

March 23, 1954

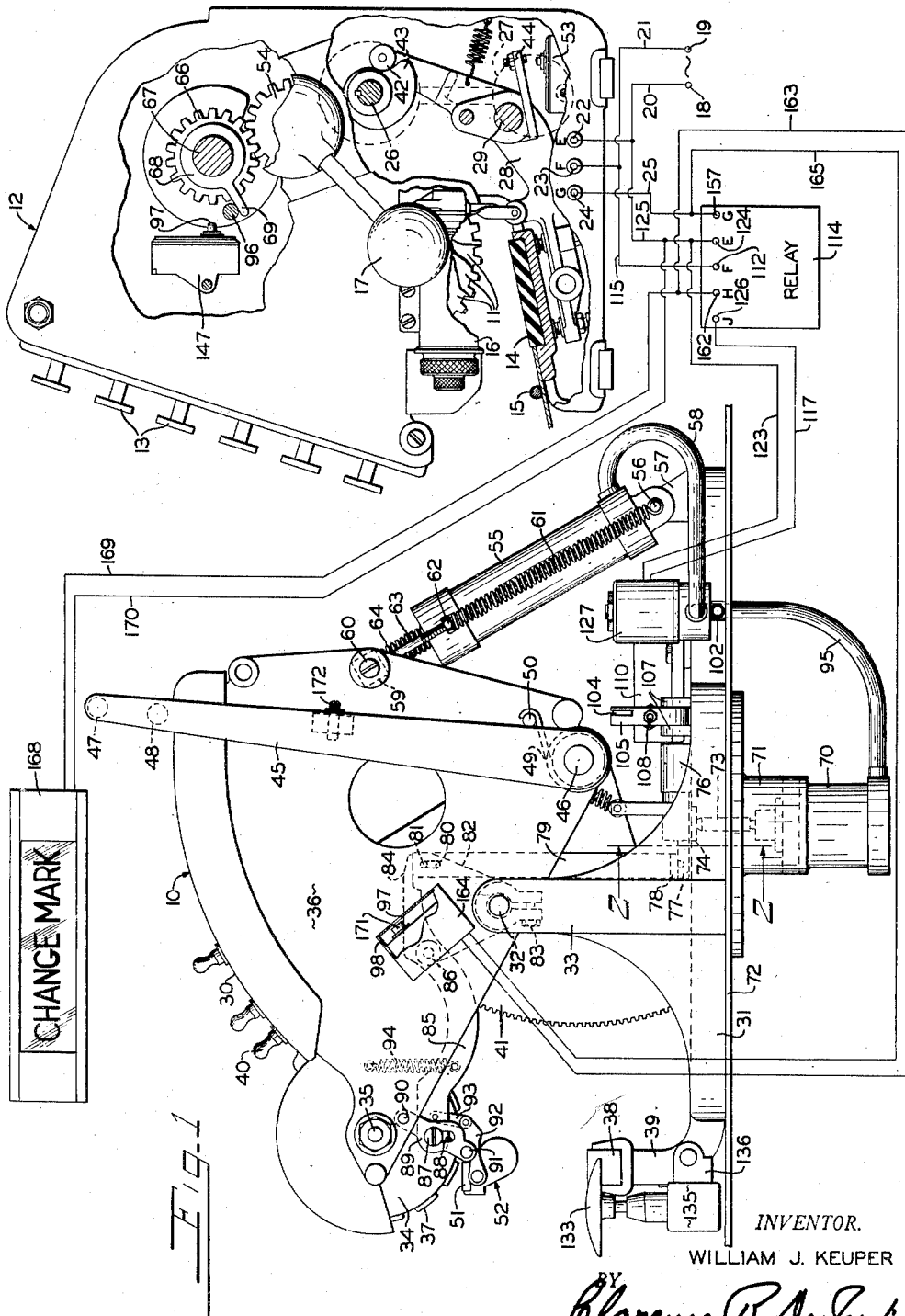
W. J. KEUPER

2,672,810

LAUNDRY LISTING AND MARKING SYSTEM

Filed Jan. 24, 1950

4 Sheets-Sheet 1



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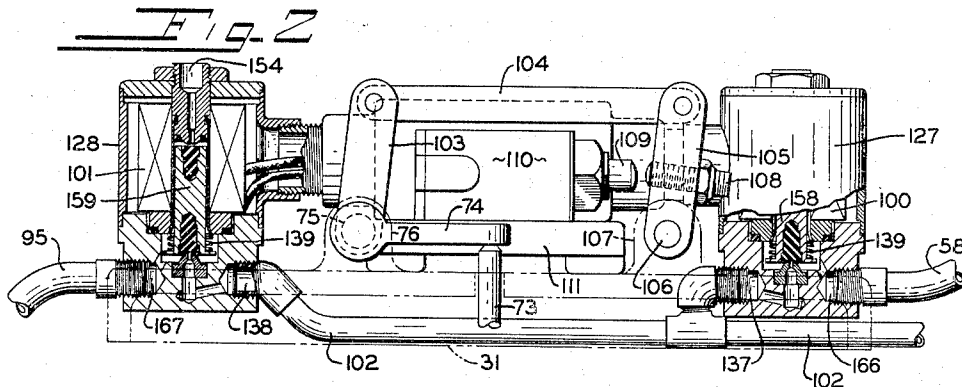
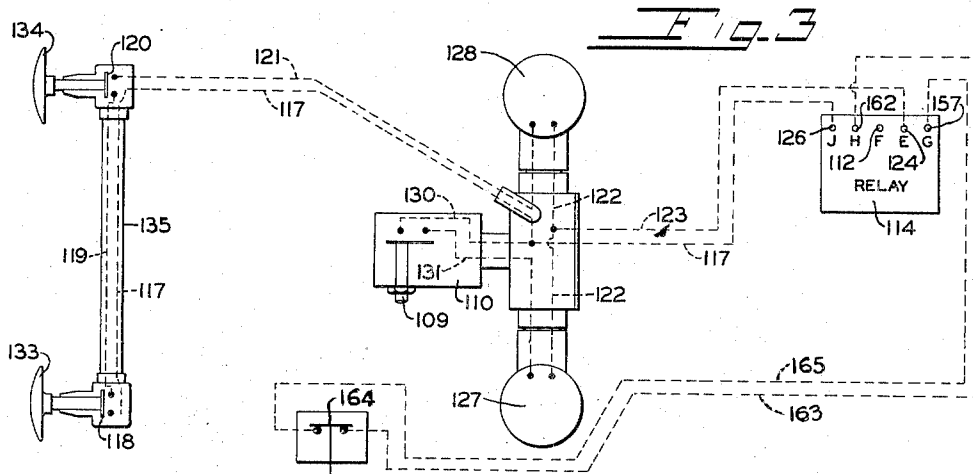
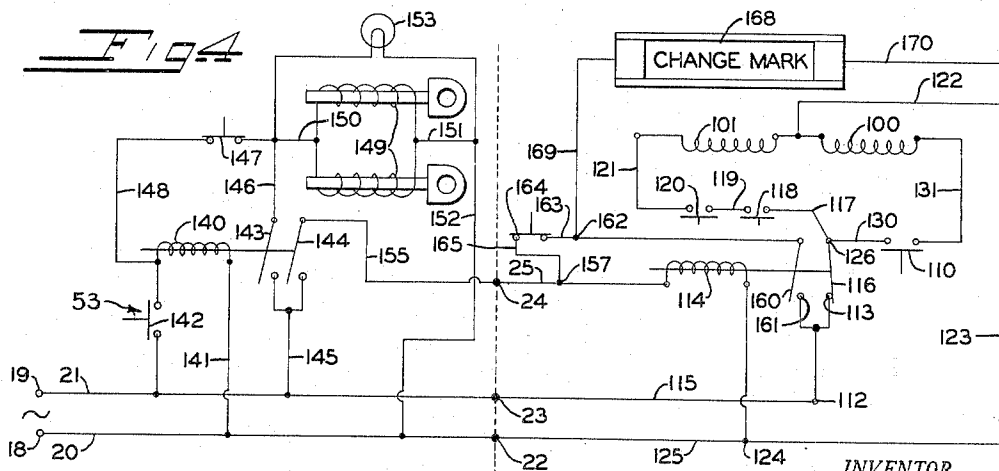
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LAUNDRY LISTING AND MARKING SYSTEM

