March 23, 1954 W. J. KEUPER 2,672,811

LAUNDRY MARKING MACHINE

Filed June 1, 1950 3 Sheets-Sheet 1

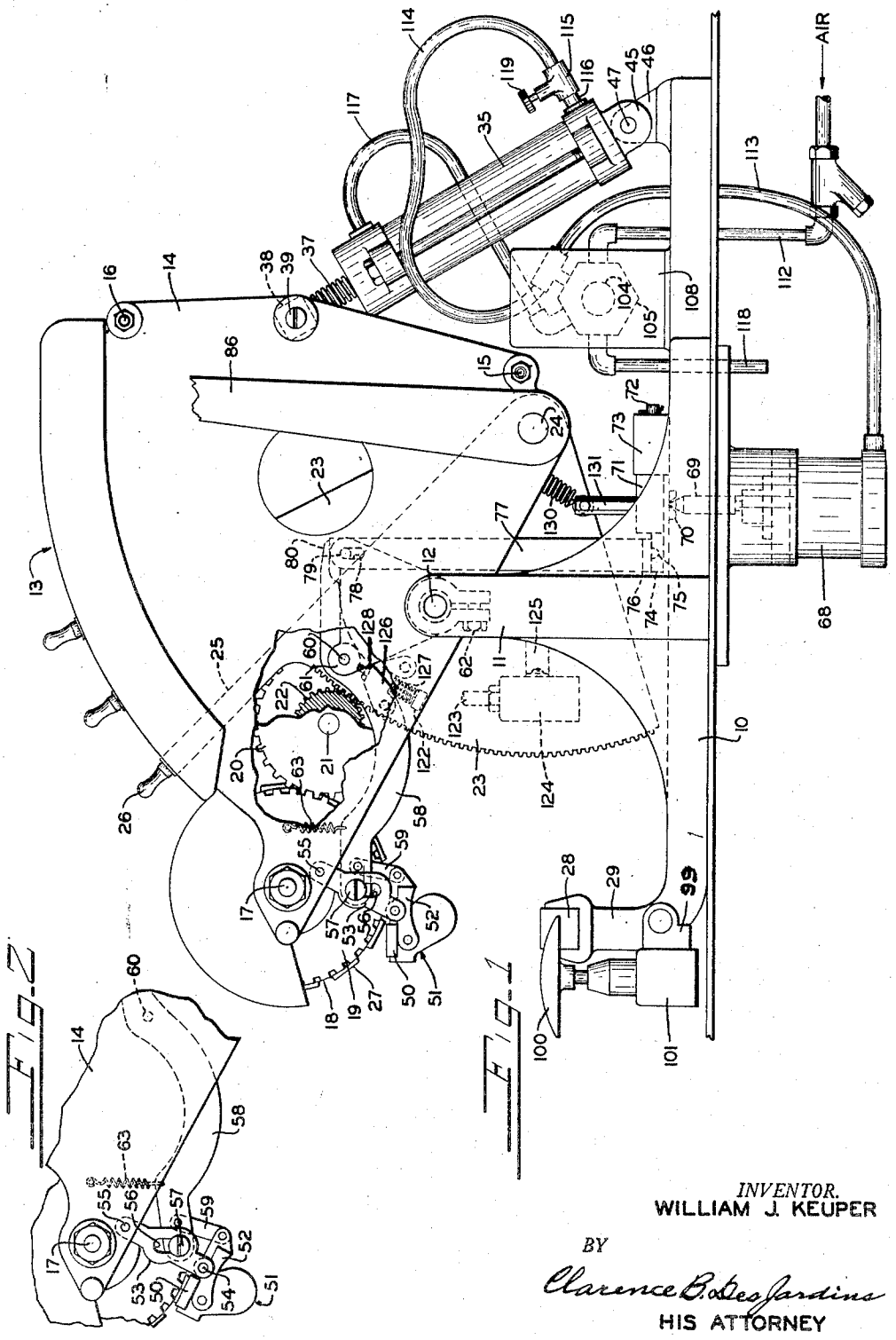

FIG. 2

FIG. 1

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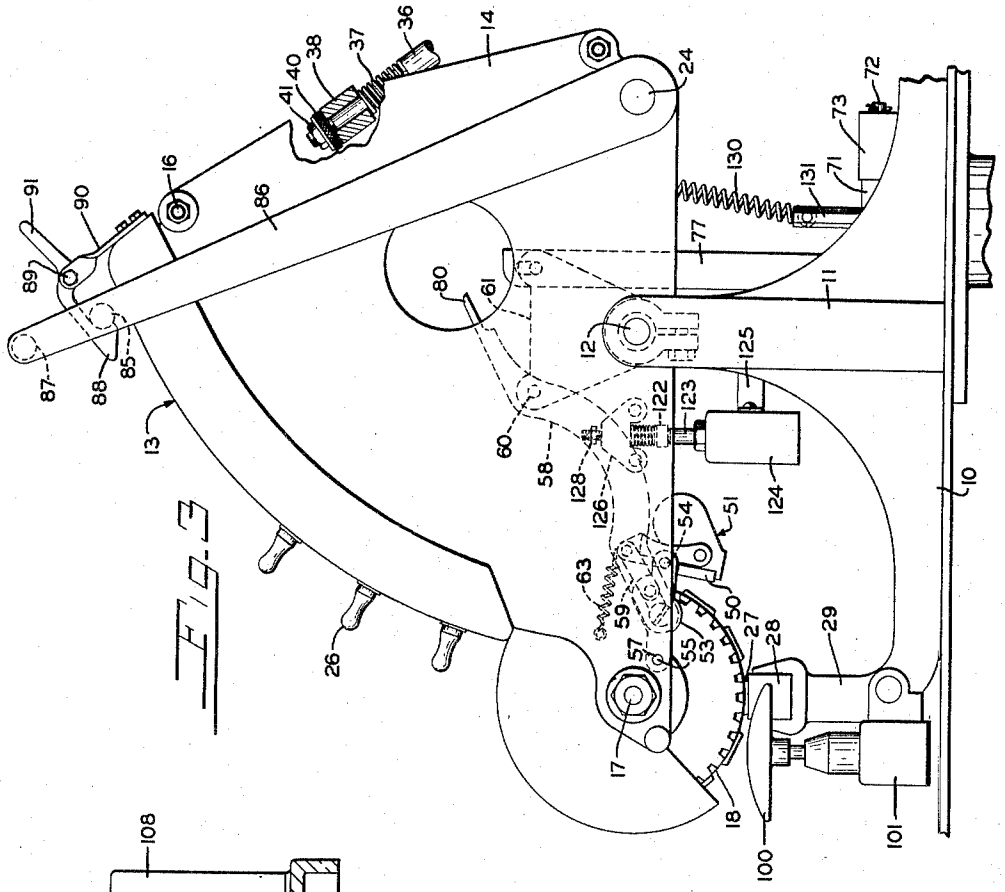

