

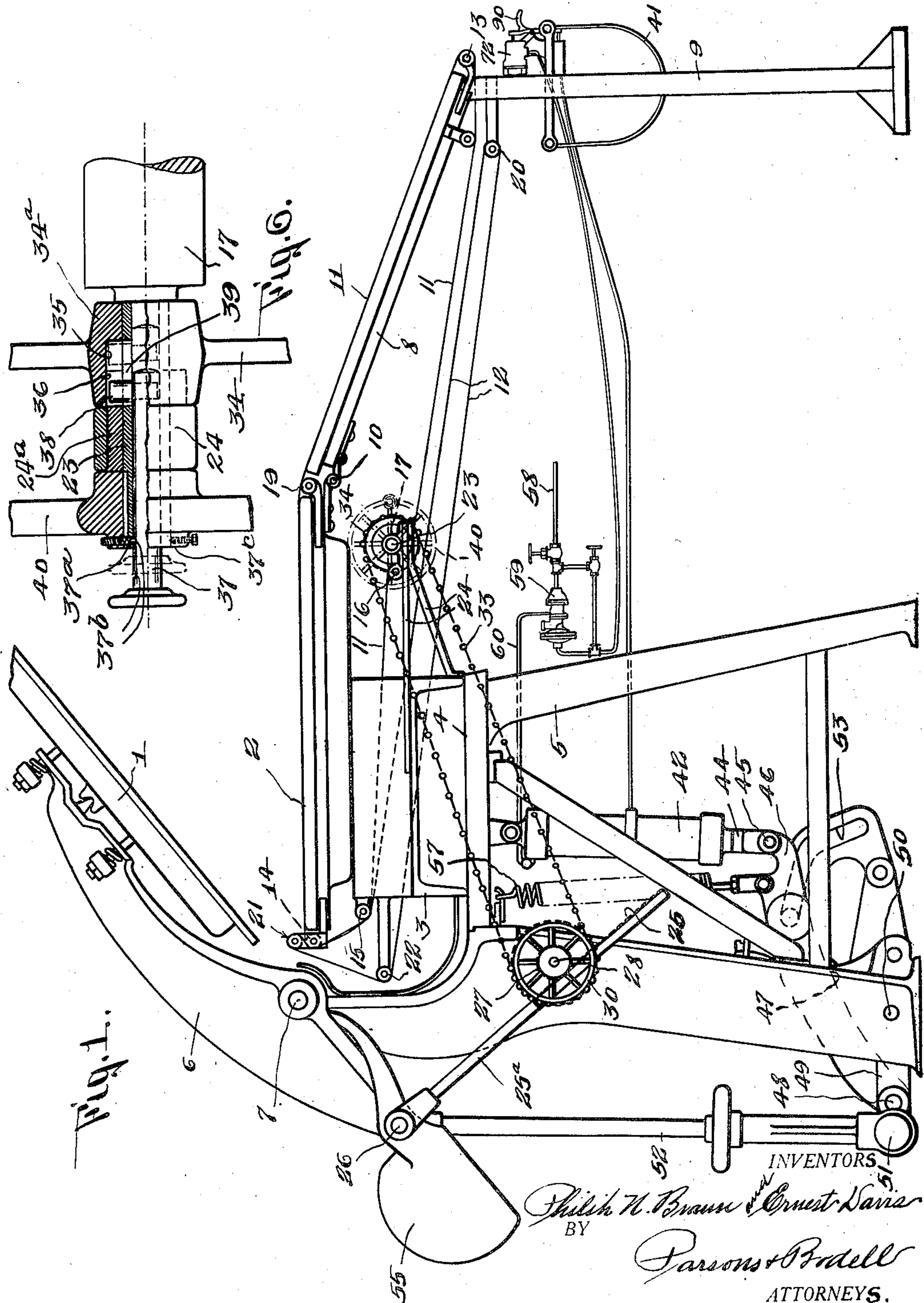
Nov. 26, 1935.

P. N. BRAUN ET AL

2,022,073

GARMENT OR IRONING PRESS

Original Filed April 21, 1928 2 Sheets-Sheet 1



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Fig. 7.