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4 Sheets-Sheet 2



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March 23, 1954

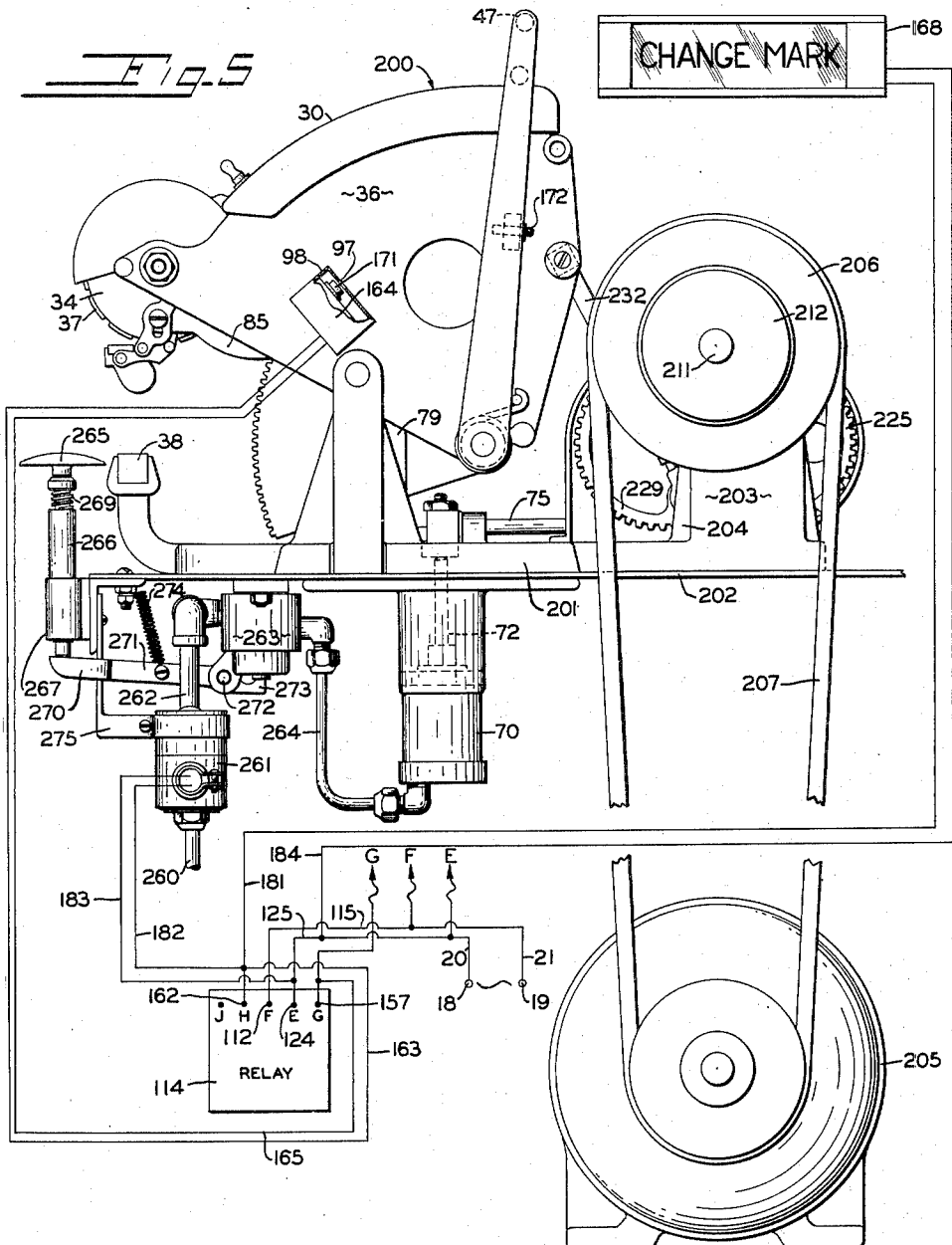
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LAUNDRY LISTING AND MARKING SYSTEM

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4 Sheets-Sheet 3



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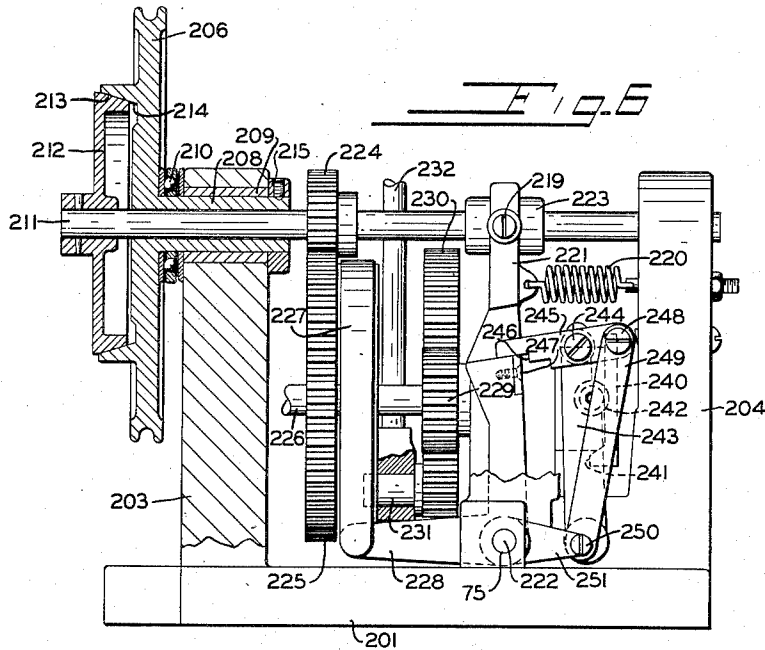
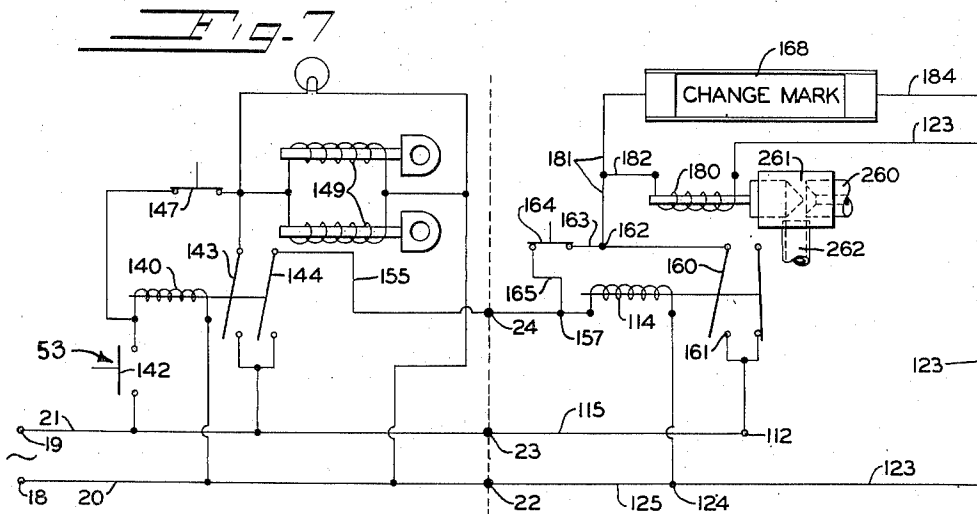
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LAUNDRY LISTING AND MARKING SYSTEM

Filed Jan. 24, 1950

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,672,810

LAUNDRY LISTING AND MARKING SYSTEM

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Application January 24, 1950, Serial No. 140,335

29 Claims. (Cl. 101—95)

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This invention relates to improvements in laundry listing and marking systems, in which the various articles of laundry are counted and listed on a laundry listing machine, and marked with a laundry mark by means of a laundry marking machine. More particularly, the present invention is concerned with a device for preventing the wrong laundry mark from being applied to the garments, due to the failure of the operator to change the set-up of the marking machine, when proceeding from the listing and marking of one customer's bundle to the next.