FIG. 3

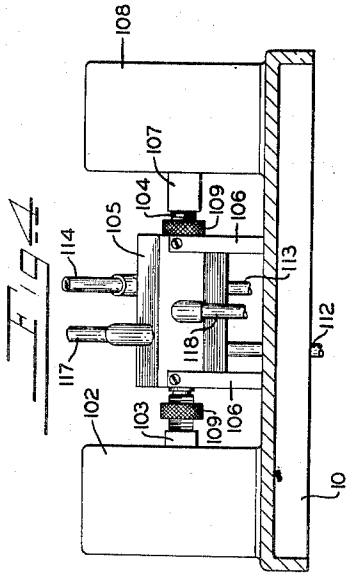

FIG. 4

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FIG. 6

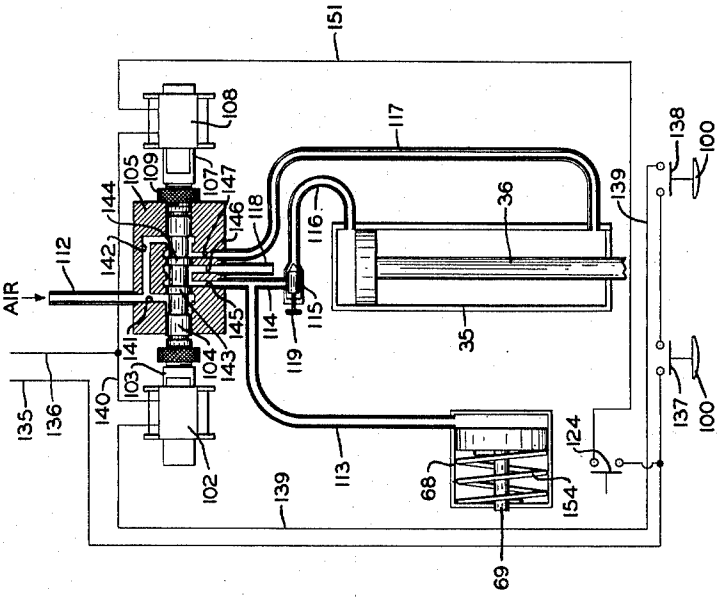
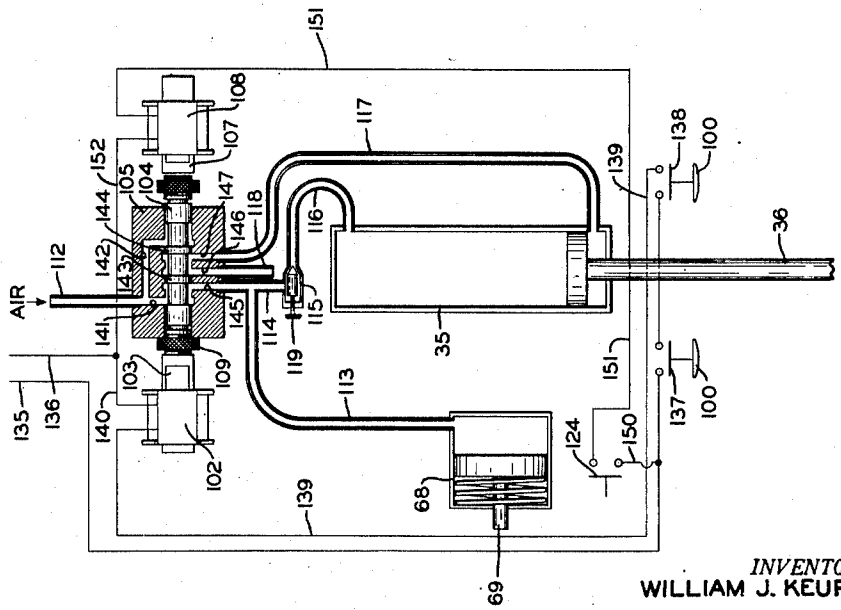


FIG. 5



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UNITED STATES PATENT OFFICE

2,672,811

LAUNDRY MARKING MACHINE

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Application June 1, 1950, Serial No. 165,533

22 Claims. (Cl. 101—97)

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This invention relates to improvements in laundry marking machines and, more particularly, to improvements in the operating mechanism for these machines.

In present day commercial laundries, each piece of laundry contained in a particular customer's bundle is usually marked with a permanent, identifying laundry mark before it is sent to the laundry room for washing. This is generally accomplished by examining each piece of laundry as it is removed from the freshly opened bundle to see whether or not it bears the proper laundry mark. If it does, it is classified into a truck or thrown onto a conveyor, as the case may be, and the next piece is removed from the bundle and examined. If the piece selected is not provided with the correct mark it is placed over the platen of a laundry marking machine on which the customer's mark has been previously set up and the machine is operated so as to cause the proper mark to be imprinted thereon. The piece is then thrown into a truck or onto a conveyor and the next piece of laundry is removed from the bundle and examined. This procedure is continued until the entire bundle has been processed.

