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THREE-HEAD SANDWICH PRESS
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U.S. Cl. 35—15 17 Claims

ABSTRACT OF THE DISCLOSURE

A three-head sandwich press having a stationary lower head, and intermediate and upper heads which can be moved against one another and the lower head, wherein steam can be selectively discharged from and vacuum can be selectively drawn in these heads, and to a control for selectively moving the heads and for selectively administering the steam discharge from or vacuum drawing in the heads.

Presses used for conditioning and creasing the legs of a pair of cleaned trouser generally include only two heads or bucks that are brought together so that only one leg of the trouser can be pressed for every cycling of the press. Existing three-head presses, because of inadequate steam, vacuum and head movement controls, must operate at an output too slow for commercial pressing of the garments with a single press cycle.

This invention relates to a high output, three-head press having a stationary lower head and movable intermediate and upper heads, and further having selective vacuum and steam controls for these heads operable to permit the conditioning and pressing of both legs of a pair of pants in a single operating cycle of the press and with a single dressing of the garment.

Accordingly, a primary object of this invention is to provide a three-head press where intermediate and upper heads can be moved into cooperative relationship with one another and with a stationary lower head, and wherein steam can be discharged from or vacuum can be drawn in the various heads selectively as desired, suitable to permit conditioning and pressing of two sections of a garment in a single dressing of the garment and press cycle.

Another object of this invention is to provide in a three-head press according the previous object suitable controls for safe, versatile, and entirely fool proof operation of the press, either manually or automatically.

Another object of this invention is to provide in a three-head press appropriate controls to cycle the movement of the heads and to draw vacuum in and/or discharge steam from the various heads, automatically and/or manually, to condition and press both legs of a pair of pants with a single dressing of the garment.

These and more detailed objects will be more fully appreciated after reviewing the following specification, including the accompanying drawings forming a part thereof, wherein:

FIG. 1 is a perspective view of the subject three-head press, showing the same with the heads in the open positions;

FIG. 2 is an enlarged sectional view as seen generally along the longitudinally center of the machine shown generally in FIG. 1;

FIG. 3 is a rear elevation view, partly in section as seen generally from line 3—3 in FIG. 2, showing the operating mechanism for the various heads of the press;

FIG. 4 is a schematic diagram suitable for use with the press of FIGS. 1—3 for operating the press, including moving the heads and applying steam or vacuum to the heads; and

FIG. 5 is a time function chart showing a preferred operating cycle for the press.

In this application the terms head and buck can be used interchangeably.

Referring to the drawings and particularly to FIG. 1, the subject press 10 includes a frame 12 supporting thereon a table 13 and a lower buck 14 elevated above the table. The frame further supports at pin 18 (FIG. 2) for pivotal movement about a horizontal axis an intermediate buck and an upper buck 22. The lower buck 14 has an upper surface which complements the lower surface of the intermediate buck 20, and likewise the upper surface of the intermediate buck 20 complements the lower surface of the upper buck 22. The lower buck 14 and upper buck 22 have padded material or covering 23 (FIG. 2) thereon which absorbs some irregularities in the complementary surfaces, and the intermediate buck 20 is on both surfaces conventionally of glossy metallic material.

Each buck structurally has a metal air and liquid tight enclosure for containing live steam and/or vacuum. The mating surfaces of the buck enclosures are perforated to permit the discharge of steam against the garment and/or to expose the garment to vacuum drawn within the buck. Suitable connections including flexible hoses for the movable intermediate and upper bucks are made to the buck enclosures for the steam and the vacuum.

Referring specifically to FIGS. 2 and 3, the lower buck 14 has an enclosure 24, and a live steam line 26 and vacuum line 28 are connected to the enclosure. The upper mating surface of the buck is perforated at openings 30. The intermediate buck 20 has an inner chamber 31 defined by edge seamed solid plates 32, and a steam line 33 to this chamber heats the intermediate buck; and further has an outer enclosure 34 consisting of edge seamed plates 35 having perforations 36, and a steam line 37 to this enclosure provides for live steam discharge from the upper and lower surfaces of the intermediate buck. Likewise, the upper buck 22 has enclosure 39, and a steam line 40 used to admit live steam thereto for discharge from openings 42 and a vacuum line 44 are connected to the enclosure chamber. The under surface of the lower buck enclosure 24 and the upper surface of the upper buck enclosure 39 are each covered with asbestos or other heat insulating material, as at 46, to minimize heat loss as well as potential danger of burning the operator.