The modern practice of processing incoming laundry in commercial laundries consists of, first, placing the customer's bundle in a work box or tray mounted on a marking table provided for that purpose. The operator, then, opens the bundle and, from the laundry list accompanying the bundle, notes the customer's mark and sets it up on the keyboard of the laundry marking machine, which is generally located in a convenient position on the table adjacent to the work box. The operator then places the list on the platen of the listing machine after which she picks up the topmost piece of laundry in the bundle and presses the key of the listing machine corresponding to the description of the article. If it is a shirt, the operator depresses the listing machine key labeled "Shirts," if a handkerchief, the key labeled "Handkerchiefs," and so on. The operator, then places the article in front of the marking machine and examines it to see whether or not it bears the proper mark. An ultra-violet lamp is provided over the marking machine to render visible any mark which may have been made on the article using invisible ink. If the article is provided with the proper laundry mark, it is, then, classified into a truck or tossed onto a conveyor. If it does not bear the proper mark, it is placed in position beneath the marking devices of the marking machine and the machine is operated to cause the proper mark to be printed on said article. The article is then tossed into the truck or onto the conveyor and the next article picked up from the bundle. This procedure is repeated until the entire bundle has been processed and the work box is empty. When all of the pieces of laundry in one particular bundle have been processed in this manner, the operator actuates the list printing means of the listing machine to cause the name and quantity of all of the articles in the bundle to be printed on the laundry list. The list is then removed from the listing machine, which is reset or cleared by operating a resetting mechanism that returns all of the listing machine printing elements to their normal or non-printing positions.

In the listing machine disclosed herein, means are provided for causing the keyboard of the

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machine to become locked after each printing operation. This keyboard lock can only be released by performing an operation of the resetting mechanism to restore all of the printing elements to their normal positions. Thus, further listing of laundry articles is positively prevented until the printing mechanism has been reset to a clear position. A keyboard locking mechanism of this type is fully shown and described in my copending application, Serial No. 698,666, filed September 23, 1946, and entitled Keyboard Locking Mechanism for Laundry Listing Machines, now U. S. Patent No. 2,573,847.

While a keyboard locking mechanism, of the type described in the aforementioned application, provides absolute assurance that the articles counted in one bundle cannot be erroneously added to the articles counted in another bundle, there remains the possibility that a new or unskilled operator may forget to change the mark set up on the laundry marking machine, when proceeding from one customer's bundle to the next. In order to guard against such an oversight, I have now devised a means for preventing operation of the marking machine, after a printing operation has been effected on the listing machine, until the listing machine is reset and the operator manipulates an interlock release. This means is so designed as to cause the marking machine to be locked against operation after each listing operation. The operator will thus be notified that the set-up of the marking machine must be changed and he may then proceed to reset the listing machine and to release the interlock, and set up the new mark on the marking machine.

Accordingly, it is an object of the present invention to provide an interlock between a laundry listing and a laundry marking machine, which will be rendered effective upon operation of the list printing mechanism and will remain effective until released by resetting of the listing machine and a subsequent manual operation of the operator.

Another object of the invention is to provide an interlock between a laundry listing machine and a laundry marking machine, which will be rendered effective by a list printing operation of the listing machine and will remain effective until the listing machine has been reset and all of the marking devices of the marking machine have been restored to their normal positions.

Another object of my invention is to provide an interlock between a laundry listing machine and a laundry marking machine, in which the air supply to the air trip mechanism of the marking machine will be cut off, when the list printing mechanism is operated, and will remain cut off until a certain manipulable member is actuated by the operator.

Another object of the invention is to provide an interlock between a laundry listing and a pneumatically-operated marking machine, in which the valve controlling the supply of air to the pneumatic operating mechanism of the machine will be rendered inoperative when a list printing operation takes place in the listing machine, and will remain inoperative until a certain manipulative member is actuated by the operator.

Another object of the invention is to provide an interlock between a laundry listing machine and a laundry marking machine, which is rendered effective by a list printing operation of the listing machine, and will remain effective until all of the printing elements of the listing machine have been reset to their normal positions and a manipulative member associated with the marking machine has been actuated.

Further objects of the invention will appear from the following description of preferred embodiments of my invention, illustrated in the accompanying drawings, forming a part of this specification, in which:

Fig. 1 is a right side elevation of a laundry marking machine and a laundry listing machine, partly in section, showing the interlock connections between these machines.

Fig. 2 is a view taken along the line 2-2 in Fig. 1.

Fig. 3 is a diagrammatic view showing the interlock electrical circuits incorporated in the marking machine.

Fig. 4 is a consolidated wiring diagram showing the interlock circuits of both the listing machine and the marking machine, and the connections between them.

Fig. 5 is a side elevation showing the invention applied to a different form of marking machine.

Fig. 6 is a view, partially in cross section, taken from the rear of the machine and showing the details of the clutch and driving mechanisms of the machine shown in Fig. 5.

Fig. 7 is a consolidated wiring diagram showing the interlock circuits of the listing machine and the form of marking machine shown in Fig. 5, and the connections between them.

In the drawings, like reference numerals refer to like parts throughout the several views.

In Fig. 1 of the drawings, there is shown a laundry marking machine indicated generally by the reference numeral 10, and a laundry listing machine indicated by the reference numeral 12. As mentioned earlier herein, the listing machine is similar in all respects to the one shown and described in my copending application Serial No. 698,666, now U. S. Patent No. 2,573,847, to which reference may be made, if desired, for a complete disclosure of the construction and mode of operation of this machine. For the present purpose, it will be sufficient to state that the listing machine 12 is provided with a counting and printing mechanism controlled by the keys 13. There are sixty such keys, each bearing a legend corresponding to one of the various classifications of laundry articles. Each key controls the adjustment from normal position of one of a plurality of type-bearing elements 11. The machine is provided with a platen 14 for supporting a laundry list blank, which is held in position on the platen by a wire bail 15, resiliently urged downwardly against said blank by a suitable spring. The listing machine includes list printing means for printing a laundry list on the blank on platen 14, from type-bearing elements 11 and printing

ribbon 16. The list printing operation is effected by rotation of shaft 26, to which the printing handle 27 is attached, at the left side of the machine. Platen 14 is carried by lever 28, journaled on rod 29, and lever 28 has an upwardly extending arm carrying a follower 42, engaging cam 43 fixed on shaft 26. As shaft 26 rotates, cam 43 rocks lever 28 to move platen 14 toward the type-bearing elements 11, to print a list on the blank supported on said platen. Lever 28 carries an abutment 44, which is caused to engage the button of a microswitch 53, when the lever 28 is rocked to print a list, by printing handle 27. The microswitch 53 is provided with the normally-open contacts denoted by reference numeral 142 in Figs. 4 and 7.

The type-bearing elements 11 are reset or restored to their normal positions by giving resetting handle 17, on the right side of the machine a complete turn in one direction and then in the opposite direction. Resetting handle 17 is fixed to a pinion 54, journaled on a stud carried by the right-side member of the machine frame. Pinion 54 meshes with pinion 66 fixed on the resetting shaft 67. The resetting discs are keyed to said shaft 67, so that rotation of handle 17 in one direction turns the resetting shaft 67 to resetting position, and turning the handle in the opposite direction restores the shaft to its normal position. Pinion 66 has a member 68 fast thereto provided with an integral finger 69, which lies against the lower side of stop 96 when resetting shaft 67 is in normal position. When that shaft is turned to resetting position, finger 69 lies above stop 96 and engages and depresses operating button 97 to open the normally-closed switch 147, shown diagrammatically in Figs. 4 and 7. The electrical circuits and devices within the listing machine are connected to terminals 22 and 23 on the side of the machine. These terminals are connected with a pair of supply terminals 18 and 19 by conductors 20 and 21, respectively. A third terminal 24 is provided on the side of the listing machine for enabling a conductor 25, hereinafter referred to as the "interlock line," to be connected with the interlock circuits contained in the listing machine.

As shown in Fig. 1, the marking machine 10 is provided with a printing head 30, which is pivoted on an axle 32 supported between a pair of up-standing arms 33 (only one shown) provided on either side of a base 31. In order to effect marking of the articles to be laundered with a distinguishing laundry mark, the printing head 30 is provided with a plurality of marking devices 34, journaled on a transverse axle 35 extending between the side frames 36 (only one shown) of the printing head. Each of the devices 34 is provided about its periphery with a series of printing type 37 which are arranged to cooperate with a platen 38, supported by an upwardly curved arm 39 formed on the forward end of the base 31.

The marking devices 34 of the printing head may be adjusted to any of a plurality of different marking positions by means of setting levers 40 provided for this purpose. Each lever 40 is attached to a sector 41, which operates through suitable gearing (not shown) to rotate its associated marking device 34 as the lever is moved. When a setting lever is located in its forward or normal position, its associated marking device 34 is positioned with a blank portion lying opposite the platen 38, so that no marking will be effected by that device. However, as the setting levers are adjusted rearwardly, to set up a par-

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ticular laundry mark, their associated devices 34 will be rotated to bring the proper type into marking position above the platen at the printing line.