Inasmuch as the laundry marking machines installed in commercial laundries are constantly in use, it is essential that they be of simple, sturdy construction in order to insure long life and a minimum of maintenance and repair. With this objective in view I have provided a power-drive mechanism for laundry marking machines which is sturdy, reliable in operation, and inexpensive to manufacture. This mechanism consists of a single-acting fluid cylinder for operating the inking mechanism of the machine, and a double-acting fluid cylinder for rocking the printing head to and from printing position. Both cylinders are connected with a two-position slide valve which is operable to control the flow of fluid to and from the cylinders in such a way as to automatically cause the type to be inked and the head to be rocked to and from printing position. In one position of the valve, fluid will be simultaneously admitted to both of the cylinders whereby the inking mechanism will be operated and the printing head will be rocked from normal position to printing position. In the other position of the valve, the fluid in the cylinder for the inking mechanism will be released and the delivery of fluid to the cylinder for the printing head will be reversed so as to cause the head to be rocked from printing position back to normal position. The valve is set-

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table to either of these positions by means of a pair of solenoids one of which is effective, when energized, to move the valve to said one position, and the other of which is effective, when energized, to move the valve to said other position. The first-mentioned solenoid is adapted to be energized by the simultaneous depression of two push-button switches located one on either side of the printing platen of the machine, while the second-mentioned solenoid will be energized when a normally-open switch is closed by the printing head as it moves into printing position. In this way, the energization of the second-mentioned solenoid always follows as a result of the energization of the first-mentioned solenoid and, hence, the return movement of the printing head from printing position to normal position is automatically effected.

In order to enable the speed of operation of the printing head to be controlled as desired, and also to provide time for the inking of the printing type before the head moves into printing position, I have provided a throttling valve in the fluid supply line for the double-acting cylinder which operates the printing head whereby the flow of fluid to this cylinder is retarded and the speed of operation of the printing head is reduced to the extent desired.

Accordingly, it is an object of the present invention to provide a simple, sturdy operating mechanism for laundry marking machines which is inexpensive to manufacture and easy to maintain.

Another object of the invention is to provide a laundry marking machine having fluid-pressure operated means for operating the inking mechanism and the printing head, and a valve settable to one position for causing the type to be inked and the printing head to be moved to printing position and to another position to cause the printing head to be returned to normal position.

Another object of the invention is to provide a machine of the type set forth in the preceding object wherein manually controlled means is provided for setting the control valve to one position, and automatic means is provided for setting the valve to another position upon movement of the printing head into printing position.

Another object of the invention is to provide a laundry marking machine having a fluid-pressure operated inking mechanism and a fluid-pressure operated printing mechanism, and a pair of manually operable switches located one on either side of the printing platen of the ma-

chine for initiating operation of both of the fluid-pressure operated mechanisms.

Another object of the invention is to provide a laundry marking machine having a fluid-pressure device for operating the inking mechanism and a fluid-pressure device for moving the printing head to and from printing position, a valve for supplying fluid under pressure to both of said devices simultaneously, and an adjustable throttling valve for enabling the flow of fluid to the device for moving the printing head to be controlled as desired.

Another object of the invention is to provide a laundry marking machine having a reversible, fluid-pressure operated device for moving the printing head from normal position to printing position and a valve for reversing the device, said valve being operated in response to the movement of the head into printing position whereby the head will be automatically returned from printing position to normal position.

With these and other objects in view as will more fully appear from the following detailed description of one embodiment of my invention, I shall proceed to describe my invention in connection with the accompanying drawings, forming a part of this specification, in which:

Fig. 1 is a side elevation of the laundry marking machine showing the parts in their normal positions.

Fig. 2 is a fragmentary view of the inking mechanism of the machine, showing the mechanism moved to inking position.

Fig. 3 is a side elevation of the machine with the printing head moved to printing position.

Fig. 4 is a front view of the control valve and of the solenoids which are provided for operating the valve.

Figs. 5 and 6 are schematic views showing the air connections to the control valve and the air cylinders, and the electrical connections to the push-button switches and the solenoids. In Fig. 5, the parts are shown in the positions which they occupy as the printing head moves into printing position while, in Fig. 6, they are shown in the positions which they assume after the printing head has been returned to normal position.

As shown in Fig. 1 of the drawings, the laundry marking machine comprises a base 10 which is provided with a pair of spaced, upstanding arms 11 (only one shown) which, at their upper ends, support between them a stationary axle 12 on which the printing head is journaled for rocking movements. The printing head is comprised of a pair of spaced side plates 14 which are connected together by tie rods 15 and 16 and also by an axle 17 on which a series of disc-like printing members 18 are rotatably journaled. Each of the members 18 has secured thereto a gear wheel 19 which lies in mesh with a gear 20 journaled for rotation about an axle 21 supported between the side plates 14. Each gear 20 has secured thereto a smaller gear 22 which lies in mesh with the gear teeth of a sector 23 which is rotatably journaled on an axle 24 supported between the side plates 14. Each sector 23 is provided with a setting lever 25 on the upper end of which is mounted a finger piece 26 which projects above the surface of a curved, keyboard cover plate (not shown). This cover plate is provided with a plurality of elongated slots for receiving the upper ends of levers 25 so as to enable the sectors to be adjusted rearwardly from their normal or forward positions by the use of finger pieces 26. The printing members 18 will likewise

be adjusted from an initial, or non-printing position, to a selected printing position as the levers are adjusted rearwardly, through the medium of gears 19, 20 and 22. Thus, any one of a plurality of printing type 27 provided on the periphery of each of the members 18 may be moved to the printing line by suitable adjustment of the levers 25. When the printing head 13 is rocked counterclockwise about the axle 12 from the position shown in Fig. 1 to the position shown in Fig. 3, the type 27 will be pressed against a printing platen 28 seated within a recess provided in the upper end of an arm 29 formed on the forward end of the base 10. This platen is formed of a piece of rubber or other suitable, resilient material which is substantially square in cross-section and of sufficient length to underlie all of the printing members 18.

Rocking movement of the printing head 13 from its normal position, shown in Fig. 1, to its printing position, shown in Fig. 3, and return, is effected by means of a double-acting air cylinder 35 which is provided with the usual piston to which is connected a piston rod 36 (Fig. 3). The outer end of the piston rod is provided with a portion of reduced diameter on which is mounted a compression spring 37. The outer end of the piston rod 36 passes through a bore provided in a bar 38 of square cross-section which is pivotally supported between the side plates 14 by screws 39 (only one shown). The piston rod 36 is held in place within the bore by means of a knurled thumb screw 40 and a lock nut 41 which are screwed onto threads provided on the outer end of the rod 36. In this manner, a resilient connection is provided between the piston rod 36 and the bar 38, the spring 37 being compressed between the bar and the shoulder formed on the piston rod 36 at the place where the portion of reduced diameter begins.

