulic press of this type is manipulated by an operator and it is quite difficult to stop the ram at its most efficient elevated position. On the other hand, unless some limiting means is provided, the upward movement of the ram may be so great as to injure some of the mechanism or controls.

It is one of the objects of our invention to provide a means for stopping the upward movement of the ram at predetermined positions so that the ram may be set so as to move higher when a high hogshead is used or to stop its movement at a lower position when a half or smaller hogshead is used.

It is a further object of our invention to provide a means for stopping the movement as discussed above which will prevent the ram from elevating itself to such a position as to injure any of the mechanism or controls.

In loading and compacting hogsheads of tobacco or other material, it is, of course, desirable to fill the hogshead with a given, predetermined weight of material. Ordinarily, this is accomplished by loading the hogshead with the approximate amount of material and then removing it from the ram for weighing. This, of course, necessitates a number of time-consuming operations.

It is an object of our invention to provide a weighing means wherein the hogshead, together with the material contained therein may be quickly and easily weighed while in position under the ram and without the necessity of time-consuming operations. A further object of our invention is to provide a hydraulic compacting press wherein the mechanism for operating the ram, as well as the mechanism for lifting the load and weighing the same is actuated by a single hydraulic pump so that the device as a whole is compact and portable.

In the descriptions and drawings which follow, we have shown our improvement as applied to a compacting press similar to that shown in our Patent No. 2,605,697.

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However, our present improvements and particularly the weighing feature is also applicable to the hogshead loader and compacter described in our copending application Serial No. 232,628, as well as other devices of this sort wherein the same problems are present.

These and other objects of our invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, we accomplish by that certain construction and arrangement of parts of which we shall now describe an exemplary embodiment.

Reference is now made to the drawings which form a part thereof and in which:

Figure 1 is a side elevation of a compacting press in which is incorporated our invention.

Figure 2 is a detailed perspective drawing of the mechanism which limits the upward movement of the ram.

Figure 3 is a horizontal section of the hogshead lifting device taken on the section line 3—3 of Figure 1.

Figure 4 is a horizontal cross section showing a portion of the ram stop taken on the section line 4—4 of Figure 1.

Figure 5 is a section similar to Figure 4 but showing the ram stop mechanism in operation.

Figure 6 is a front elevation of a compacting press with our new features with a portion broken away for clarity.

Figure 7 is a schematic diagram of the load weighing mechanism.

Briefly, in the practice of our invention, we provide a stop means for the upward movement of the ram which consists of a downwardly projecting rod reciprocating with the ram. Slidably mounted on the rod is a dog which may be positioned in a plurality of positions along the rod in accordance with the height to which it is desired the ram to stop. There is an abutment which is contacted and moved by the dog during the ram's upward movement and connecting linkage which throws the manual control lever which actuates the hydraulic valve from the up position to the stop position.

The hogshead itself rests on an anvil during compacting, but is lifted upon this anvil and removed from the same by means of a hydraulic lift which is actuated by the same hydraulic pressure line and pump system which actuates the ram itself. The system which includes the lifting cylinders and pistons for lifting the hogshead above the anvil is a closed hydraulic system, and we include within this system a pressure gauge which is calibrated in units of weight. From this it is apparent that when it is desirable to determine the weight of the hogshead and material, the lift need only be actuated and the gauge will read the weight which is, of course, determined by the pressure within the closed hydraulic system lifting the load.

Referring to the drawings, the reciprocating compacting ram 1 is mounted on a yoke 2. Projecting downwardly from the yoke 2 is a rod 3 which is reciprocable through a guide collar 4. On the rod 3 is provided a dog 5 with a thumb screw 6 for positioning the same up and down the rod 3 which is preferably marked with indentations or indicia 3a.

Mounted on the bracket which holds the guide 4 is a lever 7 having a bifurcated contacting abutment 8 which loosely embraces the rod 3 as may be seen in Figure 2. The end of the lever 7 actuates a linkage system which consists of the rod 9, the bell crank 10, and the lever arm 11, which is so positioned that upon the upward movement of the lever 7, the lever 11 will rotate a vertical rod 12 in a clockwise direction. Mounted on the rod 12 is a lever 13 with its end attached to a horizontally disposed

reciprocable rod 14 which is reciprocated in a horizontal plane on the movement of the linkage.

The hydraulic control for the ram 1 consists of a valve generally shown at 15. The valve is of the usual type and has three positions actuated by a manual lever 16. As is apparent in Figure 2, the central position closes the valve which feeds the hydraulic pressure to the ram 1 to stop the same, while in the left position the pressure raises the ram 1 and in the right position lowers the same.