Means are provided for enabling the operator of the marking machine to return all of the setting levers 40 to their normal positions, in a single operation. This means consists of a pair of arms 45 (only one shown) lying on opposite sides of the machine and journaled at their lower ends on an axle 46 mounted in the side frames 36. At their upper ends, the arms 45 are connected by balls 47 and 48. The ball 48 is adapted to engage with the setting levers 40 and move any that are displaced to their normal positions, as the operator pulls the arms 45 forwardly by means of the upper bail 47. After the setting levers 40 have been moved to their forward or normal positions by the bail 48, the handle 47 is released, whereupon the resetting device, consisting of arms 45 and bail 48, is returned to the position shown in Fig. 1 by means of a torsion spring 49, which has one end secured to the hub of arm 45 and the other end hooked over a stud 50 mounted in the side frame 36. The stud 50 also serves as a stop for limiting the rearward movement of the resetting device.

The type 37 are inked, prior to each marking operation, by means of an inking pad 51 carried by an inking device, indicated generally at 52. The mode of operation of this inking device will be described, so far as necessary, in a subsequent portion of the present description. Reference is also made to U. S. Patent No. 2,085,325, patented June 29, 1937, on an application filed by Charles F. Miller, for further information regarding the construction and operation of this device.

For the purpose of rocking the marking head about the axle 32 to bring the type down against the platen, the machine is provided with a power drive which may be brought into play at the discretion of the operator. As shown in Fig. 1, an air cylinder 55 is provided at the back of the machine. The bottom end of this cylinder is pivoted at 56 on an ear 57, formed on the base 31 of the machine. The air cylinder is provided with the usual piston rod (not shown), which is caused to move upwardly when air is admitted to the bottom of the cylinder through a flexible conduit 58 provided for this purpose. The piston rod is secured to a cross-bar 59, which is pivotally mounted between the side frames 36 by means of shouldered screws 60. Hence, as the piston rod is thrust out of the cylinder on the application of air thereto, the head 30 will be forcibly rocked about the axle 32 and the type 37 will be pressed into contact with the platen 33 or an article thereon. When the air supply to the cylinder 55 is cut off, the marking head will be returned to its initial position by means of a pair of return springs 61 (only one shown) which are stretched between the pivot 56 and an anchor bolt 62 threaded on a rod 63 attached to the cross-bar 59. The movement of the head 30 into its home position is cushioned by means of a compression spring 64, mounted on the upper end of the piston rod. Thus, as the head 30 returns to the position shown in Fig. 1, the spring 64 will be compressed between the upper end of the cylinder and the cross-bar 59 so as to absorb the inertia of the head 30 as it returns to its initial position.

Means are provided for causing ink to be applied to the type 37 from the inking pad 51, prior to the movement of the marking head by the air cylinder 55. This preliminary movement

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of the pad into contact with the type is effected by an air cylinder 70 secured to a mounting bracket 71, bolted to the underside of a table top 72 on which the marking machine is supported. The air cylinder 70 has a piston rod 73 which extends upwardly through an aperture provided in table top 72 and base 31 of the marking machine. The upper end of the piston rod bears against the underside of a horizontal arm 74 (see also Fig. 2), which is secured to the forward end of a longitudinally extending shaft 75. As shown in Fig. 2, the shaft 75 is suitably journaled in bosses 76 provided on the base 31. Secured to the hub of the arm 74 is a horizontally extending finger 77 (Fig. 1), which lies to the right of the shaft 75 as viewed from the front of the machine. The outer end of this finger lies beneath the bottom part, 78, of a U-shaped frame provided with a pair of upwardly extending side arms 79 (only one shown). At its upper end, each side arm 79 is provided with an elongated slot 80 for receiving a pin 81 mounted in a bracket 82, which may be clamped in place on the axle 32 by a bolt 83. Although only one bracket is discernible in Fig. 1 of the drawings, it is to be understood that there are two such brackets, mounted in spaced relationship on the axle 32, each bracket having a pin 81 secured thereto, which guides the upper end of its associated arm 79. The upper ends of the arms 79 lie beneath fingers 84, provided on a pair of identical levers 85, which are pivoted at 86 on the brackets 82. Each arm 85 is provided at its forward end with a headed screw 87, which extends through a slot 88 formed in a link 89 pivotally connected at 90 to its associated side frame 36. At its lower end, each link 89 is pivotally connected at 91 to a frame 92 for the inking device 52. The rear end of the frame 92 is supported by a pair of links 93 pivotally connected to the frame and to the levers 85. The levers 85 are urged clockwise about their pivots 86 by means of tension springs 94, so as to maintain the fingers 84 in contact with the upper ends of the arms 79.

When air is admitted into the lower end of the air cylinder 70, by means of a conduit 95, the piston rod 72 will be moved upwardly so as to rock the shaft 75 (Fig. 2) counterclockwise as viewed from the front of the machine and, through the arm 77 (Fig. 1), to cause the frame 78, 79 to be raised. The levers 85 will be rocked counterclockwise about their pivots 86 and cause the screws 87 to move into the lower ends of the slots 88 formed in the links 89. At the same time, the links 93 will be moved downwardly, thereby causing the frame 92 to be rocked clockwise about the pivots 91, whereby the inking pad 51 will be moved upwardly into contact with the type 37 of the marking devices 34 that are at the printing line. The type will thus be inked in readiness for a marking operation. When air is subsequently admitted to the air cylinder 55 through the conduit 58, the marking head will be rocked so as to bring the inked type into contact with the platen and, at the same time, the inking device 52 will be swung rearwardly by reason of the fixed location of the pivots 86. In other words, as the forward portion of the marking head 30 moves downwardly, the screws 87 in the levers 85 will, in effect, pull the links 89 rearwardly and cause counterclockwise rotation of the links about their pivots 90. In this manner, the inking device is moved rear-

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wardly a sufficient distance to clear the platen 38, as the type moves into contact therewith.

The flow of air to the cylinders 55 and 70 is controlled by means of solenoid valves 127 and 128, respectively (see Figs. 2, 3 and 4), which are mounted on a bracket (not shown) secured to the base of the machine. Compressed air is supplied to the inlet ports 137 and 138 (Fig. 2) of the valves 127 and 128 by means of a supply conduit 102. The valves 127 and 128 are provided with solenoids 100 and 101, respectively, within which are located armatures 158 and 159, respectively. When either of the solenoids is energized, its associated armature is elevated against the urgency of a compression spring 139 so as to communicatively connect its inlet port with an outlet port, designated by reference numerals 166 and 167 for the valves 127 and 128, respectively. Hence, air will be permitted to flow from the supply conduit 102 to the conduits 59 and 95 when the solenoids are energized. Upward movement of the armatures will cause a relief port 154 provided in the top of each valve to be closed so as to prevent air from escaping through this port when the solenoid is energized. When the solenoid is deenergized, its armature will be moved downward by spring 139 so as to cut off the flow of air through the valve from the inlet port to the outlet port and, at the same time, the relief port 154 will be opened so as to permit air to flow from the outlet port, up around the armature, and out through the port 154 to the surrounding atmosphere. Thus, the air cylinders will be vented to atmosphere when the solenoids are deenergized and, accordingly, the pistons thereof will be free to return to their normal or unoperated positions. By means of an electrical circuit to be hereinafter described, the operator may selectively close a circuit for energizing the solenoid 101 for the valve 128, which controls the flow of air to the cylinder 70. After this cylinder has been fully operated, a circuit will be automatically closed through the solenoid 100 of the valve 127, whereby air will be supplied to the cylinder 55. For this purpose, the piston rod 73 (Fig. 2) will cause an arm 103, secured to the shaft 75, to be rocked counterclockwise as air is admitted into the cylinder 70. Pivotaly connected to the upper end of the arm 103 is a link 104, the other end of which is pivotally connected to the upper end of an arm 105 pivoted on an axle 106, supported between a pair of spaced bosses 107 formed on the base 31. Adjustably mounted in the arm 105 is an abutment screw 108, which is adapted to cooperate with a button 109 of a single-pole, single-throw microswitch 110, secured to a bracket 111 supported on the base 31. The normally-open contacts of the microswitch 110 will be closed when the button 109 is depressed at the end of the upward stroke of the piston rod 72. The switch 110 is connected in series with the electrical supply circuit for the solenoid 100 and will cause the solenoid to be energized and air to be supplied to the cylinder 55, as the piston rod 73 for the air cylinder 70 completes its upward movement. The marking head 30 will thereby be rocked downwardly so as to effect a marking operation.