At its lower end, the cylinder 35 is provided with a clevis 45 which is pivotally connected by means of a pivot pin 47 to an upstanding ear 46 formed on the base 10 of the machine. By suitably controlling the flow of air to and from the opposite ends of the air cylinder 35, the piston rod 36 may be projected out of or retracted within the cylinder 35 and so cause the printing head 13 to be rocked from normal position to printing position and return.

The printing type 27 are adapted to be inked at the outset of each printing operation of the machine by means of an inking device which will now be described. As shown in Figs. 1, 2 and 3, this device includes an ink pad 50 constructed of felt or other suitable ink-absorbent material, which is mounted on an inking head 51. This head is preferably of the same general construction as the one shown and described in U. S. Patent No. 2,085,325, issued June 29, 1937, to Charles F. Miller and entitled Inking Device for Marking Machines. As disclosed by this patent, a quantity of liquid ink of suitable type is contained in a reservoir provided in the lower part of the head 51 and is fed up to the inking pad 50 by means of a feeding wick provided within the head. As further described in the aforementioned patent, and as illustrated in the accompanying drawings, the inking head 51 is secured to a frame 52 which in turn is supported for pivotal movement between the lower ends of a pair of links 53 (only one shown) which are pivoted at 54 to the frame. At its upper end, each link 53 is pivotally connected at 55 to one of the side plates 14 of the printing head. Each

link is also provided with an elongated slot 56 which cooperates with a shouldered screw 57 mounted on the end of a lever 58. The frame 52 is also connected with the levers 58 by links 59 which are pivoted at their lower ends to opposite sides of the frame 52 and, at their upper ends, to the levers 58. Each lever 58 is pivoted at 60 on a triangularly-shaped bracket 61 secured to the axle 12 by means of a clamping bolt 62. The forward end of each lever 58 is resiliently urged upwardly by a spring 63 tensioned between the lever and the side plate 14 so as to maintain each of the screws 57 in the upper end of its associated slot 56 as shown in Fig. 1.

The ink pad 50 is moved from the position shown in Fig. 1, where it lies out of contact with the printing type 27, to the position shown in Fig. 2, where it lies up against the type, by means of a single-acting air cylinder 68. This cylinder is provided with the customary piston to which is connected a piston rod 69 the upper end of which is provided with a conical point which seats in a conical recess provided in the underside of a horizontal arm 70. The arm 70 is secured to a hub 71 which is fast on a shaft 72 journaled in a boss 73 formed integrally with the base 10. Also secured to the hub 71 and lying on the same side of the shaft 72 as the arm 70, is a second horizontal arm 74. This arm is provided on its outer end with a recess in which is seated a pin 75 mounted on the bottom of a U-shaped frame 76. The upwardly extending side arms 77 (only one shown) of this frame are provided at their upper ends with elongated slots 78 within which are received pins 79 mounted in the brackets 61. The upper end of each arm 77 lies beneath a finger 80 provided on the rear end of each of the levers 58. Thus, when air is admitted to the lower end of the air cylinder 68, the piston rod 69 thereof will be moved upwardly so as to lift the outer ends of the arms 70 and 74. The frame 76, which rests on top of the arm 74, will thereby be elevated and the side arms 77 thereof will engage against the bottom surfaces of the fingers 80 on the levers 58 and cause the latter to be rocked counterclockwise about their pivots 60 against the tension of the springs 63. The screws 57 will be moved into the lower ends of the slots 56 and the links 59 will be moved down thereby causing the frame 52 to be rocked clockwise about its pivot 54 and the ink pad 50 to be moved up against the type 27 as shown in Fig. 2. Ink will thereby be applied to the face of the printing type located at the printing line. When the printing head is now swung downwardly to the position shown in Fig. 3, the ink applied to the type will be transferred to the article of laundry held in position above the platen 28 by the operator of the machine.

As the printing head moves from normal position (Fig. 1) to printing position (Fig. 3), the inking head 51 will be retracted to the position shown in Fig. 3 where it will lie out of the path of the printing members 18 as they move down against the platen. This retraction of the inking head results from the fact that the levers 58 are supported on stationary pivots 60 so that a shortening effect of the levers 58 is produced as the head moves downwardly and the links 53 will consequently be swung counterclockwise about their pivots 55 to the position shown in Fig. 3. Also, as the printing head moves downwardly, the fingers 80 will move away from the upper ends of the arms 77 thereby permitting the screws 57 to be moved back into the upper ends of the slots 56 by the springs 63 as shown in Fig. 3. Prior to the return movement of the printing head from printing position to normal position, the air cylinder 68 will be vented to atmosphere and the piston rod 69 will be returned to its normal, retracted position by means of a suitable return spring 154 (Fig. 6). The frame 76 will thereupon be permitted to move downwardly under the influence of gravity so that the upper ends of the arms 77 will again lie in their lowered positions as the printing head returns to normal. Hence, the inking head 51 will assume the position shown in Fig. 1 at the conclusion of each printing operation. In this position of the inking head, the ink pad 50 lies out of contact with the printing type 27 whereby the members 18 may be freely rotated upon manipulation of the finger pieces 26 so as to permit a new laundry mark to be set up on the printing members 18.