The bucks are moved toward and away from one another to sandwich the intermediate buck tightly between the lower and upper bucks during the pressing operation. The means for moving the bucks will now be described, reference being directed to FIGS. 2 and 3. Both the intermediate buck 20 and upper buck 22 are supported on fulcrum type levers 50 and 52 respectively, pivoted at pin 18 to the frame 12.

Intermediate buck power cylinder 54 is pivoted at 55 to the intermediate buck lever 50 and is pivoted at its opposite end at 56 to the frame 12. Tension spring 58 is connected between the frame 12 at 59 and the intermediate buck lever at 60, and normally holds the buck open as is shown in FIGS. 2 and 3. A near end dampening mechanism 62 is connected through links 63 and 64 to the intermediate buck lever and operates to reduce shock at the opposite ends of the buck stroke. It will be understood that power to the intermediate buck power cylinder 54 is applied to the buck from its open position shown in FIG. 1 against the force of spring 58 to the closed position (not shown) whereon the intermediate buck 20 is flush against lower buck 14.

The upper buck is similarly provided with a power cylinder 68 pivoted at 69 to the upper buck lever 52 and at 70 to the frame 10; tension springs 72 connected at 73 to the
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lever and at 74 to the frame; and a shock absorber 76 connected through links 77 and 78 to the upper back frame. Power to the power cylinder 68 likewise moves the upper back against the force of spring 72 into flush engagement with the intermediate back when the intermediate back is closed and is against the lower back.

An additive power cylinder 80 is also pivoted at 81 to the upper back lever 52 and at 82 to the frame 12. This cylinder is of large capacity and is used to force the upper back against the lower back and simultaneously sandwich them with the intermediate back with a very large force required for good pressing. This additive power cylinder thus provides a safety condition in that it can be actuated only after the press has completely closed to minimize the possibility of an operator being accidently trapped and seriously injured in the press. It is understood that power cylinders 54 and 68 are sized to close the backs against the force of springs 58 and 72, but not apply real pressing between the backs. The linkage of power cylinder 80 to the upper back lever 52 in near alignment with a line through the pin 18 and pivot connection 82 permits a short stroke power cylinder 80 to minimize the cost of the unit.

The subject press operates to finish both legs of a pair of pants in a single press cycle and with a single dressing of the garment. Normally, the press cycle initially provides a vacuum to the lower back 14 to assist the operator in dressing the lower pants leg on this back and/or steam discharge from this back to condition the garment. The intermediate back is lowered thereafter while maintaining the upper back elevated, and vacuum is then provided at the intermediate back to again assist the operator in dressing the upper pants leg on this buck and/or steam is discharged from this back to condition the garment. Thereafter, the upper back is lowered against the intermediate back and pressure applied between the upper and lower backs. Simultaneous with the pressure, steam is discharged from the intermediate back to further condition the garment. After approximately three seconds and concurrently with the application of the pressure the steam discharge is terminated and vacuum is drawn in the upper and lower backs for approximately one second. Thereafter, the high pressure on the buck is reduced and the vacuum is continued for approximately ten seconds to dry the garment. The vacuum is then discontinued and after approximately one second the press can be opened and the garment can be removed. Preferably, the upper head should be lifted completely and the intermediate head lifted only an inch or so off the lower buck so that the garment will not be split apart. To elevate the intermediate head only a given amount, a special intermediate head lift assembly is provided as follows.

The intermediate head lift assembly includes a power cylinder 88 connected at 90 to the press frame 12. The cylinder 88 has a foot 92 connected to its rod that abuts angle 94 of the intermediate head lever 50 when the buck is closed. The cylinder 88 preferably is of a much larger capacity than the intermediate head power cylinder 54 to permit the cylinder 88 to overcome the cylinder 54 when both are simultaneously under power. The stroke of the intermediate head lift cylinder 88 is short so as to lift the intermediate buck 20 only a short distance, e.g. no inch or so, above the lower back 14. This permits the lower leg of the garment to be slipped from between the parted backs. Normally, power will be applied to the intermediate buck cylinders 54 and 88 simultaneously when it is desirable to have the intermediate buck partially, and both cylinders will be vented when it thereafter is desired to elevate the buck completely for the subsequent pressing operation.

The control for the subject press is within the two hand safety control required by safety laws of various states so that the machine remains inoperative until the operator concurrently depresses two buttons to start the cycle. For this reason, the control includes four push buttons indicated PB-1, PB-2, PB-3 and PB-4 located physically on table 13. Moreover, the control provides that the upper head can only be closed after the intermediate head has in fact been closed, and conversely provides that the intermediate head can only be opened after the upper head has been opened.