The wiring diagram including the electrical circuits of the marking machine control and the associated interlock circuits are shown to the right of the dotted vertical line in Fig. 4. As shown therein, the terminal 23, which is connected with the supply terminal 19 by conduc-

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tor 21, is connected by a conductor 115 to a terminal 112 on a double-pole, single-throw relay 114. The terminal 112 is electrically connected with a contact 113 of the relay. When the relay is deenergized, as shown in Fig. 4, a blade 116 thereof normally bears against contact 113. The blade 116 is electrically connected to a terminal 126 on the relay, which, in turn, is connected by a conductor 117 with one contact of a normally-open switch 118. The other contact of this switch is connected by a conductor 119 with one contact of another normally-open switch 120. The other contact of the switch 120 is connected by a conductor 121 with one terminal of the valve-operating solenoid 101. The other terminal of this solenoid is connected by conductors 122 and 123 with a terminal 124 of the relay 114, which is connected by conductor 125 with the terminal 22 on the listing machine, which, as previously described, is connected by a conductor 20 with the supply terminal 18. Thus, when the switches 118 and 120 are closed, current will flow from the terminal 19 through conductor 21, terminal 23, conductor 115, terminal 112, contact 113, blade 116 closed on contact 113, terminal 126, conductor 117, switch 118, conductor 119, switch 120, conductor 121, solenoid 101, conductors 122 and 123, terminal 124, conductor 125, terminal 22 and conductor 20 to terminal 18. Hence, the solenoid 101 will be energized and the valve 128 controlled thereby opened to cause air to be admitted to the cylinder 70. At the end of the upward stroke of the piston rod 72, the contacts of the microswitch 110 will be closed. As shown in Fig. 4, one contact of this switch is connected by a conductor 130 with the terminal 126 of the relay 114. The other contact of the switch 110 is connected by a conductor 131 with one terminal of the valve-operating solenoid 100. The other terminal of the solenoid is connected to the supply terminal 18 by conductors 122, 123, 125 and 20. Thus, current will be supplied to the solenoid 100 and cause the valve controlled thereby to be operated so as to admit air into the cylinder 55. The marking head 30 will thereby be rocked to cause the type 37 at the printing line to move down against the platen 38 and perform a marking operation.

When the switches 118 and 120 are subsequently opened by the operator, the solenoid 101 will be deenergized, thereby cutting off the supply of air to the cylinder 70. The piston rod 72 will thereupon move downwardly under the influence of a suitable return spring provided therefor and the contacts of the microswitch 110 will again open. This will cause solenoid 100 to be deenergized and permit the return spring 61 (Fig. 1) to return the marking head to its normal or raised position.

As shown in Figs. 1 and 3 the switches 118 and 120 are provided with operating buttons 133 and 134, respectively, which are resiliently urged upwardly by suitable springs (not shown). The buttons 133 and 134 are mounted on opposite ends of a tubular frame member 135, which is provided with a pair of rearwardly extending lugs 136 by means of which the member is attached to arm 39 of frame 31. Thus, the buttons 133 and 134 are conveniently situated on either side of the platen 38, where they may be depressed by the palms of the operator's hands, as the article to be marked is held upon the platen 38.

The wiring diagram of the listing machine 12, which as mentioned earlier herein, is similar in

every respect to the listing machine shown in my copending application, Serial No. 698,666, and the interlock circuits associated therewith are shown to the left of the vertical dotted line in Fig. 4. As therein shown, the listing machine is provided with a double pole-single throw relay 140. One terminal of the operating coil of this relay is connected with the supply conductor 20 by conductor 141. The other terminal of the relay coil is connected with the supply conductor 21 through a normally-open contact 142 of microswitch 53, which as previously stated, is arranged to be closed on a list printing operation when the platen 14 has been raised to bring the blank supported thereon into contact with the inking ribbon and printing type of the machine, to print a list. When this switch is closed, the relay coil 140 will be energized and the blades 143 and 144 thereof will be moved into engagement with a pair of contacts, which are connected with the supply conductor 21 by conductor 145. The blade 143 will establish through conductor 146, normally-closed switch 147, and conductor 148, a holding circuit through the relay coil 140, to maintain the relay energized until switch 147 is opened. The blade 143 also closes a circuit through a pair of keyboard locking solenoids 149, by means of conductors 150, 151, and 152, to cause the keyboard of the listing machine to be locked against operation. At the same time, a signal lamp 153 will be lighted to indicate the locked condition of keyboard. As previously described herein, the switch 147 is opened upon a resetting operation of the listing machine during the course of which all the printing elements 11 thereof are returned to their normal positions. Hence, the listing machine will be locked against operation after each printing operation and can only be unlocked by resetting the type elements of the machine, which will cause the switch 147 to open and break the holding circuit through the relay coil 140.

As previously mentioned herein, it sometimes happens that the operator of the laundry listing and marking machines will forget to change the setting of the marking machine when proceeding from one customer's bundle to the next. It is desirable, therefore, to provide some means for disabling the marking machine after the laundry list has been printed on the listing machine. This directs the operator's attention to the need of resetting the listing machine and setting up a new and different mark by adjustment of setting levers 40 of the marking machine. The interlock of the present invention disables the marking machine upon a list printing operation of the listing machine, and the marking machine cannot be enabled for further operation until the operator, first, resets the listing machine and, then, operates a manually-operable member associated with the marking machine, for instance, the resetting bail. For this purpose, the relay 140 is provided with blade 144, which is connected by a conductor 155, terminal 24, the interlock line 25, and terminal 157 to the winding of relay 114, the other end of which is electrically connected to terminal 18, through terminal 124, conductor 125, terminal 22 and conductor 20. Hence, when the relay 140 is energized and the blade 144 moved against its related contact, a circuit will be established through the operating coil of relay 114 by way of conductors 145, 155 and 25. Relay 114 will thus be energized and blade 116 moved away from its contact 113, thereby breaking the circuits to solenoids 101 and

100. The operator cannot, therefore, cause operation of the marking machine so long as relay 114 remains energized. In order to maintain this relay energized, a holding circuit is provided, which is established when blade 160 of relay 114, on energizing the relay, is brought to bear against its associated contact 161. This contact is electrically connected with the terminal 112 while the blade 160 is electrically connected with a terminal 162 on the relay. The terminal 162 is connected by a conductor 163 with one contact of a normally-closed switch 164, the other contact of which is connected by a conductor 165 with terminal 157 of the relay. A circuit is thus established through the relay coil from one supply conductor to the other by means of terminal 124, coil of relay 114, terminal 157, conductor 165, switch 164, conductor 163, terminal 162, blade 160, contact 161 and terminal 112. This relay 114, therefore, will remain energized until switch 164 is opened to break the holding circuit for the relay.

Means are provided for causing a sign 168 (Figs. 1 and 4) bearing the legend "Change mark" to be illuminated during the time that the relay 114 is energized and the marking machine disabled. For this purpose, one terminal of the "Change mark" sign is connected by a conductor 169 with terminal 162 of the relay. The other terminal of the sign is connected by a conductor 170 with the conductor 123, which is connected to terminal 124 of the relay. Hence, as long as the relay is energized, a circuit through the sign 168 will be effected by conductor 123, conductor 170, conductor 169, terminal 162, blade 160, contact 161 and terminal 112.

As shown in Fig. 1 of the drawings, the switch 164 is secured to the side frame 36 of the marking head, in such a position that its operating button 171 will be contacted by an abutment screw 172 mounted on the right-hand arm 45 of the resetting device, when this device has been moved all the way forward to return all adjusted setting levers 40 to their normal positions. Hence, the marking machine will be disabled each time the list printing means of the listing machine is operated, and will remain disabled until the resetting means of the listing machine is operated to open switch 147 and, thereafter, the resetting device is operated to restore all of the marking elements 34 to their normal positions, opening switch 164. Thus, it will be impossible for the operator to forget to reset the listing machine or to restore the marking devices of the marking machine to normal, preparatory to setting up a new mark.