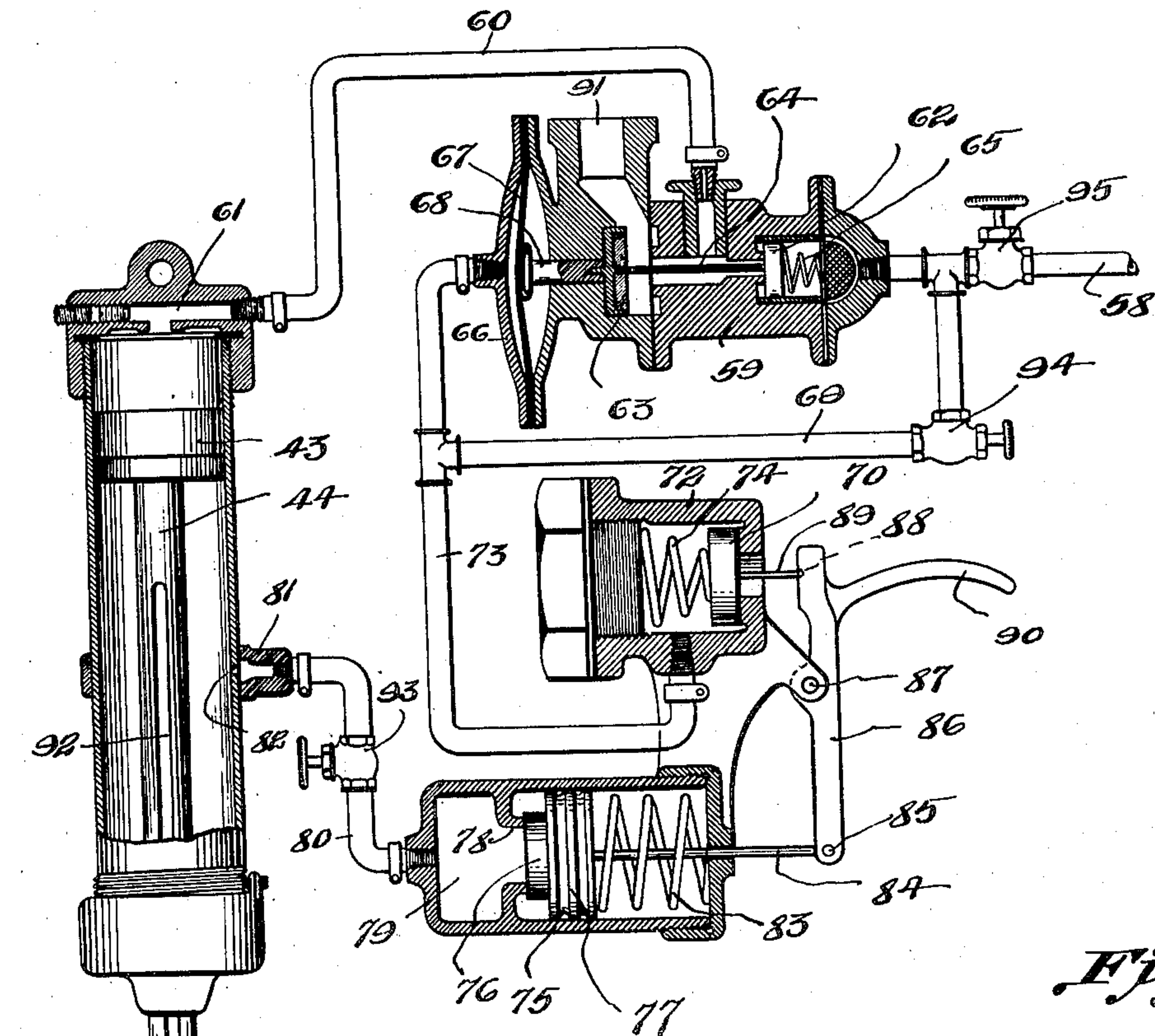


Fig. 5.

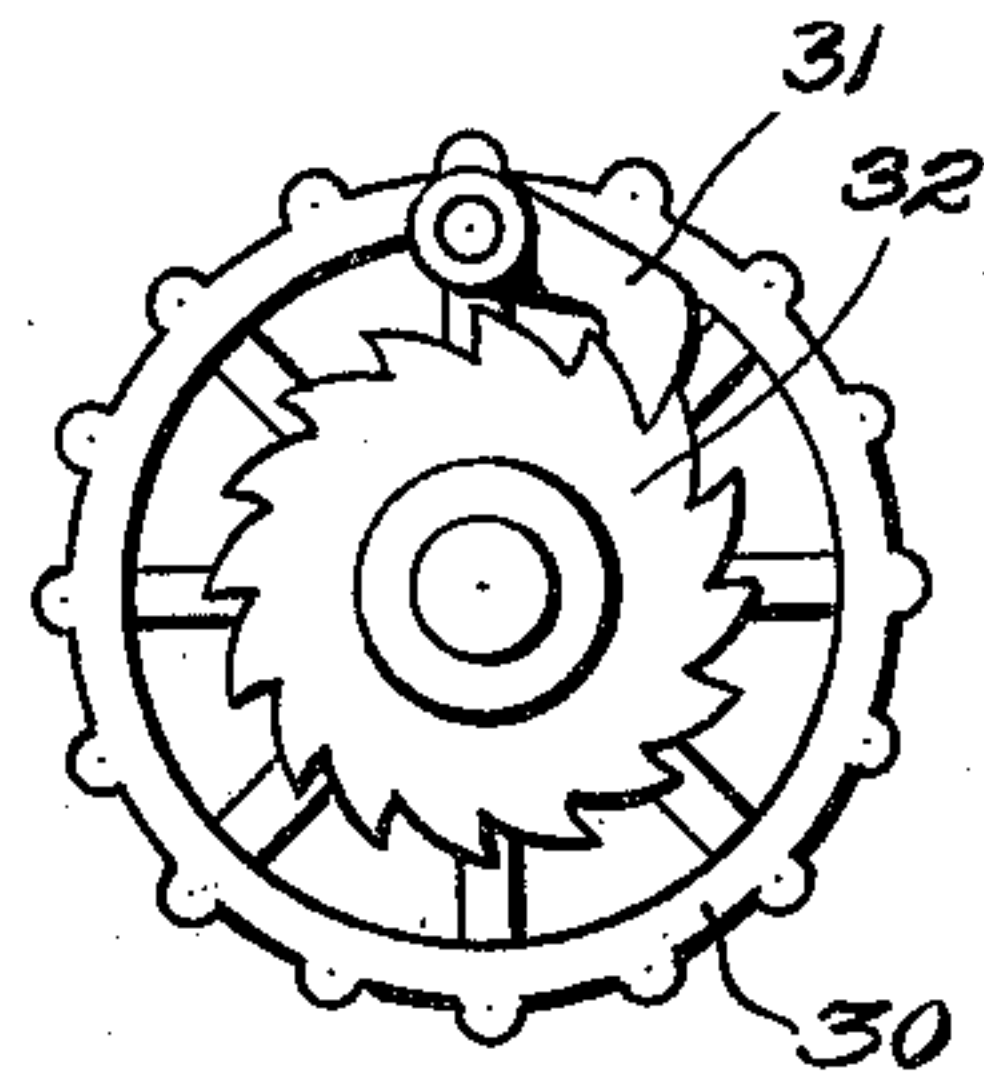


Fig. 4.