Regarding the steam and vacuum operation, vacuum can only be drawn in and the steam can only be discharged from certain heads when they are in the certain operative positions. In other words, vacuum can be applied only to the lower head when both the intermediate and upper heads are raised and opened to assist the operator in initially dressing the garment in place on the lower back, and steam can be discharged only from the lower head when the intermediate and upper heads are raised. After the intermediate head has been lowered against the lower buck, the upper head still being open, vacuum can be drawn in and steam can be discharged from only the intermediate head. With the upper head closed, during manual control of the press, steam can be applied to the intermediate head only and vacuum can be applied to all heads; while for the automatic control, vacuum is drawn in the lower and the upper heads only, while steam is discharged only from the intermediate head. The steam conditions the fabric and the vacuum and the applied heat dry the fabric.

Referring now specifically to FIG. 4, the circuit includes an intermediate head control 100, an upper head control 102, an additive pressure control 104, an intermediate head lift control 106, a vacuum control 108, and a steam control 110. In these controls, the various power air, steam or vacuum sources are only indicated schematically and are identified as required.

The intermediate head control 100 includes the two push buttons PB-1 and PB-2 which manually open valves 120 and 122 connected together by line 123 and which communicate through line 124, valve 126 and line 127 to the air powered actuation means of valve 128. The push button operated valves 120 and 122 are normally closed three-way valves, while valve 126 is a normally open two-way valve and valve 128 is a normally closed three-way valve. One outlet of valve 128 is directed through line 130 to the one-way power cylinder 54 which includes cup 134, a connecting rod 136 and an exhaust vent 138. A take-off port 140 is provided in cylinder 54 which is uncovered after the cup 134 traverses the entire length of its required stroke, and this port is connected by line 142 the purpose of which will be outlined later. The outlet of the valve 128 similarly is directed by line 144 to the air powered actuation means of valve 126 that operates this valve.

Thus, by manually depressing push buttons PB-1 and PB-2 to open valves 120 and 122, line pressure is admitted through normally open valves 126 to open the normally closed valve 128, which thereby admits line pressure through air line 130 to the cylinder 54 to lift the cup 134 and thus close the intermediate head of the press. The pressure in line 130 simultaneously passes through line 144 to close the normally open valve 126 and trap air in line 127 to maintain valve 128 open. The operator at this time can release the push buttons PB-1 and PB-2 with the intermediate head being held against the lower buck.

The lower leg of the pants is thus confined between the lower and intermediate heads and the operator now dresses the upper leg on the intermediate head. The operator can now release the intermediate head manually by foot pedal FP-1 which opens normally closed two-way valve 150. This vents line 127 to atmosphere through line 152 and normally open two-way valve 154 to shift valve 128 to close off the line pressure and to exhaust the cylinder 54 to atmosphere. The purpose of valve 154 will be explained later.

The upper head control 102 similarly includes a pair...
of push buttons, the same PB-1 and PB-3 connected together, by lines 123, 164 and 165 through normally closed three-way valve 162. This valve 162 is opened by pressure in line 161 which connects through line 142 to the power cylinder 54 and is pressurized only when the cylinder is fully extended. This prevents the accidental closing of the upper head when the inner head is still open. Line 166 is directed through normally open two-way valve 170 to open the normally closed three-way valve 172 and hold this valve open until the condition occurs to be described later. Line pressure can thus be directed through the now opened valve 172 and line 174 to the power cylinder 68 for the upper head. The cylinder 68 includes cup 178 connected to a rod 180, vent 181 and take-off port 182. Air pressure to the cylinder 68 thus forces the upper head against the intermediate head at which time cup 178 passes take-off port 182 to divert line pressure through lines 184 and 185 to the valve 168 to close the normally open valve 168 and by the air trapped in line 170 maintain the valve 172 open for the desired admission of line pressure to the upper head control cylinder 68. At this time also, the operator can remove his hands from the buttons PB-1 and PB-3. Note also that line 184 connects through line 187 the cylinder 68 to valve 154 to close this valve and prevent the opening by the foot pedal FP-1 of the intermediate head when the upper head is closed.

Although both the intermediate head and the upper head are closed, there is only a slight pressure against one another. At this time, the operator can release the upper head by depressing momentarily the push button PB-4 which opens normally closed valve 186 to vent through lines 188 the line 170 between the closed valve 168 and air actuating means of valve 172. This vents the cylinder 68 through line 174 and valve 172 to open the upper head. Simultaneously, the intermediate head is opened by the control 106 to be described now.