As best shown in Fig. 3, means is provided whereby all of the setting levers may be restored to their normal positions in a single operation. This means consists of a resetting bar 85 which is attached at either end to a pair of side arms 86 located on opposite sides of the printing head. Each arm 86 is journaled at its lower end for rotation about the axle 24 and the upper ends of the arms are connected by a cross bar 87. By grasping the bar 87 and pulling it forward, the rod 85 will be swung forwardly so as to engage the finger pieces 26 of all of the setting levers which have been adjusted rearwardly and thereby move the levers to their forwardmost positions. The resetting device is normally held in its rearward position, as shown in Fig. 3, by means of a latch 88 which is pivoted at 89 on a bracket 90 secured to the printing head. The latch is provided with a tail 91 which may be manipulated in order to release the latch from the bar 85 and permit the resetting device to be swung forwardly. The latch 88 is provided for the purpose of preventing the inertia of the resetting device from carrying it forward when the printing type strike against the platen. Forward movement of the bar 85 would cause the setting of the printing members to be changed and thereby result in an improper mark being printed on the next operation of the machine.

In the machine presently being described, the initiation of a printing operation is effected by the simultaneous depression of two push-buttons 100 positioned on either side of the platen 28 where they may conveniently be operated by the palms of the operator's hands while holding an article of laundry above the platen 28. Each push-button controls a normally open switch located within a housing 101 which extends across the front of the machine and is provided with a pair of mounting lugs 99 by means of which it may be secured to opposite sides of the arm 29. When the push-buttons are simultaneously depressed, the switches controlled thereby will be closed and a solenoid 102 will be energized (see, also, Figs. 4 and 5) and cause a plunger 103 thereof to be projected outwardly. The end of the plunger 103 lies adjacent the left-hand end of the core 104 of a spool valve 105. As shown in Fig. 4, the body of the valve 105 is supported at either end by brackets 106 secured to the base 10 of the machine. The right-hand end of the core 104 lies adjacent the end of a plunger 107 of a second solenoid 108. When the solenoid 102 is deenergized and the solenoid 108 is energized, the plunger 107 will be projected outwardly and

the core 104 of the valve will be shifted toward the left as viewed in Fig. 4. The core 104 is provided on either end with screw threads on which are screwed limit stops 109. The inner faces of the stops 109 are adapted to contact with the end of the valve body and thereby determine the position of the core at either end of its stroke. By a suitable adjustment of the stops 109 on the ends of the core 104, the end positions of the core may be adjusted as desired. When the solenoid 102 is energized upon depression of push-buttons 100, the core 104 will be moved toward the right until the limit stop 109 strikes against the end of the valve body. With the core 104 in this position, air from a supply line 112 will flow into the valve 105 from whence it will be delivered to a line 113 connected with the lower end of air cylinder 68 and to a line 114 connected to one side of a throttling valve 115. After passing through the throttling needle valve 115, the air is conducted through a short line 116 into the lower end of the double-acting air cylinder 35. The upper end of this cylinder is connected by a line 117 with the valve 105 and, when the valve core is in the position shown in Fig. 5, the line 117 will be communicatively connected with an exhaust or vent line 118. As a consequence, the piston rod 69 of the air cylinder 68 will be moved upwardly and the inking head 51 will be rocked to the position shown in Fig. 2 so as to cause inking of the printing type 27. At the same time, the piston rod 36 of the double-acting air cylinder 35 will be moved upwardly so as to rock the printing head about the axle 12 and cause the printing type located at the printing line to be moved downwardly against the platen as shown in Fig. 3. The rapidity with which the printing head is swung about the axle 12 by the air cylinder 35 will be determined by the setting of the throttle valve 115. This valve is provided with a thumb screw 119 which may be screwed in or out to decrease or increase the rate of flow of air through the valve. The machine is preferably operated by using relatively high pressure air in the supply line 112 so that the piston of the air cylinder 68, which moves only a short distance, will be moved quickly to its upper limit of travel. By use of the throttling valve 115, the speed with which the printing head is rocked from normal position to printing position may be reduced sufficiently to insure that the type will be inked before any appreciable movement of the printing head has taken place. Also, the reduction in speed of operation of the printing head by valve 115 will serve to prevent any serious hammering of the printing type against the platen 28.

As the printing head moves into printing position, a plunger 122 mounted on the left-hand side plate 14 will engage the operating plunger 123 of a microswitch 124 supported on a bracket 125 secured to the left-hand arm 11 of the machine base. The contacts of the switch 124 are normally open but will be closed by the plunger 122 just prior to the engagement of the printing type with the platen 28. Closure of this switch will cause the solenoid 108 to be energized and, assuming that the operator has released the push-buttons 100, the core 104 of the spool valve will be shifted to the left as viewed in Fig. 4 and thereby cause the line 113 (Fig. 1) to be communicatively connected with the vent line 118 and so permit the piston rod 69 of air cylinder 68 to return to its normal position. At the same time, air from the supply line 112 will be supplied to the line 117 connected with the upper end of air cylinder 35 while the line 114, connected with the bottom of the cylinder, will be communicatively connected with the vent line 118. Hence, the piston rod of the double-acting air cylinder 35 will be drawn inwardly so as to return the printing head from printing position to normal position.

As shown in Figs. 1 and 3, the plunger 122 is mounted for sliding movement in a bracket 126 secured to the outer face of the left-hand side plate 14. A compression spring 127 is confined between an enlarged head provided on the lower end of the plunger and the lower edge of the bracket 126 and acts to resiliently urge the plunger downwardly. On its upper end, the plunger is threaded to receive a nut 128 which engages with the upper edge of the bracket and resists downward movement of the plunger under the urgency of the spring 127. By means of the nut 128, the plunger 122 may be adjusted to a position where it will cause the contacts of the switch 124 to close just before the printing type engage with the platen 28. Further downward movement of the head will cause the spring 127 to be compressed and thus prevent injury to the microswitch 124.

As previously mentioned herein, the spring 37 provided on the upper end of the piston rod 36 for the double-acting air cylinder 35 provides a resilient connection between the piston rod and the printing head 13. It will be seen that when the piston rod is projected upwardly to move the head from normal position to printing position, the spring 37 will be compressed when air is first supplied to the air cylinder 35 due to the inertia of the printing head. When the printing type contact the platen 28, the spring 37 will again be compressed so as to force the type firmly against the platen and thereby cause a clear, distinct imprint of the type to be produced on the article of laundry held over the platen. On the return stroke, the printing head will be moved upwardly until the piston rod 36 reaches the limit of its downward travel within the cylinder whereupon it will be brought to a stop and the spring 37 will absorb the inertia of the printing head and bring it to a smooth stop.