The reciprocable rod 14 is journaled in a bearing 17 mounted on the manual control handle 16 and on the rod 14 is a dog 18 which is positioned properly on the rod 14 by a set screw 18'. A conventional ball and socket arrangement 16a and 16b permits the bearing 17 to swing about with the rod 14 as is occasioned by the movement of lever 13 between its extreme positions, the rod end of lever 13 defining an arcuate path as moved.

From the above, and referring to Figure 2, it is apparent that when the lever 16 is moved to the up position and the ram 1 is moving upwardly carrying the rod 3, the dog 5 on rod 3 will contact the bifurcation 8 on the lever 7. This lifts the lever 7, the rod 9 and actuates the bell crank 10, which in turn rotates rod 12 and lever 13 in a clockwise direction. This throws rod 14 to the right in Figure 2 and the dog 18 contacts the journal 17 and forces the lever 16 to the intermediate stop position. This shuts off the hydraulic pressure and the ram 1 stops its movement. It should be noted that the ram 1, of course, may be stopped before reaching this position at any time by merely moving the lever 16 from the up to the stop position, since the dog 18 does not interfere with the movement of lever 16, except when the ram 1 reaches a predetermined elevation.

In order to insure the complete stopping of the ram 1, I have provided a toggle mechanism which is shown in Figures 2, 4, and 5. This consists of a conventional type including a spring 19 in alignment with the lever 13 and the rod 12 (when the rod 14 is in its intermediate position) so as to insure the stoppage of lever 13 only at predetermined limits. These limits are controlled by pins 20 and 20a as shown in Figures 4 and 5.

As more fully described in our copending application, Serial No. 97,264, the hoghead 21 is mounted on a dolly 22 having casters 23. The dolly and hoghead is rolled onto the track 24, which in turn is lifted so the dolly will clear the anvil 25.

The track 24 is positioned under the ram 1 and includes a framework 26 which embraces the main cylinder 27 of the ram 1. There is also a plate 28 attached to the track 24 and which also embraces the cylinder 27 so that the track 24 may be raised and lowered in reference to the cylinder 27. In order to raise the track, I provide hydraulic pistons and cylinders 29 29' preferably attached to the main cylinders 27 for actuating the ram 1. The cylinders 29 and 29' have pistons working therein on piston rods 29a and 29b respectively which are fastened to the plate 28 so when pressure is applied into cylinders 29 and 29' under the respective pistons for the piston rods 29a and 29b the track 24 will be raised.

The hydraulic pressure for actuating the pistons of cylinders 29 and 29' is derived from the same pump and system which actuates the main pistons within the cylinders 27 for moving the ram 1.

A valve 30 is provided for applying hydraulic pressure to the cylinders 29 and 29' at the will of the operator by a manual control lever 31. Preferably, the valves 30 and 15 are placed side by side as shown in Figure 1 so that the manual levers 16 and 31 will be easily available to a single operator.

Referring to Figure 7, when the track 24 is in its elevated position so that the weight of the hoghead material comprising the load L is borne by the pistons in the cylinders 29 and 29' and the closed hydraulic system 32, the pressure within the line 32 is directly proportional to the weight of the load. In order to take advantage of

this, we provide a pressure gauge 33 in the line 32 and we calibrate the pressure gauge in units of weight. From the above, it is apparent that when the hoghead, together with its material which comprises the load is lifted by means of the tracks 24 the weight of the load may be directly read on the dial 33.

From the above, it is apparent that a single operator may actuate the track 24 for placing the hoghead, together with its dolly 22, upon the anvil 25 for loading or compacting. Copending application Serial No. 232,628 shows a press which is adapted to load the hoghead when in this position. As the hoghead is being loaded and compressed by actuating the manual lever 16 it may be weighed at intervals by merely raising the ram 1 and then by actuating manual lever 31 and valve 30. The track 24 lifts the load from the anvil 25 and, in effect, places the weight of the load on the hydraulic fluid in line 32. In this position, the gauge 33 will read the weight of the material within the hoghead and more material may be added as needed.

From the above, it is apparent that we have provided a compacting press which is a unitary, portable structure and wherein the material may be loaded within a hoghead weighed at intervals during this operation and compacted as desired. When the hoghead is filled and properly compacted, the head may be placed in position as described in copending application Serial No. 232,628 and the properly filled and closed hoghead may be removed from under the ram. Thus, all operations are accurately and efficiently done without the necessity of moving the hoghead after once placed under the ram 1 at any time.

A single hydraulic pump 34 operated by a gasoline or electric motor 35 provides the necessary hydraulic pressure for both operating the main ram 1 and the track lift cylinders 29 and 29' from a reservoir of fluid R. The pump 34, together with its motor 35 is conveniently placed within a housing 36 underneath the manually operated control valves 15 and 30 (see Figures 1 and 6). The whole device is substantially foolproof since the upward movement of the ram 1 is automatically stopped at a predetermined position, even though the operator neglects to properly actuate the manual lever 16. The press is completely self-contained with all of the above features and may be moved from warehouse to warehouse, or position to position with a minimum of difficulty, thus increasing the efficiency of the loading-compacting operation necessary in packaging tobacco.