The operation of the interlock heretofore described, will now be explained briefly. When the operator has finished counting and listing the various items of a given customer's bundle, and the marking of these articles, where necessary, she actuates the list-printing means by turning printing handle 27, to print the laundry list for that customer's bundle. Such list printing operation closes switch 142 and energizes relay 140, establishing the holding circuit through switch 147 and energizing relay 114. Energizing relay 114 opens switch 116, thus breaking the control circuit for the marking machine, which cannot be operated so long as switch 116 is open. Energizing relay 114 also closed switch 160 and established a holding circuit for relay 114, through normally-closed switch 164. This interlock remains effective, disabling the marking machine, until the relay 114 is deenergized. To deenergize

relay 114, and once again enable the marking machine, the operator must, first, open switch 147 by resetting the listing machine type-bearing elements 11 to normal positions. This de-energizes relay 140, but relay 114 remains energized through its holding circuit. The operator must, then, break that holding circuit by opening switch 164. This is effected by moving the resetting bail 48 forward to reset all the marking machine type elements 34 to normal positions, which automatically opens switch 164 by engagement of pin 172 on arm 45 therewith. Relay 114 is now deenergized and the marking machine enabled for normal operation. The operator will then set up the new mark by manual adjustment of setting levers 40. It is to be noted that, to release the interlock and enable the marking machine, the listing machine must be reset before the marking machine is reset. If not, resetting of the marking machine will not deenergize relay 114, which will remain energized through the circuit including operated blade 144 of energized relay 140.

Although it has been found desirable to locate the switch 164 on the side of the marking head, for cooperation with pin 172 on arm 45 of the resetting device as previously described, it is to be realized, of course, that the switch may be moved from this position to a location on the table 72, or may be placed in any other convenient location, where it may be operated as a manual push-button switch by the operator, to render the interlock ineffective and enable the marking machine to permit further marking operations to be performed on it. In this case, after the marking machine has been disabled by a list printing operation on the listing machine, the operator may reset the listing machine and then push the button 181 of the switch 164 with his thumb or finger, to again render the marking machine operative. In the preferred embodiment shown in Fig. 1, the button 171 can only be operated by the pin 172 passing through an opening 97 in the switch casing 98, so that the operator is forced to reset the marking machine to release the interlock.

A modified form of interlock between the listing machine shown in Fig. 1 and a different form of marking machine, which may be referred to as an air tripped, motor driven machine, is illustrated in Figs. 5, 6 and 7. This marking machine is indicated generally by the reference numeral 200. The marking head 30 of this machine is similar in all respects to the marking head 30 of the air operated marking machine shown in Fig. 1. The machine 200 is provided with a base 201, which may be bolted or otherwise suitably secured to a table top 202. The base 201 is provided, at its rear end, with a pair of spaced supporting legs 203 and 204, which support the clutch and driving mechanism for the marking head 30. As shown in Fig. 5, the power for operating the machine is supplied by a continuously running electric motor 205, which is mounted beneath the table top 202 and drives a pulley 206, on the marking machine, through a belt 207. As shown in Fig. 6, the pulley 206 is provided with a hub 208, which is journaled in a bushing 209 mounted in the upper end of the leg 203. A thrust bearing 210 is provided between the inner face of the pulley and the outer face of the leg 203, for a purpose to be subsequently disclosed. The hub of the pulley is bored to receive one end of a driving shaft 211, the other end of which is journaled in the upper end of the leg 204. The left-hand end of the shaft 211

extends beyond the pulley, where it is provided with a clutch element 212 pinned to the shaft. The element 212 is provided with a conical, peripheral surface 213 which is adapted to cooperate with a corresponding conical surface 214 formed on the outer face of the pulley 206. A collar 215 is pinned to the inner end of the hub 208 to prevent endwise shifting of the hub within the bushing 209. The shaft 211 is yieldably urged toward the right, as viewed in Fig. 6, by a spring 220 tensioned between the leg 204 and an upwardly extending arm 221, pivoted on an axis 222. The upper end of the arm 221 is forked and provided with screws 219 (only one shown), the inner ends of which engage in opposite sides of an annular groove formed in a cylindrical hub 223 secured to the shaft 211. The conical surface 213 of the clutch element 212 will thereby be spring-urged into engagement with the surface 214 on the pulley 206, to establish a driving connection between the pulley and the drive shaft 211. Secured to the shaft 211 between the legs 203 and 204 is a pinion 224, which meshes with a larger gear 225 secured to a shaft 226, journaled in the framework of the machine. The gear 225 is provided with a brake drum which is encircled by a brake band 227, one end of which is fastened to the base 201 and the other end of which is attached to the outer end of a horizontal arm 228, which is formed integrally with the arm 221. A small gear 229 is secured to the shaft 226 and meshes with a larger gear 230, which carries a laterally-extending stud 231 on which is journaled the lower end of a crank rod 232. The upper end of the rod 232 is secured to the cross rod 59 extending between the side frames 36 of the marking head, as previously described in connection with the marking machine shown in Fig. 1.

The gear 230 is mounted on the left-hand end of a transverse shaft (not shown), to which is also secured a clutch disengaging cam 240, which is provided at its periphery with a laterally-extending nose 241. Cooperating with the cam 240 is a roll 242 rotatably mounted on an arm 243, which, at its lower end, is pivoted to the framework of the machine. At its upper end, the arm 243 is provided with a screw 244, on which is pivotally mounted a dog 245. On the left-hand end of the dog, as viewed in Fig. 6, there is provided a shoulder 246, which is adapted to cooperate with an abutment plate 247 mounted on the arm 221. At its right-hand end, the dog 245 carries a screw 248 on which is pivoted the upper end of a link 249. The lower end of this link is pivoted on a screw 250 mounted in the end of an arm 251. This arm is secured to the rear end of the shaft 75, corresponding to shaft 75 heretofore referred to in connection with Fig. 2.

In Fig. 6, the clutch is shown engaged, so as to cause rocking of the marking head 30 by the crank rod 232 connected with the gear 230. After the head has completed a marking operation, and as it is returning to its initial position shown in Fig. 5, the nose 241 on the cam 240 engages the roll 242 and rocks the arm 243 counter-clockwise about its pivot. The resulting movement to the left of the dog 245 will cause shoulder 246 to engage abutment plate 247 and move arm 221 toward the left, so as to disengage the clutch element 212 from the driving pulley 206. At the same time, the brake band 227 is tightened on the brake drum secured to gear 225, and the rotation of the gear 230, and the shaft on which it and the cam 241 are mounted, is halted. The marking

head will remain at rest, in its initial position, until it is again brought into operation by the operator of the machine. The drive of the marking head is initiated by admitting compressed air to the cylinder 70, which causes the piston rod 72 thereof to rise. As in the case of the air-operated machine described in connection with Fig. 1, upward movement of the piston rod 72 rocks the shaft 75 counterclockwise, as viewed from the front of the machine, or clockwise as viewed from the rear thereof as in the case of Fig. 6. This movement of the shaft 75 causes the link 249 to be moved downwardly, which rocks the dog 245 about its pivot screw 244 and removes the shoulder 246 from the plate 247. The arm 221 is thereupon released to the action of the spring 220, which pulls the clutch element 212 into engagement with the pulley 206, the bearing 210 serving to absorb the thrust produced on the pulley 206 by the spring 220. The marking head 30 will thus be rocked on its pivot and will receive a forward and return stroke, at the end of which the nose 241 will strike roll 242 and, through the dog 245, move arm 221 to the left to disengage the clutch.

As in the case of the air-operated type of marking machine shown in Fig. 1, upward movement of piston rod 72 will cause the U-shaped frame, which includes the arms 79, to be elevated, and the link 85 to be rocked about its pivot to produce a preliminary inking operation of the type 37 on the marking elements 34, which are at the printing line.

Air is supplied to the cylinder 70 from a compressed air line 260 (Fig. 5), the air passing first through a solenoid-operated cut-off valve 261, after which it passes through a conduit 262 into a manually-operated control valve 263, from whence it passes through a conduit 264 into the bottom of the cylinder 70. The valve 263 is adapted to be opened to permit the passage of air therethrough, when both of the tripping buttons 265 (which are arranged one on either side of the platen 38, as in the case of the buttons 133 and 134 shown in Fig. 3) are simultaneously depressed. As shown in Fig. 5, the buttons are each provided with a stem which is slidable within a sleeve 266 mounted in a bracket 267, secured to the forward edge of the table top 202. The stems, to which the buttons are secured, are resiliently urged upwardly by springs 268, and the lower ends of the stems bear against a pair of forwardly-extending fingers on a rocker arm 270, pivoted at its center on a screw secured to a lever 271. This lever is pivoted at 272 to the frame of the valve 263 and is provided with a rearwardly-extending finger 273, which lies beneath the stem of the valve 263. When the buttons 265 are simultaneously depressed, the lever 271 will be rocked counterclockwise about its pivot 272 against the tension of a spring 274, and the finger 273 will elevate the stem of the valve and permit air to flow through the valve and into the cylinder 70.