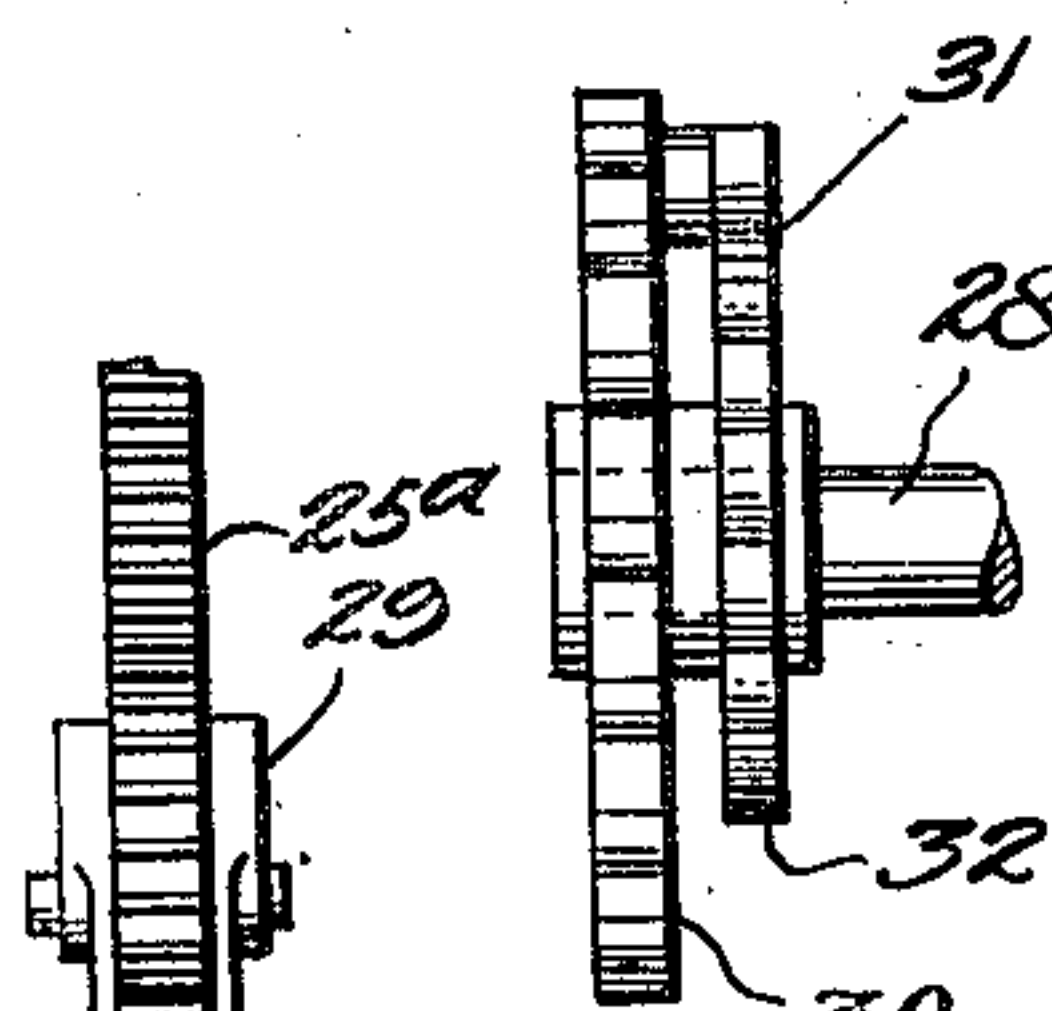


Fig. 3.

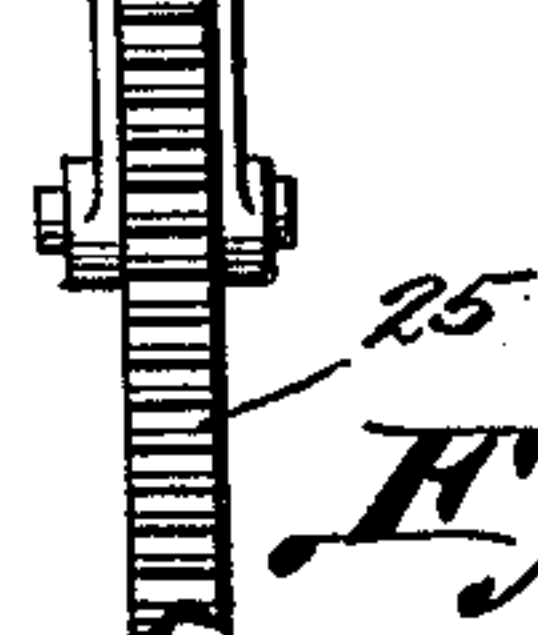
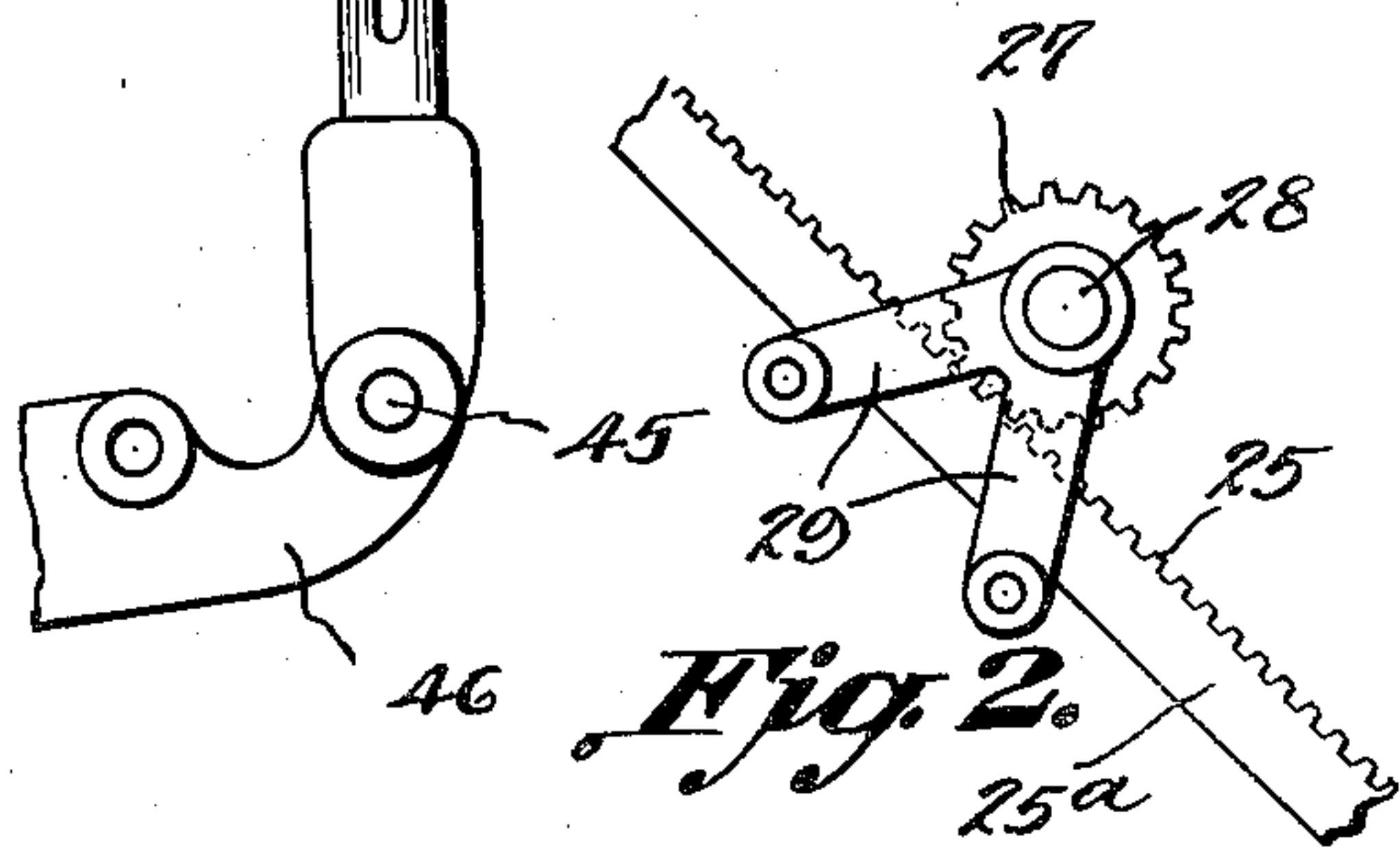


Fig. 2.