The printing head will be resiliently held in its normal position, as shown in Fig. 1, by means of a tension spring 130 which is stretched between the upper end of a post 131 mounted on the base of the machine and the bar 38 to which the piston rod 36 is connected. The spring 130 is stretched as the printing head is moved out of normal position and will thereby overcome the tendency of the head to fall by gravity into printing position when the pressure in the supply line 112 drops to zero as is apt to happen during the night. Movement of the head into printing position under such conditions would, of course, cause the solenoid 108 to be continuously energized and would result in overheating of the solenoid.

Referring now to Figs. 5 and 6 of the drawings wherein the electrical and pneumatic circuits of the machine are schematically illustrated, it will be observed that in Fig. 5 the air cylinders and solenoids are shown in the positions which they occupy after the push-buttons 100 have been depressed and released and after the printing head has been rocked to a point where the printing type lie just above the platen but prior to the closure of the switch 124 by the plunger 122 mounted on the printing head. In

Fig. 6 of the drawings, the air cylinders and solenoids are shown in the positions which they occupy after the switch 124 has been closed and again opened, and after the printing head has been returned to normal position. Referring to Fig. 5, it will be observed that the electrical energy for operating the solenoids 102 and 103 is obtained from a source of electrical current to which wires 135 and 136 are connected. The wire 135 is connected with one terminal of a normally open switch 137 which is adapted to be closed upon depression of one of the push-buttons 100. The other terminal of the switch 137 is connected to one of the terminals of a normally open switch 138 which is adapted to be operated by the other push-button 100. The second terminal of the switch 138 is connected by a line 139 with one terminal of the solenoid 102. The other terminal of this solenoid is connected by a wire 140 with the input wire 136. Hence, when both push-buttons 100 are depressed by the operator of the machine as he holds an article of laundry above the platen 28, both switches 137 and 138 will be closed and the solenoid 102 will be energized and its plunger 103 will be projected outwardly, or toward the right, so as to cause the core 104 of the valve 105 to be pushed to the right-hand limit of its travel as determined by the limit stop 109. With the core 104 in this position, it will be observed that air from the supply line 112 may flow through the passages 141 and 142 provided in the valve body. The passages 141 and 142 are in communication with a central bore provided in the valve body within which the core 104 is slidably mounted. The core 104 is provided with three sections of reduced diameter which are separated from one another by a pair of annular sealing rings 143 and 144 which are of the same diameter as the ends of the core 104. When the core is in the position shown in Fig. 5, the ring 143 will be so positioned as to cause the passage 141 to be communicatively connected with a passage 145 provided in the body of the valve. The latter passage is connected with the lines 113 and 114 and, thus, air may flow from the supply line 112 into the lower ends of the air cylinders 35 and 68. It will also be noted that the sealing rings 143 and 144 are so positioned as to cause passages 146 and 147, provided in the body of the valve, to be communicatively connected with one another. Inasmuch as the passage 146 is connected to the vent line 118 and the passage 147 is connected to the line 117 which, in turn, is connected with the upper end of the air cylinder 35, air will be permitted to escape from the upper end of the cylinder 35 as the piston thereof is forced upwardly by air entering the lower end of the cylinder. It is further to be noted that air from the supply line 112 may flow through the line 113 into the lower end of the air cylinder 68 without restricton so as to cause the piston rod 69 of this cylinder to be quickly moved through the short distance necessary to cause operation of the inking mechanism. However, the flow of air into the bottom of the double-acting air cylinder 35 is restricted by the needle valve 115 so that the piston rod 36 will move more slowly than the piston rod 69 and, for this reason as well as by reason of its longer stroke, will require much more time to move from its fully retracted position to its fully extended position than does the piston rod 69. The printing type 27 will therefore be inked at the very outset of the printing operation before the printing head 13 has moved downwardly any appreciable distance.

In operating the laundry marking machine herein shown and described, the operator merely strikes the push-buttons 100 a sharp blow with the palms of his hands when he wishes a printing operation to be effected. Consequently, by the time the printing head is moved downwardly far enough for the plunger 122 to close the contacts of the normally open switch 124, the push-button switches 137 and 138 will again be opened as indicated in Fig. 5. When, now, the downward movement of the head causes the normally open switch 124 to be closed, current will be permitted to flow through the wire 135 and wire 150 to one of the terminals of the switch 124. The other terminal of this switch is connected by a wire 151 to one terminal of the solenoid 103, the other terminal of which is connected by a wire 152 with the supply wire 136. The solenoid 103 will therefore be energized and, the solenoid 102 being deenergized, the plunger 107 of the solenoid 103 will be projected outwardly, or toward the left as shown in Fig. 6, so as to move the core 104 toward the left until it is stopped by the limit stop 109 engaging against the end of the valve body. In this position of the core, it will be noted that sealing ring 144 is in such a position as to cause the passages 142 and 147 to be communicatively connected with one another whereby air from the supply line 112 may flow through the valve and into the line 117 connected with the upper end of the double-acting air cylinder 35. At the same time, the passages 145 and 146 will be communicatively connected by virtue of the positions of the sealing rings 143 and 144 whereby the lines 113 and 114 will be connected with atmosphere through the vent line 118. As a result, air will be permitted to escape from the lower end of the cylinder 35 as the piston rod 36 moves downwardly in response to air under pressure being admitted to the upper end of the cylinder. Also, air will be permitted to escape from the lower end of the cylinder 68 and a return spring 154, provided within the cylinder, will restore the piston and piston rod 69 to their normal positions. The printing head 13 will thereupon be returned to its normal position and the U-shaped frame 76 will be permitted to return under the influence of gravity to its lower position as shown in Fig. 1. Consequently, the inking head 51 will assume the position shown in Fig. 1 after the printing head has reached its normal position. The machine will now be ready for another printing operation and may again be operated by the simultaneous depression of push-buttons 100.

Inasmuch as the double-acting air cylinder 35 participates in a slight rocking movement about the pivot 47, relative movement will occur between the cylinder and the valve 105 and it is therefore desirable that the air lines 114 and 117 be constructed in whole or in part of flexible type of air hose which will yield in response to the movement of the air cylinder during a printing operation.