The solenoid-operated cut-off valve 261 is interposed between the air supply line 260 and the inlet of valve 263 and is supported from the table top 202 by means of a bracket 275. This valve forms a part of the interlock between the marking machine and the listing machine and operates to cut off the supply of air to the control valve 263, when its solenoid 180 is energized. Hence, when the solenoid 180 of the valve 261 is energized, depression of the buttons 265 will not be effective to cause air to be admitted to the air

cylinder 70 and, hence, the clutch cannot be engaged to cause a marking operation to take place, and the marking machine is disabled.

In Fig. 7, the wiring diagram for the interlock between the listing machine and this form of marking machine is shown. It will be recalled that, whenever a list printing operation is effected on the listing machine, the switch 142 will be closed to energize the relay 140, whereby the blades 143 and 144 thereof will be moved into engagement with their associated contacts. The blade 143 will establish a holding circuit through the relay via the normally-closed switch 147, and will also close a circuit through the solenoids 149 to lock the keyboard of the listing machine against operation. The blade 144 will close a circuit to energize the relay 114, from the input conductor 21 through the blade 144, conductor 155, terminal 24, terminal 157 of the relay 114, through the coil of the relay to the terminal 124 of the relay, conductor 125, terminal 22, and input conductor 20. The blade 160 of the relay 114 will thereupon be moved into engagement with its contact 161 so as to establish a holding circuit through the coil of the relay, this circuit extending from the input conductor 21 to the terminal 23, thence through conductor 115 to terminal 112 of the relay 114, contact 161, blade 160, terminal 162 of the relay, conductor 163, normally-closed switch 164, conductor 165, terminal 157 of the relay, coil of relay 114, terminal 124 of the relay, conductor 125, terminal 22, and input conductor 20. Hence, the relay 114 will remain energized, so long as switch 164 is closed, even though the relay 140 is deenergized by resetting operation of the listing machine in which switch 147 is opened and the holding circuit through relay 140 broken.

When the blade 160 engages contact 161, upon energization of relay 114, the solenoid 180 of the valve 261 will be energized by a circuit extending from input conductor 21 to terminal 23, thence through conductor 115 to terminal 112, contact 161, blade 160, terminal 162, thence through conductors 181 and 182 to one terminal of coil 180, thence from the other terminal of the coil through conductor 123 to terminal 124, conductor 125, terminal 22, and input conductor 20. The valve 261 will thereupon be operated to cut off the flow of air from input line 260 to the conduit 262 leading to the intake valve 263 (Fig. 5), thus disabling the marking machine. At the same time, the "Change mark" sign 168 will be illuminated, inasmuch as this sign is connected in parallel across the coil 180 by means of conductors 181 and 184.

In this manner, the marking machine will be rendered inoperative or disabled until the holding circuit through the coil of the relay 114 is broken by opening switch 147 upon resetting of the listing machine, and the subsequent opening of the switch 164 upon forward movement of the resetting bail handle 47, which causes pin 12 to pass through hole 97 in casing 98 of switch 164 to depress button 171 and open normally-closed switch 164. Therefore, upon the resetting of the listing machine and of all the marking elements 34 to their normal positions, the solenoid 180 will be deenergized and the valve 261 permitted to open to again admit air to the control valve 263 and, once more, enable the marking machine, rendering it operative to print a laundry mark on a garment held above the platen 38, when the buttons 265 are simultaneously depressed.

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The operation of this form of interlock is quite similar to that of the form first described. A list printing operation of the listing machine closes normally-open switch 142 (Fig. 7) thus energizing relay 140. This establishes a holding circuit through normally-closed switch 147, and makes an energizing circuit for relay 114, so that the latter relay is energized. The energization of relay 114 closes cut-off valve 261 to disable the marking machine. Valve 261 remains closed as long as relay 114 remains energized. To enable the marking machine for further operation it is necessary first, to deenergize relay 140, which is effected by resetting the listing machine and thus opening switch 147, and, then, to deenergize the relay 114, which is accomplished by resetting the marking machine and thus opening switch 164.

As mentioned earlier herein in connection with the embodiment of the invention shown in Figs. 1, 2, 3 and 4, the switch 164 (Fig. 5) may be removed from the side frame of the marking machine and placed in a convenient position on the table top 202, if this should be found desirable. In this case, the operator, after a list printing operation of the listing machine, will be unable to cause operation of the marking machine by depression of the buttons 265, and will thus be warned that the setting of the marking machine should be changed. He may then adjust the setting of the marking elements to set up the new mark, after which he may manually depress the button of switch 164 to release the machine for operation.

I am aware that the interlock between a laundry listing machine and a laundry marking machine 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. An interlock between a laundry listing machine having means for printing a list of items to be laundered, and a laundry marking machine having means for marking the articles to be laundered with a distinctive mark, said marking machine being provided with a power drive for operating said marking means and means for controlling the operation of said marking means by said power drive; said interlock comprising the combination of a relay; means for energizing said relay each time the printing means of the listing machine is operated; a second relay rendered effective by energization of said first-mentioned relay, for disabling said controlling means; a holding circuit for each of said relays and means, including a manipulating device associated with each holding circuit, for breaking the same to thereby deenergize its associated relay and render said disabling means ineffective.

2. In a laundry listing and marking system comprising a laundry listing machine for listing the articles to be laundered, and having means for printing a list of said articles, and a laundry marking machine provided with means for marking said articles with a distinguishing mark, the combination of an interlock, for preventing operation of the marking means following an operation of the list printing means, said interlock including a relay, means for energizing said relay each time the list printing means is operated, a second relay controlled by

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said first-mentioned relay for preventing operation of the marking means, a holding circuit for each of said relays and separate manually operable means for breaking said holding circuits to deenergize said relays and render said interlock ineffective.

3. In a laundry counting and marking system comprising a laundry listing machine having means, including a plurality of type-bearing elements, each movable from a normal position to a printing position, for printing on a list the totals of the articles counted, and means for resetting said elements from their printing to their normal positions, and a laundry marking machine provided with means for marking the said articles with a distinguishing mark; the combination of an interlock for preventing operation of the marking means following an operation of the list printing means until all of the type-bearing elements of the listing machine have been reset to their normal positions, said interlock including a first relay, means for energizing said relay each time the list printing means is operated, a second relay, holding circuits for both of said relays, a circuit controlled by said first relay for energizing said second relay whenever said first relay is energized, means controlled by said second relay for preventing operation of the marking means whenever said second relay is energized, means operated by said resetting means for breaking the holding circuit for said first relay to deenergize said first relay, and manually operable means for breaking the holding circuit for said second relay to deenergize said second relay after said first relay has been deenergized, whereupon said interlock will be rendered ineffective.

4. An interlock between a laundry listing machine and a laundry marking machine, each of said machines being provided with a printing mechanism including a plurality of type-bearing elements, means for moving said elements from a normal position to a printing position, and means for resetting said type elements from printing to normal positions; said interlock comprising the combination of means, rendered effective each time the printing mechanism of the listing machine is operated, for preventing operation of the printing mechanism of said marking machine; and means, jointly controlled by the resetting means for the listing machine and the resetting means for the marking machine, for causing said preventing means to be rendered ineffective.

5. In a laundry counting and marking system comprising a laundry listing machine having means for printing on a list the totals of the articles counted, and a laundry marking machine having means, including a plurality of marking devices each settable from a normal position to a marking position, for marking the said articles with a distinguishing mark, said marking machine being provided with means for resetting all of said marking devices from their marking positions to their normal positions, the combination of an interlock for preventing operation of the marking means following an operation of the list printing means of the listing machine until all of the marking devices have been reset to their normal position, said interlock including a relay, means for energizing said relay each time the list printing means is operated, a holding circuit for said relay, means controlled by said relay for preventing operation of the marking means, and means for deenergizing said relay and rendering said interlock ineffective, including a switch adapted to

be operated by said resetting means upon return of said marking devices to their normal positions for breaking said holding circuit.