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UNITED STATES PATENT OFFICE

2,022,073

GARMENT OR IRONING PRESS

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Application April 21, 1928, Serial No. 271,853
Renewed April 6, 1935

27 Claims. (Cl. 68—9)

This invention relates to machines having an opening and closing movement as garment and laundry pressing machines. The invention has to do particularly with conveying mechanism for bringing work between the pressing jaws of the press and removing it from between the jaws after it is pressed. In addition, the invention relates particularly to a timing mechanism for opening the press after the press has remained closed a desired pressing period and also to again close the press so that continuous automatic opening and closing of the press is obtained.

It is an object of the invention to devise a particularly simple and efficient means for conveying the work to and from the pressing elements.

Another object is to produce a simple and efficient means for automatically causing the machine to open after a predetermined interval.

A still further object is to provide a pressing machine which will automatically open and close, which operation is obtained by a new and novel timing or automatic control mechanism.

The invention consists in the novel features and constructions hereinafter set forth and claimed.

In describing the preferred embodiment of this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a side elevation of a pressing machine embodying the invention and shows particularly the conveying mechanism and its relation to the other parts of the press.

Figure 2 is a detail side elevation of a rack and pinion mechanism for actuating the work carrier during the opening movement of the press.

Figure 3 is an edge view of parts shown in Figure 2.

Figure 4 is a fragmentary view of the one way clutch or ratchet and pawl mechanism forming part of the actuating mechanism for the work conveyor.

Figure 5 is an elevation of parts shown in Figure 4.

Figure 6 is an enlarged fragmentary view, partly in section, of a clutch for connecting and disconnecting the work conveyor from the driving mechanism.

Figure 7 is a fragmentary sectional view of the automatic means for timing the opening and closing of the press at predetermined intervals.

This invention comprises, generally, coacting pressing elements, as a stationary buck and a head movable toward and from the buck, a work conveyor including a belt, one run of which moves over the buck from the front to the rear side

thereof and another run of which extends under the buck from the rear of the buck to the front of the machine and another means as a second belt for coacting with the lower run of the first belt, and means actuated during the opening of the press head for actuating the belts.

The invention is illustrated in the conventional type of machine, as a garment or laundry pressing machine which comprises a head 1 movable toward and from a buck 2 which is supported by a bracket 3 on a table or bench 4. A suitable frame, designated generally 5, supports the table 4 and the head being shown is carried by the usual yoke lever 6 which is pivoted between its ends at 7 to the frame in the rear of the buck 2. The lever 6 is actuated by a motor through motion transmitting means between the motor and the rear arm of the lever 6.

The mounting of the buck 2 is different from the mounting in ordinary pressing machines, in that the bracket 3 is provided with a passage therethrough below the buck through which the work conveyors extend from the rear to the front of the machine.

Preferably, the machine is provided with an inclined table 8 in the front of the buck 2, this table being supported by suitable standards 9 and being secured as by hinges 10 to the front side of the buck 2.

The work conveyors are here shown as a pair of belts 11 and 12, the belt 11 running over the rollers 13, 14, 15, and 16 and partly around the driving roller 17 back to the roller 13 and the upper run of this belt 11 extends over the table 8 and the upper face of the buck. The rollers 13 and 14 are located at the front of the table 8 and at the rear of the buck 2 respectively. There is also an intermediate roller 19 at the front edge of the buck over which the upper run of the belt 11 runs. The other conveyor belt 12 runs over rollers 20, 21, 22 and the upper run thereof lies contiguous to the portion of the belt 11 running between the rollers 14 and 15 and diverges from the lower run 11 between the rollers 15 and 20. The roller 21 is located directly above the roller 14. The driving roller 17 is secured to a suitable shaft 23 mounted in bearings supported by brackets 24 which project forwardly from the bracket 3 beneath the front portion of the buck 2. The roller 17 is located beneath the front portion of the buck 2.

The shaft 23 is rotated during the opening of the head 1 by driving means connected with the head carrying lever 6 or any part of the motion transmitting means movable with the lever 6.

This conveyor driving mechanism includes a one way clutch device which acts to drive the shaft 23 during the opening movement of the head 1, and to idle during the closing movement of the head. The driving mechanism, here shown, is a rack 25 provided on a rod 25^a which is pivoted at 26 to the rear arm of the head carrying lever 6 and meshes with the pinion 27 loosely mounted on the shaft 28. The portion of the rod 25^a adjacent to the pinion is guided in a carrier 29 pivoted on the shaft 28. Preferably the pinion is loosely mounted on the shaft, especially if the roller is not driven from opposite ends of the shaft. In other words, the shaft is a stationary spindle and does not require journal bearings in the frame.

The shaft 28 has a sprocket wheel 30 loosely mounted thereon and provided with a pawl 31 on one side thereof. The pawl coacts with the ratchet wheel 32 which is rotatable with the pinion 27. During movement of the rack 25 in a downward direction, the ratchet wheel 32 through the pawl 31 drives the sprocket wheel 30 in one direction, and during retrograde movement of the rack, the ratchet wheel ratchets past the pawl without transferring movement to the sprocket wheel 30, this ratchet and pawl constituting a one way clutch. The sprocket wheel 30 is connected by a sprocket chain 33 to a similar sprocket wheel 34 on the shaft 23, so that any rotation of the sprocket wheel 30 is transferred to the sprocket wheel 34, and hence to the roller 17 to cause the roller to move the belt 11.

In order to rotate the roller 17 to feed the belt 11 independently of the actuating mechanism, a manually operable clutch is provided for disconnecting the sprocket wheel 34 from the shaft. As here illustrated, the hub 34^a of the wheel 34 is provided with a key way 35 and an annular recess 36, and the clutch includes an endwise movable rod 37 movable axially in a bore in the shaft and having a pin or tooth 38 extending through a longitudinal slot 39 in the shaft and located either in the key way 35 or the annular recess 36. A suitable hand wheel 40 is mounted on the shaft, and the shaft is rotatably mounted in the bracket 24. A bushing 24^a is inserted to provide a bearing surface.

When the clutch tooth 38 is shifted inwardly to the dotted line position in Figure 6, the tooth 38 is in the key way 35 of the hub 34^a of the wheel 34 so that the wheel 34 is keyed to the shaft. When the clutch tooth 38 is shifted to its full line position into the annular recess 36, the wheel is unclutched from the shaft and the shaft can be turned by hand by turning the wheel 40. The wheel 40 is secured to the shaft 23 in any suitable manner, as by a key.