The intermediate head lift control 106 includes a three-way, double-ported valve 190 having line pressure connected with or separated from line 194, depending on the position of the valve member in the valve. The valve has one air actuating means connected by line 192 to the outlet 124 in the intermediate head control 100 and has the opposite air actuating means connected through line 190 to the upper head cylinder take-off port 182. When pressure is in line 192 from the intermediate head control 100, the valve 190 is closed; whereas when pressure is in line 184 of the upper head control 102, the valve 190 is open. The valve 190 is of the type that when it is positioned at either its open or closed position, it will remain there until moved to the other position. A normally open three-way valve communicating with line 184 through line 197 is closed by pressure in line 184 to block the outlet line 194 from valve 190. Line 198 connects the opposite side of valve 196 to the lift cylinder 88.

In the normal cycle, once the intermediate head is closed, pressure from the line 124 and line 192 shifts the valve 190 to the closed position to prevent flow of the line pressure to the line 194. However, when the upper head closed completely to begin the actual pressing cycle, the take-off port 182 exposes line pressure through line 184 to the opposite side of the valve 190 to shift the valve 190 to the open position. Simultaneously, the pressure in line 184 closes valve 190 to block the output from the opened valve 190. This condition continues until the upper head is raised by venting line 170 between valves 168 and 172, which thereby vents line 184 through the cylinder 68 and permits the valve 196 to open. Line pressure thus passes through opened valve 190, line 194, valve 196 and line 198 to cylinder 88. Cylinder 88 includes cup 189, and has substantially larger capacity than the intermediate head cylinder 54 to overpower this cylinder and lift the intermediate head from contact with the buck even though the intermediate head cylinder 54 is still under pressure. This permits the operator to remove the upper and lower legs of the garment from the press. The operator can then raise the intermediate head completely by depressing the foot pedal FP-1 and open valve 150 to vent line 127 and permit cylinder 54 to be vented through valve 128.

Inasmuch as power cylinders 54 and 68 are sized to only counter-act the spring return forces on the bucks, as was previously mentioned, it is necessary to have an additive force snugly engage the press heads against one another. The high pressure and additive control 104 includes pressure from take-off port 182 on the upper head cylinder 68 which is transmitted through a normally open three-way solenoid control valve 210 to open valve 214. The inlet line 216 to the valve 214 is on the outlet side of an adjustable, zero to maximum pressure regulator 218, and the outlet line 220 from valve 214 is directed through a quick release exhaust valve 222 to the high pressure cylinder 80. The high pressure cylinder 80 is a one-way operation cylinder including a cup 226 and rod 228. Pressure in line 220 thereby moves the piston 226 with a pre-determined force as determined by the pressure regulator 218 to apply the required force between the various press heads. To release the high pressure cylinder 80, the valve 210 is shifted to close the inlet side at line 184 and simultaneously vent line 212 which closes valve 214 and blocks line pressure to the cylinder and furthermore which shifts the quick release dump valve 222 to vent the pressure from cylinder 80.

The vacuum and steam controls 108 and 110, respectively, will now be explained. The vacuum and steam lines and valves are not shown on the control but the same are controlled by means of pressure sensitive diaphragms which act in response to various pressure conditions in the control. The diaphragms are pneumatically opened, spring returned, and diaphragm 232 is used to control the vacuum to the lower head 14, diaphragm 233 is used to control the vacuum to the upper head 22, and diaphragm 234 is used to control the vacuum to the intermediate head 20, whereas diaphragm 256 is used to control the steam to the lower head 14 and diaphragm 258 is used to control the steam to the intermediate head 20.

Vacuum is initially applied to the lower head 14 during the dressing operation, as was previously mentioned, by depression of foot pedal FP-2 which opens normally closed valve 236. Upon opening valve 236 line pressure is admitted through line 238, line 242 to shuttle valve 242 for opening of the buck vacuum valve 230. Similarly, depression of foot pedal FP-3 opens the normally closed three-way valve 246 to admit pressure through line 248, a shuttle valve 250, one line of a four-way valve 252 and the outlet line 254 to the lower buck steam diaphragm 256, which admits steam to the lower buck chamber.