It is to be understood that modification may be made in our invention without departing from the spirit thereof and we do not intend to limit ourselves otherwise than as pointed out in the claims which follow.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a compacting press, a ram, means to hydraulically reciprocate said ram in a vertical direction a control valve for said hydraulic means, a manual lever for said valve with an operative up and stop position, means for stopping the upward movement of the ram comprising a depending rod attached to the ram and reciprocating therewith, a dog mounted on the rod at selective positions along its length, a first abutment in the path of said dog, a second abutment, actuating linkage connected to said manual lever and said first abutment so that upon contact by said dog said linkage will move said manual lever from up to stop position, said first abutment comprising a bifurcated element a lever embracing said rod and said linkage operatively attached to said lever with the terminal of said linkage operating said second abutment which contacts and moves said manual lever when said dog contacts and moves said first abutment, said second abutment having a toggle mechanism which insures the complete movement of said manual lever upon contact therewith.

2. In combination with a hydraulically actuated compacting press and a hydraulic lift for the load being

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treated, a single hydraulic pump selectively operatively connectible with the press or the lift for actuating the same, said press including a pair of cylinders, pistons in said cylinders, a ram fixed to said pistons, and said lift including a second pair of cylinders fastened to said first mentioned cylinders, other pistons in said second cylinders, a platform attached to said other pistons, a source of fluid connected to said pump, fluid conduit means leading to all the cylinders from the source, said pump having a connection with all of said fluid conduit means, and a valve selectively operable to admit fluid under pressure from said pump into the respective pairs of cylinders.

3. In a compacting press, a reciprocable ram, an anvil adapted to receive a container, means to reciprocate said ram into and out of said container, a control valve for said reciprocating means, a lever for said valve having operative "up," "stop" and "down" positions corresponding to the desired movement of said ram, and means to move said lever automatically from its "up" position to its "stop" position when the ram reaches a certain height whereby to stop further upward movement of said ram, said last mentioned means comprising a first rod attached to and reciprocating with the ram, linkage including a second rod, a bearing for said second rod to permit reciprocation thereof, said bearing being connected to said lever, abutment means fixed on said second rod so as to strike said bearing when the lever is in its "up" position whereby to return the lever to its "stop" position, and an adjustable connection between said first rod and said linkage whereby said linkage is actuated and said second rod thereby reciprocated by movement of said ram and first rod only when said ram reaches the predetermined height.

4. The press of claim 3 in which said adjustable connection comprises a lug adjustable on said first rod, a second lever connected to the press and to the linkage, and an abutment member on said second lever in the path of said lug.

5. The press of claim 3 in which said linkage includes a third lever, said third lever having a pivotal connection with the linkage at its one end and being fastened to said second rod at its other end, and a spring connected to said third lever to aid movement of said second rod when same is actuated by said first rod through said linkage and said third lever.

6. The press of claim 3 in which the connection between said bearing and said first mentioned lever is a ball and socket arrangement to permit lateral shifting of the second rod as it is reciprocated.

7. In a compacting press having a frame, a reciprocable ram; an anvil adapted to support a container; means to reciprocate said ram into and out of said container; a con-

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trol valve for said reciprocating means; a lever for said valve having operative "up," "stop" and "down" positions corresponding to the desired movement of said ram; and means to move said lever automatically from its "up" position to its "stop" position when the ram reaches a certain height whereby to stop further upward movement of said ram; said last mentioned means comprising a first rod attached to and reciprocating with said ram, a second lever pivoted to said frame, linkage having a terminal member connected to said second lever, a third lever actuable by said linkage, a second rod connected to said third lever, a bearing for said second rod, said bearing permitting reciprocation of said second rod as moved by said third lever, said bearing being connected to said valve lever by a ball and socket arrangement to permit shifting of the second rod as said second rod is reciprocated, first abutment means on said first rod arranged to strike said second lever after a predetermined movement of said ram whereby to actuate said third lever through said linkage, and second abutment means on said second rod arranged to strike said valve lever bearing upon reciprocation of said second rod as actuated through said first rod, said second lever, said linkage and said third lever, whereby to move said valve lever from its "up" position to its "stop" position when the ram has moved the predetermined amount to bring it to the said certain height.

8. The press of claim 7 including toggle means to insure positive reciprocation of said second rod by said third lever, said toggle means including a spring connected to said third lever and to said frame.

9. The arrangement of claim 2 including means for measuring the weight of the load and platform comprising a pressure gauge communicating with the conduit means leading to said second pair of cylinders, said last mentioned conduit means being a part of a closed system with said source and said pump, said gauge being calibrated in units of weight.

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