The clutch is held in position by suitable means as a spring pressed poppet or detent 37^a coacting with notches 37^b on the rod of the clutch 37, Figure 6. The poppet is mounted in a collar 37^c on the shaft 23 of the clutch on the outer side of the hand wheel 40.

In operation, the operator lays the articles to be pressed on the portion of the belt 11 over the table 8 and while the machine is opening, the upper run of the belt travels rearwardly carrying the work on to the buck 2. The press then closes pressing the work on the portion of the carrier over the buck 2. During the pressing operation, the operator arranges more work on that portion of the belt 11 which lies over the table 8.

During the next opening of the press, the belt 11 is actuated as before which carries the work

on the buck around the rollers 14 and 16 against the adjacent portion of the belt 12, the belt 12 being actuated by the friction between the belts 11 and 12.

During continued operation, the work is carried forwardly on the upper run of the belt 12 to the front of the machine where it is deposited in a suitable tray 41. At any time the press is open, the operator can work the belt by hand by throwing the clutch to full line position shown in Figure 6 and turning the hand wheel 40.

The timing mechanism for controlling the actuation of the head will now be described. In the present embodiment of our invention, the machine opens and closes automatically at predetermined timed intervals.

In the illustrated embodiment of the invention, a fluid operated motor is shown to actuate the movable parts of the machine.

The fluid operated motor is here shown as a cylinder or casing 42, and a single acting piston 43 movable in the cylinder and having its rod 44 connected to motion transmitting means between the motor or actuator and the head, it being here shown as connected to the rear arm of the yoke lever 6. As here shown, the piston rod 44 is pivoted at 45 to the front end of the combined lever and pull link 46 which rests at 47 on the frame and is pivoted at its front end at 48 to a link 49. The link 49 is pivoted at one end at 50 to the frame and at its other end at 51 to the lower end of the link 52 which is pivoted at 26 to the rear arm of the yoke lever 6, the links 49, 52 constituting a toggle.

The lever 46 has a follower movable along a cam slot 53 which causes the lever to initially straighten the toggle while moving in the horizontal portion of the slot and while the head 1 is being brought down close to the buck 2 and then to straighten the toggle while heavy pressure is being applied as the follower moves into the upright portion of the cam slot. As before stated, the piston is single acting and the press is opened by a counterweight 55 pivoted at 26 to the rear arm of the lever 6 and by a spring 57.

The construction of the motor and the motion transmitting mechanism per se forms no part of this invention.

The invention includes fluid operated means connected in the air or conduit system for operating control means at predetermined intervals to open and close the press, and this fluid operated means is shown as controlled by the movable member of the motor, as in this instance, the piston or some part operated thereby.

The fluid operated means will now be described which is connected in the conduit system for controlling the flow of motive fluid to and from the cylinder 42 by operating the control means at predetermined intervals to open and close the press. The fluid operated means comprises a feed pipe 58 adapted to be connected to any suitable source of supply of motive fluid as compressed air, and connected with a valve casing 59. A pipe 60 connects the valve casing with a port 61 in the upper end of the cylinder 42. Within the valve casing 59 is a normally closed intake valve 62 and a normally open exhaust valve 63 connected together as by a stem 64 so that they act as a unit. A spring 65 returns or urges the valves to their normal positions. The pipe 60, which connects the valve casing 59 with the motor means, connects with the valve casing from a point between the valves. A pressure operated means controls the opening and closing of

the valves such as a diaphragm chamber 66 mounted on the end of the valve casing and having a diaphragm 67 therein which acts upon a stem 68 connected to the exhaust valve 63. A by-pass 69 passes around the valve casing 59 and connects the intake 58 with the pressure side of the diaphragm chamber 66.

As thus far described, the motive fluid or air from the intake pipe 58 first passes through the by-pass 69 into the diaphragm chamber 66 and acts on the diaphragm 67 to close the exhaust valve 63 and open the intake valve 62. Air then passes through the valve casing 59 and pipe 60 to the cylinder 42 and actuates the piston 63 on its power stroke. The valves remain in operated position to keep the press closed as long as the air pressure continues acting upon the diaphragm 67.

The automatic timing means connected in the conduit system for operating the valves 62, 63 to normal position or position assumed when the press is open is preferably a pneumatic means. This timing means permits the intake 62 to close and the exhaust 63 to open after a predetermined lapse of time and comprises a normally closed exhaust valve 70 located in a casing 72 which is connected by a pipe 73 to the diaphragm chamber 66 or to the by-pass 69. The means which determines the time interval includes a second fluid operated means which is connected in the conduit system and opens the exhaust valve 70 at certain intervals. The beginning of the time interval is controlled by some part of the motion transmitting means such as the piston. The exhaust valve 70 is acted on by a returning spring 74 which normally holds the valve closed.

The pressure operated means which is controlled by the movable member of the motor or some part actuated thereby comprises a casing or cylinder 75 having a double piston 76, 77 therein. The smaller piston 76 serves as a valve to close the passage 78 in the casing and prevent the working fluid from coming in contact with the head of the larger piston 77 so long as the piston 76 seats upon the valve seat 78.

In Figure 7, the chamber 79 is shown as connected in the conduit system through the cylinder, that is, the cylinder forms part of the conduit system after the piston has traveled a predetermined distance on its power stroke.

A pipe 80 connects the chamber 79 to a casing 81 mounted on the cylinder, the cylinder being formed with a port 82 opening into the casing. The port is so located that it is uncovered by the piston 43 during the out stroke of the piston or at the time the head 1 has been brought down close to the work on the buck 2 or on the overlying portion of the belt 11. The valve 93 in the conduit 80 permits the air to leak slowly into the chamber 79 and the speed with which the air passes therethrough into the chamber 79 may be regulated so that the length of time between closing of the press and automatic actuation of the piston 76, 77 to open the press may be any desired interval.

The movement of the double piston 76, 77 is against the action of the returning spring 83 and this double piston is connected by mechanical means to the exhaust valve 70 to open it. These connections are a rod 84 which is carried by the double piston and is pivoted at 85 to one end of the lever 86. The lever 86 is pivoted at 87 between its ends and coacts at 88 at its other end with the stem 89 on the exhaust valve 70. The

lever also has a suitable handle 90 for manual operation when desired.