For operation during the actual pressing cycle when the heads are closed, the line pressure conveyed through intermediate head control cylinder take-off port 140 through lines 142 and 251 is used to shift the valves 238 and 252 for both the vacuum and the steam controls. Thus, considering initially the vacuum control, valve 238 shifts to direct the output from line 237 to line 260 which operates the intermediate head vacuum control diaphragm 234. Thus, the vacuum is drawn only in the intermediate head chamber. Similarly, the steam control valve 252 is shifted by pressure in line 242 and 251 to provide the output. The air actuating pressure in line 248 passes through line 252 to line 262 to shift the intermediate head steam control diaphragm 258. Structurally, both the vacuum and the steam control valves, 238 and 252 respectively, are normally biased by springs to the position shown and are shifted by pressure in line 251. The manual operation of the foot pedals FP-2 or FP-3 thus will direct steam or vacuum to either the lower buck chamber or the intermediate buck chamber depending on the conditions of
valves 238 and 252. Moreover, the steam system can be operated automatically by an appropriate electric control (not shown) by means of a normally closed three-way solenoid valve 266 which is opened only through energized control such as through a timer. Likewise, normally closed three-way solenoid valve 268 can be connected to lower and upper head vacuum control diaphragm by lines 269 and 270 through shuttle valve 242 for automatic vacuum control.

Automatic cycling of the press can be controlled by means of an automatic timing device such as covered in the Patent 3,272,932 assigned to the McGraw-Edison Company. The timer mechanism is controlled by a timer start and hold device 280, which can be generally nothing more than a diaphragm connected to the line 184 that holds micro-switch contacts (not shown) closed. For example, the garment is dressed on the press and the intermediate and upper heads are closed by the operator upon actuation of the appropriate push buttons PB-1, PB-2 and PB-3. Thereafter, pressure in line 184 actuates the diaphragm 280 to close the contact controls (not shown) and begin the operation of the timer. The timer then automatically begins and ends the particular function that is being controlled, such as discharge steam by means of solenoid valve 265 or draw vacuum by means of solenoid valve 268. Additionally, the timer energizes solenoid 280 to release the intermediate pressure on the additive pressure cylinder 80, and thereafter opens the press heads by actuation of two way solenoid release valve 282 connected by lines 283 and 188 to line 170 which vents the upper head cylinder 68 through the released valve 172. When the press heads are open, line 184 is vented and the diaphragm 280 released to automatically reset the timer for the next press cycle.

What is claimed is:

1. A three-head press, comprising a lower head, an intermediate head mounted to move between a raised position spaced above the lower head and a closed position against a lower head, and an upper head mounted to move between a raised position spaced above the intermediate head and a closed position against the intermediate head, means for preventing the closing of the upper head without first closing completely the intermediate head against the lower head, the adjacent surfaces of the lower, intermediate, and intermediate and upper heads, respectively, being complementary to one another and being perforated, means to heat the intermediate head, means operative when both the intermediate and upper heads are closed to apply a large adjustable squeezing pressure between the various heads, means to discharge live steam from the perforations of the intermediate and upper heads, and means for raising the upper head from the closed position and simultaneously for raising the intermediate head to an intermediate position spaced only a small distance above the lower head, and means to prevent raising the intermediate head without first raising the upper head.

2. A press according to claim 1, wherein means are provided to draw vacuum initially through the perforations in the lower head, while the intermediate and upper heads are in the raised positions, to help dress an article on the lower head and wherein means are provided to draw vacuum through the perforations in the intermediate head, while the intermediate head is closed against the lower head and the upper head is raised, to help dress an article on the intermediate head and means are provided for discharging steam from the perforations in the lower head.

3. A press according to claim 1, wherein when the intermediate head is closed and the upper head is raised, means are provided for discharging live steam from the perforations in the intermediate head.

4. A press according to claim 1, wherein when the intermediate head is closed and the upper head is raised, means are provided for discharging live steam from the perforations in the lower head.

5. A press according to claim 1, wherein the large squeezing pressure between the heads is applied only a short duration of the time during which vacuum is being drawn in the upper and lower heads, and wherein means are provided to release this pressure while in the closed position for a short duration.

6. In a three-head press having lower, intermediate and upper heads mounted to move against respective complementary adjacent faces in the closed condition and to move to open conditions where the respective adjacent faces are spaced apart, the combination including means for preventing the upper head to close against the intermediate head without first completely closing the intermediate head against the lower head, means operative when both the intermediate and upper heads are closed to apply a large squeezing pressure between the various heads, means for raising the upper head from the closed condition and simultaneously for raising the intermediate head to an intermediate position spaced only a small distance above the lower head, and means for preventing the intermediate head to raise without first raising the upper head.