A brief recapitulation of the operation of the laundry marking machine hereinbefore described will now be given. As previously described in the early part of this description, each customer of the laundry is usually assigned a mark which is to be stamped on each of the articles contained in the customer's bundle before they are sent

through the laundry. For this purpose, the setting levers of the marking machine are adjusted by manipulation of finger pieces 26 so as to cause the proper laundry mark to be set up on the type 27 located at the printing line. The first article to be marked is then grasped by the operator with both hands and held over the platen 28 with the heels of the hands located above the push-buttons 100. Both push-buttons are simultaneously struck a sharp blow with the heels of the hands whereupon the solenoid 102 will be energized and the core 104 of the valve moved toward the right from the position shown in Fig. 6 to the position shown in Fig. 5. With the valve core in this position, air under pressure will be admitted to the lower ends of the cylinders 35 and 68 and the upper end of the cylinder 35 will be vented to atmosphere. The rapid upward movement of the piston rod 69 of the air cylinder 68 will cause the inking head 51 to be rocked quickly to the position shown in Fig. 2 and cause the ink pad 50 to be pressed against the printing type 27 located at the printing line. At the same time, the printing head 13 will commence to move downwardly toward printing position. During downward movement of the printing head, the inking head 51 will be drawn rearwardly toward the fully retracted position shown in Fig. 3 of the drawings. Just prior to the time that the printing type make contact with the article of laundry held above the platen 28, the plunger 122 will engage with the upper end of the plunger 123 of the microswitch 124 and cause the contacts thereof to be closed. Solenoid 108 will thereupon be energized and, solenoid 102 now being deenergized, the core 104 of the spool valve will be moved to the left to the position shown in Fig. 6. When the valve core is in this position, the lower ends of the cylinders 35 and 68 will be vented to atmosphere while air from the supply line 112 will be delivered to the upper end of the cylinder 35 through the line 117. As a consequence, the U-shaped frame 76 (Fig. 1) will be permitted to return to its lowered position under the influence of gravity and the printing head 13 will be returned to its normal position. The various parts of the machine will now lie in the positions shown in Fig. 1 and will remain in these positions until the next article of laundry to be marked has been placed over the platen 28 and the push-buttons 100 depressed. After all of the articles contained in the particular bundle under consideration have been impressed with the proper laundry mark, the setting levers 25 may all be returned to their normal or forward positions by the operator's releasing the latch 88 and pulling forward on the cross bar 87 whereupon the bar 85 will pick up all of the finger pieces 26 and move them to their forward positions. The cross bar 87 is then moved rearwardly whereupon the bar 85 will again be engaged by the latch 88 which will drop down over the bar under the influence of gravity and hold it in its rearward position as shown in Fig. 3. A new laundry mark for the next customer's bundle may now be set up on the machine by means of the setting levers, the printing members 18 being freely rotatable at this time since the ink pad 50 lies out of contact therewith as shown in Fig. 1.

I am aware that an air-driven operating mechanism for laundry listing machines of the type described herein is susceptible of considerable variation, without departing from the spirit of my invention, and, therefore, I claim my invention broadly, as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by United States Letters Patent, is:

1. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from a normal position to a printing position and back again, and a plurality of settable, type-bearing elements on said head adapted to make an imprint on material held on said platen when said head is rocked from normal position to printing position, the combination of an inking device for applying ink to the type located at the printing line, said device being movable from a non-inking position in which it lies out of contact with said elements, to an inking position in which it lies in contact with the type located at the printing line; a single-acting, self-restoring, first fluid-pressure motor for moving said device from non-inking position to inking position; a double-acting fluid-pressure motor operable in one direction to rock said printing head from normal position to printing position and in another direction to rock said printing head from printing position to normal position; a control valve settable to one position to cause both of said motors to be energized so as to effect inking of the type and rocking of the head to printing position, and to another position to cause said first motor to be de-energized and said second motor to be reversed so as to restore said head to normal position; manually controlled means for moving said valve to said one position; and automatic means for moving said valve to said other position upon movement of said head into printing position.

2. The combination recited in claim 1, including means, actuated by said printing head as it is rocked on said frame, for withdrawing said inking device from the path of travel of said type-bearing elements as the latter move into engagement with the material held on said platen.

3. The combination recited in claim 1 wherein said manually controlled means includes a solenoid and a manually operable switch for controlling the energization of said solenoid, and wherein said automatic means includes a solenoid and a switch operable by said printing head as it moves into printing position for causing said last-mentioned solenoid to be energized.

4. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from a normal position to a printing position and back again, and a plurality of settable, type-bearing elements on said head adapted to make an imprint on material held on said platen when said head is rocked into printing position, the combination of an inking device for applying ink to the type located at the printing line, said device being movable from a non-inking position in which it lies out of contact with said elements to an inking position in which it lies in contact with the type located at the printing line; a single-acting, self-restoring, fluid-pressure motor for moving said device from non-inking position to inking position; a reversible fluid-pressure motor for rocking said printing head on said frame to and from printing position; a source of fluid under pressure; a valve for controlling the flow of fluid from said source to said motors, said valve having an element settable to one po-

sition to cause fluid from said source to be supplied to both of said motors whereby the type will be inked and the head will be rocked into printing position, and to another position to cause the fluid to be released from said first motor and the flow of fluid to said reversible motor to be reversed whereby said head will be restored to normal position; a first solenoid for setting said element to said one position; a second solenoid for setting said element to said other position; manually operable means for energizing said first solenoid and causing said type to be inked and said head to be rocked to printing position; and a switch actuated by said printing head as it moves into printing position for energizing said second solenoid and thereby causing said head to be restored to normal position.

5. The combination recited in claim 4 wherein said manually operable means comprises a pair of push-button switches located one on either side of said platen.

6. The combination recited in claim 4, including means, actuated by said printing head as it is rocked on said frame, for withdrawing said inking device from the path of travel of said type-bearing elements as the latter move into engagement with the material held on said platen.

7. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from an inactive position to an active position and back again, and a group of printing members on said head for making an imprint on material held on said platen when said head is rocked from inactive position to active position, the combination of a device for applying ink to said printing members, said device being movable from an inactive position in which it lies out of contact with said members, to an active position in which it lies in contact with said members; means for moving said printing head and said device from their inactive positions to their active positions and back again; a control device settable to one position for causing said moving means to move said printing head and said device from their inactive positions to their active positions, and to another position for causing said moving means to move said printing head and said device from their active positions back to their inactive positions; a first solenoid for setting said device to said one position, and a second solenoid for setting said device to said other position; manually controlled means for energizing said first solenoid and setting said control device to said one position; and means operating automatically in response to the movement of said printing head into printing position for energizing said second solenoid and setting said control device to said other position.

8. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from a normal position to a printing position, and a group of type-bearing printing members on said head for making an imprint on material held on said platen when said head is rocked to printing position, the combination of an inking mechanism for applying ink to the type located at the printing line when said head is in its normal position; a fluid-pressure motor for operating said inking mechanism; a fluid-pressure motor for rocking said printing head from normal position to printing position; a source of fluid under pressure; means for causing fluid to flow from said source to both of said motors simultaneously; and means for retarding the flow of fluid from said source to said second-mentioned motor so as to enable said first-mentioned motor to operate said inking mechanism before said printing head is moved out of normal position by said second-mentioned motor.

9. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from a normal position to a printing position and back again, and a plurality of adjustable, type-bearing elements mounted on said head for marking material held on said platen when said printing head is rocked from normal position to printing position, the combination of a double-acting, fluid-pressure motor for rocking said head to and from printing position; a source of fluid under pressure for operating said motor; a valve settable to one position for causing said motor to move said head to printing position and to another position for causing said motor to return said head to normal position; manually controlled means for setting said valve to said one position so as to cause said head to be moved from normal position to printing position; and means, operating automatically in response to the movement of said head into printing position, for setting said valve to said other position so as to cause said head to be returned to its normal position.

10. The combination recited in claim 9 wherein said manually controlled means includes a solenoid and a manually operable switch for energizing said solenoid, and wherein said automatic means includes a solenoid and a switch operable by said printing head as it moves into printing position for causing said last-mentioned solenoid to be energized.

11. The combination recited in claim 10 wherein said valve includes a core settable to one position by said first-mentioned solenoid so as to cause said printing head to be moved from normal position to printing position, and to another position by said second-mentioned solenoid so as to cause said head to be automatically returned from printing position to normal position.

12. In a laundry marking machine, the combination of a printing head movable from a normal position to a printing position and back again; a fluid-pressure motor operable in one direction for moving said head from normal position to printing position and in another direction for moving said head from printing position to normal position; a source of fluid under pressure for operating said motor; means for controlling the flow of fluid to said motor so as to cause the latter to be operated in either direction, including a device settable to one position for causing said motor to be operated in said one direction and settable to another position for causing said motor to be operated in said other direction; manually controlled means for setting said device to said one position to cause said head to be moved from normal position to printing position; and means, operating automatically in response to the movement of said head into printing position, for setting said device to said other position to cause said head to be moved from printing position to normal position.

13. The combination recited in claim 12 wherein said device comprises a valve having a core settable to either one of two positions.

14. The combination recited in claim 13 wherein said manually controlled means includes a solenoid for setting said core to said one position and a switch for energizing said solenoid,

and wherein said automatic means includes a solenoid for setting said core to said other position and a switch operable by said printing head as it moves into printing position for energizing said last-mentioned solenoid.

15. In a laundry marking machine having a frame, a platen fixed on said frame, a printing head mounted on said frame for movement from a normal position to a printing position, and a group of printing members on said head for making an imprint on material held over said platen when said head is moved to printing position, the combination of a device for applying ink to said printing members; a motor for operating said inking device to cause ink to be applied to said printing members at the outset of a printing operation; a reversible motor for moving said head from normal position to printing position and back again; a device for controlling said motors, said device being settable to one position in which both of said motors will be actuated so as to cause the printing members to be inked and the head to be rocked into printing position, and to another position in which said reversible motor will be reversely actuated so as to cause said head to be restored to normal position; manually controlled means for setting said device to said one position; and means, operating automatically in response to the movement of said head into printing position, for setting said device to said other position.

16. The laundry marking machine as recited in claim 15 including means, actuated by said printing head as it is moved into printing position, for withdrawing said inking device from the path of travel of said printing members as the latter move toward said platen.

17. The laundry marking machine as recited in claim 15 including a first solenoid for setting said device to said one position, and a second solenoid for setting said device to said other position.

18. The laundry marking machine as recited in claim 17 in which said manually controlled means includes a pair of normally open, push-button switches connected in series with said one solenoid.

19. The laundry marking machine of claim 18 in which said automatic means includes a normally open switch connected in series with said other solenoid.

20. The laundry marking machine of claim 19 including means on said printing head for closing said last-named switch when said printing head moves into printing position.

21. In a laundry marking machine having a frame, a platen mounted on said frame, a printing head pivoted on said frame for rocking movement from a non-printing position to a printing position, and a plurality of adjustable type members mounted on said head for effecting a marking operation of material held on said platen when said printing head is rocked to printing position, the combination of an inking device for applying ink to selected type located in printing position, said device normally occupying a position where it lies out of contact with said type, a supporting arm for said device pivoted at one end on said head and at the other end on said device, a control arm pivoted on said frame eccentrically with respect to the pivot for said head and having its free end pivotally and slidably connected to said supporting arm, a link pivotally connected between the free end of said control arm and said inking device, power means for rocking said control arm about its pivot on said frame to cause said link to rock said inking device about its pivot on said supporting arm and into contact with the type located in printing position to cause the same to be inked, and separate power means for rocking said printing head from non-printing position to printing position and causing said inking device to be withdrawn from the type as said supporting arm is rocked about its pivot on said head by said control arm.

22. The laundry marking machine of claim 21 wherein each power means recited therein comprises a fluid-pressure motor, and including in combination therewith, a source of fluid under pressure, and a valve for controlling the flow of fluid from said source to both of said motors in predetermined sequence.

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