In operation, the intake valve 62 is opened and the exhaust valve 63 closed by the action of the diaphragm 67, as before described, so that air is admitted to the cylinder 42 and the piston 43 moves down on its out stroke until it uncovers the port 82. Some of the air passes through the port 82, casing 81, pipe 80, and valve 93 to the chamber 79 of the cylinder 75. When the pressure builds up sufficiently in the chamber 79, it acts on the face of the smaller piston or valve 76 and opens the valve 76 whereupon the pressure is applied to the face of the larger piston 77 causing the double piston 76, 77 to take a sudden movement against the action of the spring 83. Movement of the piston 76, 77 opens the exhaust valve 70 so that air is free to exhaust from the diaphragm chamber 66, which permits the intake valve 62 to be closed by its spring and the exhaust valve 63 to be opened so that the machine opens under the influence of the counterweight 55 and spring 57. With the exhaust valve 63 open, the air in the motor means is free to exhaust through the pipe 60, casing 59 and the exhaust passage 91.

During the opening movement, belt 11 is actuated to convey the work off the buck and convey the work on the portion of the belt over the table 8 onto the buck.

In order to prevent the portion of the cylinder below the piston from becoming air bound, the piston rod 44 is provided with an elongated lengthwise groove 92 which permits the air to escape from the lower side of the piston out through the lower end of the cylinder. When the air is exhausted from the cylinder 75, the spring 83 returns the double piston to its normal position, and, also, closes the exhaust valve 70 so that the pressure from the main line again builds up in the diaphragm chamber 66 to open the intake 62 and close the exhaust 63 whereby the press repeats the operations described. The operation is repeated indefinitely until the air in the feed pipe is cut off by closing the manually operated valve 95 therein.

In case the operator wants to open the machine at any time, he can do so by opening the exhaust valve 70 by manually operating the lever 76 by means of the handle 90. The press opens in the same manner whether the exhaust valve 70 is automatically operated by the piston 76, 77 or manually operated by the handle 90 and hence no further description is believed to be necessary.

Some of the air from the feed pipe 58 will exhaust through the pipe 73 and exhaust valve 70, but the amount of air so lost is of small consequence because of the valve 94 in the by-pass pipe 69. The air passing through the by-pass is regulated by a suitable valve 94 which is adjusted so as to keep the machine open any desired interval of time. It is particularly because of this valve 94 and partially because of the valve 95 that a great deal of air is not lost through the exhaust valve 70 when it opens. This valve also remains open a relatively short period, but long enough to exhaust the air from the diaphragm chamber 66.

In the complete operation of the machine, the operator arranges the work on the portion of the belt 11 over the table 8, the press then being closed. While the press is closed, the pressure builds up in the cylinder 75 and eventually causes the exhaust valve 70 to open thereby exhausting the air pressure against the diaphragm 67 which permits the intake valve 62 to close and exhaust

63 opens. The motor then exhausts so that the head opens. While the head is moving upwardly, the carrier belt 11 is actuated by the rack 25, pinion 27, ratchet wheel or one way clutch 32 and pawl 31, sprocket wheel 30, chain 33, sprocket wheel 34 and roller 17 to bring a new batch of unpressed work between the pressing jaws.

During closing of the press, the rack 25 remains idle and does not actuate the sprocket wheel 30 as the ratchet wheel 32 is then moved in a retrograde direction relative to the pawl 31. As the press is opening and the piston 43 returns to the upper end of the cylinder 42, the exhaust valve 70 closes, as the pressure is exhausted in the cylinder 75 so that an effective pressure is then transferred to the diaphragm chamber 66 and diaphragm 67 to close the exhaust valve 63 and open the intake so that the air is again free to flow to the cylinder and open the press.

What we claim is:

1. A pressing machine including a buck, a head movable toward and from the buck, a work carrier including a belt, one run of which moves over the buck from the front to the rear side thereof and the other run of which moves from the rear side of the buck to the front side thereof beneath the buck, and means coacting with the lower run of the belt for carrying the work from beneath the buck to the front side of the buck, mechanism for actuating the head including a motor and motion transmitting connections between the motor and the head, and conveyor driving mechanism including a reciprocating part between the first mentioned motion transmitting connections and the belt to actuate the belt including a drive roller for the belt driven by said reciprocating part, and a one-way clutch between said reciprocating part and the drive roller.

2. A pressing machine comprising a buck, a head movable toward and from the buck, a work carrier comprising a belt one run of which moves over the buck from the front to the rear side thereof and the other run of which moves from the rear to the front side of the buck beneath the buck, and means coacting with the lower run of the belt for carrying the work beneath the buck to the front side of the buck, mechanism for actuating the head including a motor and motion transmitting means between the motor and the head, motion transmitting connections for controlling the actuation of the belt between the motor and said motion transmitting means for actuating the head, said connections comprising a reciprocating rack, a pinion meshing with the rack, the rack being connected to said motion transmitting means, a shaft on which the pinion is mounted, a belt driving member on the shaft being connected to the driving member by a one way clutch device and means connecting the driving member and the belt.

3. A pressing machine including a buck, a head movable toward and from the buck, a work carrier including a belt, one run of which moves rearwardly over the buck from the front side thereof, rollers over which the belt runs including a drive roller extending transversely of the buck in front of the buck, common power means for actuating the head and the drive roller, and operator operated means for disconnecting the drive roller from the power means, and means for operating the belt manually.

4. A pressing machine including a buck, a head movable toward and from the buck, a work carrier including a belt, one run of which moves

rearwardly over the buck from the front side thereof, rollers over which the belt runs including a drive roller extending transversely of the buck in front of the buck, power means for actuating the head and the drive roller, and operator operated means for disconnecting the drive roller from the power means and for operating the belt manually, said operator-operated means including a shaft to which the drive roller is secured, drive means connected to the power means, a clutch normally connecting said shaft and the drive means, a handle rotatable with the roller, and means at one end of the roller for de-clutching at will the roller from the drive means.

5. A pressing machine including coacting pressing elements which open and close on the work, motor means for actuating the press, a timing mechanism for controlling the actuation of the motor means to close the press and including means set in operation by the closing of the press to again open the press after a predetermined lapse of time.

6. A pressing machine including coacting pressing elements which open and close on the work, means for actuating the press including a fluid operated motor having a movable member, a conduit system for the motive fluid, valve means in said system for controlling the flow of fluid to and from the motor, pressure operated means in the system to receive motive fluid therefrom for controlling the operation of the valve means, and a timing mechanism including pressure operated means connected in said system to receive motive fluid therefrom and also connected to the former pressure operated means to control the operation of the latter, and means controlled by the movement of the movable member of the motor for controlling the flow of fluid to and from the pressure operated means of the timing mechanism.