7. A press according to claim 6, wherein first power cylinder means acts on the intermediate head to bring it to the closed condition against the lower head, and the means for raising the intermediate head includes a second power cylinder that acts on the intermediate head against the first power cylinder means and is of such capacity that it overpowers the first power cylinder, both being powered, to raise the intermediate head.

8. A press according to claim 7, wherein a third power cylinder acts on the upper head to bring it to the closed condition against the intermediate head, and the means for preventing the upper head to close against the intermediate head without first completely closing the intermediate head against the lower head includes a take-off connection from the first power cylinder means, opened only when the intermediate head is against the lower head, that is connected operatively to the third power cylinder for operating same to close the upper head only when the take-off connection is opened.

9. A press according to claim 9, further including fourth means to bias the upper and lower heads toward one another and against the intermediate head with a large additive pressing force, said additive pressing means only being operative when the heads are in the closed positions.

10. A press according to claim 10, wherein the adjacent surfaces of the lower and intermediate, and intermediate and upper heads, respectively, are complementary to one another and are perforated, wherein means operative when both the intermediate and upper heads are closed initially discharge steam from the perforations of the intermediate and upper heads, and subsequently draw vacuum through the perforations of the lower and upper heads, and wherein said additive pressing means operates concurrently with the discharge of steam from the intermediate head, and ceases to operate before the termination of drawing vacuum in the lower and upper heads.

11. In a three-head press having a lower head, an intermediate head pivoted to move against the lower head, an
upper head pivoted to move against the intermediate head, and means for moving the intermediate and upper heads as desired, the combination comprising having adjacent surfaces of the lower and intermediate heads, and the intermediate and upper heads, respectively, complementary to one another and having perforations therein, means including a steam line connected to the lower and intermediate heads for delivering steam to each head for discharging steam from said perforations therein, a control for discharging steam from only certain of the heads depending on the relative positions of the heads and including means to discharge steam from only the lower head when the intermediate head is open and means to discharge steam from only the intermediate head when the intermediate head is closed, means including a vacuum line connected to the lower, intermediate and upper heads for drawing vacuum in each head for admission through the perforations therein, and a control for drawing vacuum in only certain of the heads depending on the relative positions of the heads and including means to draw vacuum in only the lower head when the intermediate head is open, means to draw vacuum in only the intermediate head when the intermediate head is closed and the upper head is open, and means to draw vacuum simultaneously in only the lower and upper heads when both the intermediate and upper heads are closed.

13. A press according to claim 12, wherein the steam control and the vacuum control each includes a means to sense the intermediate head being at its operative position against the lower head, which sensing means actuates the respective steam discharge and vacuum drawing means.

14. A press according to claim 12, wherein the steam control and the vacuum control each includes manually operable means that can be actuated when desired to discharge steam from or draw vacuum in the particular head as determined by the relative positions of the heads.

15. In a three-head press having a lower head, an intermediate head pivoted to move against the lower head, an upper head pivoted to move against the intermediate head, and means for moving the intermediate and upper heads as desired, the combination comprising having adjacent surfaces of the lower and intermediate heads, and the intermediate and upper heads, respectively, complementary to one another and having perforations therein, means including a steam line connected to the lower and intermediate heads for delivering steam to each head for discharging steam from said perforations therein, a control for discharging steam from only certain of the heads depending on the relative positions of the heads and including a valve operable in one position to discharge steam from only the lower head and operable in another position to discharge steam from only the intermediate head, means to hold the valve normally in the one position, and means responsive to the intermediate head being against the lower head to shift the valve to the other position.

16. In a three-head press having a lower head, an intermediate head pivoted to move against the lower head, an upper head pivoted to move against the intermediate head, and means for moving the intermediate and upper heads as desired, the combinations comprising having adjacent surfaces of the lower and intermediate heads, and the intermediate and upper heads, respectively, complementary to one another and having perforations therein, means including a vacuum line connected to the lower and intermediate heads for drawing vacuum in each head for admission through the perforations therein, a control for drawing vacuum in only certain of the heads depending on the relative position of the heads and including a valve operable in one position to draw vacuum in only the lower head and operable in another position to draw vacuum in only the intermediate head, means to hold the valve normally in the one position, and means responsive to the intermediate head being against the lower head to shift the valve to the other position.

17. A press according to claim 16, wherein a vacuum line is also connected to the upper head for drawing vacuum in said head for admission through the perforations therein, and wherein a second valve is operable in one position to draw vacuum simultaneously in the lower and upper heads.

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U.S. Cl. X.R.
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