7. A pressing machine comprising coacting pressing elements, one of which is movable toward and from the other, mechanism for actuating the movable element including a pressure operated motor including a casing and a movable member therein, motion transmitting connections between the movable motor member and the movable pressing element, a feed pipe for a motive fluid, a valve casing connected in said pipe having a normally closed intake valve and a normally open exhaust valve therein, a conduit connecting the valve casing and the motor casing, pressure operated means for opening the intake valve and closing the exhaust valve, a by-pass connecting the pressure side of said pressure operated means and the feed pipe, a normally closed exhaust valve connected to the by-pass, a second pressure operated means having an inlet pipe for the motive fluid, and means controlled by the movement of the movable member of the motor for controlling the flow of fluid from the feed pipe to said inlet pipe of the second pressure operated means at a predetermined point in the movement of said movable member, connections between the second pressure operated means and the exhaust valve connected to the by-pass whereby said exhaust valve connected to the by-pass is opened by the second pressure operated means and relieves the pressure within the first pressure operated means to permit the intake valve in the feed pipe to close and the exhaust valve in the feed pipe to open.

8. A pressing machine comprising coacting pressing elements, one of which is movable toward and from the other, mechanism for actuat-

ing the movable element including a pressure operated motor comprising a casing and a movable member therein, motion transmitting connections between the movable motor member and the movable element, a conduit system for a motive fluid comprising a feed pipe, a valve casing connected to said pipe and having a normally closed intake valve and a normally open exhaust valve therein, a pipe connecting the valve casing and the motor casing, pressure operated means for opening the intake valve and closing the exhaust valve, a by-pass around the valve casing and connecting the intake pipe and the pressure operated means, a normally closed exhaust valve connected to the by-pass and having means tending to close it, a second pressure operated means having an inlet pipe for motive fluid and a normally open exhaust port, and means controlled by the movement of the movable member of the motor for controlling the flow of motive fluid from the system to the second pressure operated means and closing said port to the outlet of motive fluid when the movable member has traveled a predetermined distance, and connections between the second pressure operated means and the exhaust valve connected to the by-pass whereby said exhaust valve connected to the by-pass is opened by the second pressure operated means and relieves the pressure in the first pressure operated means thereby permitting the intake valve in the feed pipe to close and the exhaust valve to open.

9. A pressing machine comprising coacting pressing elements which open and close on the work, mechanism for actuating the press including a cylinder, a piston movable in the cylinder, a conduit system for motive fluid including a feed pipe, a valve casing connected to said feed pipe and having a normally closed intake valve and a normally open exhaust valve therein, a pipe connecting the valve casing and the cylinder and serving as an intake and exhaust pipe, pressure operated means having a movable part connected to the intake and exhaust valve for opening the intake valve and closing the exhaust valve, a by-pass around the valve casing from the feed pipe to the pressure operated means, a normally closed exhaust valve connected to the by-pass and having means tending to close it, a second pressure operated means having a combined intake and exhaust pipe connected to the cylinder provided with an intake and exhaust port normally open to exhaust of motive fluid from the second pressure operated means and controlled by the movement of the piston to open the inlet for the second pressure operated means to the inlet of air from the conduit system when the piston has traveled a predetermined distance on its out stroke, connections between the second pressure operated means and the exhaust valve connected to the by-pass whereby said exhaust valve is opened by the second pressure operated means and releases the first pressure operated means to permit the intake valve in the feed pipe to close and the exhaust valve in the feed pipe to open, and means for moving the piston in the reverse direction to permit the second pressure operated means to exhaust and the parts to be restored to their original positions.

10. A pressing machine including coacting pressing elements which open and close on the work, motor means for actuating the press, a working fluid supply line, means for controlling the flow of working fluid to and from the motor means, means for automatically operating the

control means to effect the closing of the press including fluid operated timing means, said timing means also effecting operation of the control means to open the press and means to regulate the rate of flow of working fluid through the timing means and thus adjust the timing of the control means.

11. A pressing machine comprising coacting pressing elements which open and close on the work, motor means for actuating the press, a working fluid supply line, means for controlling the flow of working fluid to the motor means, means for automatically operating the control means to effect the closing of the press, pressure operated timing means operated by working fluid from the supply line for effecting the operation of the control means to open the press, means to regulate the rate of flow of working fluid to the timing means and thus adjust the timing of the control means, and a conveyor operable to carry the work to and from between the pressing elements and connections between the work conveyor and the actuating means to actuate the conveyor during the opening of the press.

12. In a pressing machine in combination cooperative pressing elements, one of which is movable with respect to the other; a conveyor for moving the work into position to be operated on by the pressing elements; operating mechanism for the movable pressing element including a motor and motion transmitting mechanism between the motor and the movable pressing element, said motion transmitting means having a forward and reverse movement to close and open the press respectively; driving means for the conveyor operated from the motion transmitting mechanism; and means included in the driving means to render the same inoperative when the motion transmitting means moves in one direction.

13. In a pressing machine in combination cooperative pressing elements, one of which is movable with respect to the other; a conveyor for moving the work into position to be operated on by the pressing elements; operating mechanism for the movable pressing element including a motor and motion transmitting parts connecting the motor with the movable pressing element and having forward movement to close the press and reverse movement to open the press; driving means for the conveyor connected to one of said motion transmitting parts and operated thereby.

14. In a pressing machine in combination cooperative pressing elements, one of which is movable with respect to the other; a conveyor for moving the work into position over the other pressing element to be operated on by the movable pressing element; operating mechanism for the movable pressing element including a motor and motion transmitting parts between the motor and the movable pressing element including parts having forward movement to close the press and reverse movement to open the press; driving means for the conveyor including a member connected to one of the motion transmitting parts; gear teeth on said member, a pinion meshing with said gear teeth; and a one-way clutch mechanism connecting the pinion with the conveyor.

15. A pressing machine including in combination cooperative pressing elements which open and close on the work; operating mechanism for the press including a motor; a working fluid supply line; means to control the flow of working fluid from and to the motor; timing means for controlling the operation of the working fluid control means to open and close the press; a

working fluid conduit for supplying working fluid to the timing means, said timing means including an adjustable valve for regulating the rate of flow of working fluid through the timing means.

5 16. A pressing machine including in combination cooperative pressing elements which open and close on the work; operating mechanism for the press including a motor; a working fluid supply line; means to control the flow of working
10 fluid to the motor; timer means to operate the control means to close the press; other timer means to operate the control means to open the press; and connections between the two timer means so that the operation of one timer means
15 controls the operation of the other and thereby maintains said timer means operating in the desired sequence.

17. A pressing machine including in combination cooperative pressing elements which open
20 and close on the work; operating mechanism for the press including a motor; a working fluid supply line; means to control the flow of working fluid to the motor; timer means to operate the control means to close the press; other timer
25 means to operate the control means to open the press; and means for causing a repeat operation of the first mentioned timer means so that the press will again close after the lapse of a predetermined time following the operation of the second
30 mentioned timer means.

18. A pressing machine including in combination cooperative pressing elements which open and close on the work; operating mechanism for the press including a fluid operated cylinder and
35 piston; a motor; valve means to control the flow of working fluid to and from the motor; a working fluid supply line; a pressure operated timer means including an adjustable bleed connection for supplying working fluid to the timer means
40 from the supply line to operate said timer means for shifting the valve means to supply working fluid to the motor to close the press; another pressure operated timer means including an adjustable bleed connection from a port in the
45 cylinder for supplying working fluid to said other timer means to operate the same to cause the valve means to shift into position so that working fluid will exhaust from the motor and the first mentioned timer means start a new
50 cycle of operation.

19. A reciprocating mechanism comprising a fluid operated motor having a movable member, valve means connected with the motor for
55 controlling the flow of fluid to and from the motor, pressure operated means connected with the valve means for operating the same, and a timing mechanism including valve means controlling the admission of fluid to the pressure operated means and the exhaust of fluid there-
60 from, a second pressure operated means connected to the second valve means to control the exhaust of fluid from the first pressure operated means, and means controlled by the movement of the movable member of the motor for
65 controlling the flow of fluid to and from the pressure operated means of the timing mechanism.

20. A reciprocating mechanism comprising a fluid operated motor having a movable member, valve means connected with the motor for
70 controlling the flow of fluid to and from the motor, pressure operated means connected with the valve means for controlling the operation thereof, a normally closed exhaust valve for the pressure operated means, means for admitting
75 pressure operated means, means for admitting

fluid to said pressure operated means and a timing mechanism including pressure operated means connected in said system to receive motive fluid therefrom and also connected to the
5 exhaust valve to open the same and control the operation of the first pressure operated means, and means controlled by the movement of the movable member of the motor for controlling the flow of fluid to and from the pressure operated means of the timing mechanism. 10

21. A reciprocating mechanism comprising a fluid operated motor having a cylinder and a movable member therein, valve means connected with the motor for controlling the flow of fluid to and from the motor, pressure operated means
15 connected with the valve means for operating the same, and a timing mechanism including valve means controlling the admission of fluid to the pressure operated means and the exhaust of fluid therefrom, a second pressure operated
20 means connected to the valve means to control the exhaust of fluid from the first pressure operated means, and means including a port in the cylinder spaced from the ends thereof and uncovered during the movement of the movable
25 member of the motor for controlling a restricted flow of fluid to and from the pressure operated means of the timing mechanism.

22. A reciprocating mechanism comprising a fluid operated motor having a cylinder and a
30 movable member therein, valve means connected with the motor for controlling the flow of fluid to and from the motor, pressure operated means connected with the valve means for operating the same, and a timing mechanism including
35 valve means controlling the admission of fluid to the pressure operated means and the exhaust of fluid therefrom, a second pressure operated means connected to the valve means to control the exhaust of fluid from the first pressure
40 operated means; and means including a port in the cylinder spaced from the ends thereof and uncovered during the movement of the movable member of the motor for controlling the flow of fluid to and from the pressure operated means
45 of the timing mechanism, and a valve restricting the flow of fluid to the latter pressure operated means so that the latter is operated after a predetermined lapse of time.

23. A pressing machine including coacting
50 pressing jaws which open and close on the work, means for actuating the press including a fluid operated motor having a movable member, valve means connected with the motor for controlling the flow of fluid to and from the motor, pressure
55 operated means for operating the valve means, means for admitting fluid to said pressure operated means and a timing mechanism including a normally closed exhaust valve connected with the pressure operated means, a second pres-
60 sure operated means connected to the exhaust valve to open the latter, and means controlled by the movement of the movable member of the motor for connecting and disconnecting the pressure operated means of the timing mechanism
65 with a source of fluid supply.

24. A pressing machine including coacting pressing jaws which open and close on the work, means for actuating the press including a fluid
70 operated motor having a cylinder and a movable member, valve means connected with the motor for controlling the flow of fluid to and from the motor, pressure operated means for operating the valve means, means for admitting
75 fluid to said pressure operated means and a tim-

ing mechanism including a normally closed exhaust valve connected with the pressure operated means, a second pressure operated means connected to the exhaust valve to open the latter, 5 and a port in the cylinder connected with the second pressure operated means and uncovered by the movement of the movable member of the motor for controlling a restricted flow of fluid to and from the pressure operated means of the 10 timing mechanism.

25. A pressing machine comprising coacting pressing jaws which open and close on the work, means for actuating the press including a fluid 15 operated motor means having a movable member, valve means connected with the motor means for controlling the flow of fluid to and from the motor, valve operating means connected with the valve means for operating the same after a predetermined lapse of time and holding the valve 20 means in operated position, pressure operated releasing means connected with the valve operating means to release the latter, and means controlled by the movement of the movable member of the motor controlling a restricted 25 flow of fluid to and from the pressure operated releasing means whereby the latter is operated after a predetermined lapse of time to exhaust fluid from the motor means.

26. A pressing machine comprising coacting 30 pressing jaws which open and close on the work, means for actuating the press including a fluid operated motor means having a cylinder and a movable member therein, valve means connected with the motor means for controlling the flow of 35 fluid to and from the motor, valve operating

means connected with the valve means for operating the same after a predetermined lapse of time and holding the valve means in operated position, pressure operated releasing means connected with the valve operating means to release 5 the latter, and means including a port in the cylinder wall which is uncovered by the movement of the movable member of the motor means for controlling a restricted flow of fluid to and from the pressure operated releasing means 10 whereby the latter is operated after a predetermined lapse of time to exhaust fluid from the motor means.

27. A pressing machine comprising coacting pressing jaws which open and close on the work, 15 means for actuating the press including a fluid operated motor means having a movable member, valve means connected with the motor means for controlling the flow of fluid to and from the motor, valve operating means connected with the 20 valve means for operating the same and holding the valve means in operated position including a diaphragm means and a leak valve connected therewith and adapted to be connected with a source of fluid supply, pressure operated releas- 25 ing means connected with the valve operating means to release the latter, and means controlled by the movement of the movable member of the motor means for controlling a restricted flow of fluid to and from the pressure operated releasing 30 means whereby the latter is operated after a predetermined lapse of time to exhaust fluid from the motor means.

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