6. In a laundry counting and marking system comprising a laundry listing machine having means, including a plurality of type-carrying elements each movable from a normal position to a printing position, for printing on a list the totals of articles counted, and means for resetting said elements for their printing portions to their normal positions; a laundry marking machine having means, including a plurality of marking devices each settable from a normal position to a marking position, for marking the said articles with a distinguishing mark, and means for resetting all of said devices from their marking to their normal positions; the combination of an interlock, for preventing operation of the marking means following an operation of the list printing means until both resetting means have been operated, said interlock including a first relay, means for energizing said relay each time the list printing means is operated, a holding circuit for said relay, a second relay, a circuit for energizing said second relay whenever said first relay is energized, a holding circuit for said second relay, means controlled by said second relay for preventing operation of the marking machine whenever said second relay is energized, means controlled by the resetting means for the listing machine for breaking the holding circuit for said first relay, and means controlled by the resetting means for the marking machine for breaking the holding circuit for said second relay, whereby said interlock will be rendered ineffective when both relays are deenergized.

7. An interlock between a laundry listing machine, having list printing means and resetting means, and a laundry marking machine, having a plurality of type-bearing elements each individually adjustable from a normal to a selected marking position and power-operated marking means operable to print a mark from said elements, comprising the combination of a first relay; an energizing circuit therefor; a normally-open switch in said circuit, closed by operation of said list printing means; a holding circuit for said first relay, closed by energization thereof; a normally-closed switch in said holding circuit, opened by operation of said listing machine resetting means; a second relay; an energizing circuit therefor, closed by energization of said first relay; a holding circuit for said second relay, closed by energization thereof; a normally-closed switch in said second relay holding circuit; manually-operable means for opening the switch in the second relay holding circuit; and a control circuit for said marking means including a normally-closed switch opened by energization of the second relay.

8. The interlock of claim 7 in which the marking machine includes a manually-operable member for resetting adjusted type-bearing elements to normal position; and a device carried thereby for opening the switch in the second relay holding circuit, upon movement of said member to restore said elements to normal positions.

9. An interlock between a laundry listing machine having means for printing a list of articles to be laundered, and a laundry marking machine for marking said articles with a distinctive mark, said marking machine being provided with a motor drive for operating said marking means, a clutch for operatively connecting said motor drive with said marking means to cause the latter to perform a marking operation, and means for en-

gaging said clutch; said interlock comprising the combination of means, rendered effective each time the printing means of the listing machine is operated, for disabling said clutch engaging means; and means, including a manipulative element, for rendering said disabling means ineffective to permit engagement of said clutch by said engaging means.

10. The invention as recited in claim 9 wherein said disabling means includes a relay, adapted to be energized each time said printing means is operated, and a holding circuit for said relay; and said manipulative element comprises a normally-closed switch in said holding circuit, which, when manipulated, will break said holding circuit and deenergize said relay.

11. An interlock between a laundry listing machine having means for printing a list of articles to be laundered and a laundry marking machine having means for marking said articles with a distinguishing mark, said marking machine being provided with a power drive for operating the marking means and with a control means for causing operation of said marking means by said power drive; said interlock comprising the combination of means for rendering said control means ineffective to cause operation of said marking means by said power drive, said rendering means including a cut-off valve, a solenoid for operating said valve, and a normally-open electrical circuit for energizing said solenoid; means, controlled by the list printing means, for closing said electrical circuit to operate said valve and render said control means ineffective, including a relay, means for energizing said relay each time the list printing means is operated, and a holding circuit for said relay; and means to deenergize said relay and open said electrical circuit, including a manipulative element for breaking said holding circuit.

12. An interlock between a laundry listing machine having means for printing a list of articles to be laundered and a laundry marking machine having means for marking said articles with a distinguishing mark, said marking machine being provided with a power drive for operating the marking means and control means for causing operation of said marking means by said power drive; said interlock comprising the combination of a cut-off valve which is effective, when operated, to render said control means ineffective to cause operation of said marking means by said power drive; a solenoid for operating said valve; a relay; means for energizing said relay each time the list printing means is operated; a holding circuit for said relay; an electrical circuit controlled by said relay for energizing said solenoid; and means to deenergize said relay and restore said cut-off valve to its unoperated condition, including a manually operable device for breaking said holding circuit.

13. An interlock between a laundry listing machine having means for printing a list of articles to be laundered, and a laundry marking machine having means for marking said articles with a distinguishing mark, said marking machine being provided with a drive mechanism for said marking means, an electric driving motor, a normally-disengaged clutch for connecting said motor with said drive mechanism, air-operated means for engaging said clutch, a source of compressed air, and means for controlling the flow of air from said source to said engaging means; said interlock comprising the combination of a valve operable to obstruct the flow of air from

said source to said engaging means; a solenoid for operating said valve; a relay; means for energizing said relay each time the list printing means is operated; means, controlled by said relay, for energizing said solenoid and for causing said relay to remain energized, whereby engagement of said clutch under the control of said control means will be prevented; and means, including a manually-operable member, for causing said relay and said solenoid to be deenergized, whereby said control means will again be effective to control the operation of said engaging means.

14. The invention as recited in claim 13 wherein said preventing means includes a solenoid-operated valve.

15. In a laundry counting and marking system including a laundry listing machine having means for printing on a list the totals of laundry articles counted, and a laundry marking machine having means for marking said articles with a distinguishing mark, said marking machine being provided with a pneumatic means for operating the marking means; the combination of an interlock between the listing machine and the marking machine comprising an electromagnetic valve for controlling the operation of said pneumatic means, a normally-open electrical circuit for said valve, manually-operable means for closing said electrical circuit to cause operation of said valve, means controlled by the list printing means for breaking said electrical circuit and preventing operation of said valve by said manually-operable means, said means including a relay, means for energizing said relay each time the list printing means is operated, and a holding circuit for said relay, and means for deenergizing said relay, including a manipulative element for breaking said holding circuit, whereby said electrical circuit will be reestablished and said valve again rendered operable by said manually-operable means.

16. An interlock between a laundry listing machine, having list printing means and resetting means, and a laundry marking machine, having a plurality of type-bearing elements each individually adjustable from a normal to a selected marking position and power-operated marking means operable to print a mark from said elements, comprising the combination of a first relay; an energizing circuit therefor; a normally-open switch in said circuit, closed by operation of said list printing means; a holding circuit for said first relay, closed by energization thereof; a normally-closed switch in said holding circuit, opened by operation of said listing machine resetting means; a second relay; an energizing circuit therefor, closed by energization of said first relay; a holding circuit for said second relay, closed by energization thereof; a normally-closed switch in said second relay holding circuit; manually-operable means for opening the switch in the second relay holding circuit; means for disabling said marking means; a solenoid for operating said disabling means; and an energizing circuit for said solenoid, closed by energization of said second relay.

17. An interlock between a laundry listing machine having means for printing a list of articles to be laundered and a laundry marking machine having means, including a plurality of marking devices each settable from a normal to a marking position, for marking the said articles with a distinguishing mark, said marking machine being provided with a power drive for operating the marking means, control means for causing operation of said marking means by said power drive,

and means for resetting all of said marking devices from their marking to their normal positions; said interlock comprising the combination of means for rendering said control means ineffective to cause operation of said marking means by said power drive, including a cut-off valve, a solenoid for operating said valve, and a normally-open electrical circuit for energizing said solenoid; means, controlled by the list printing means, for closing said electrical circuit to operate said valve and render said control means ineffective, including a relay, means for energizing said relay each time the list printing means is operated, and a holding circuit for said relay; and means, operated by said resetting means, for breaking said holding circuit to deenergize said relay, whereby said electrical circuit will be opened and said solenoid deenergized.

18. In a laundry counting and marking system including a laundry listing machine for printing on a list the totals of articles counted, and a laundry marking machine having means, including a plurality of marking devices each settable from a normal position to any one of a plurality of marking positions, for marking the said articles with a distinctive mark, and means for resetting all of said devices from their marking positions to their normal positions; the combination of an interlock, rendered effective by operation of the list printing means, for preventing operation of the marking means until all of the marking devices have been reset to their normal positions, said interlock comprising an electromagnetic valve, for controlling the operation of said marking means, a normally-open electrical circuit for said valve, manually-operable means for closing said electrical circuit and causing operation of said valve, a relay controlled by the list printing means for breaking said electrical circuit and preventing operation of said valve by said manually-operable means, and means adapted to be operated by said resetting means, upon restoration of all of said marking devices to their normal positions, for deenergizing said relay, whereby said electrical circuit will be reestablished and said valve again rendered operable by said manually-operable means.

19. In a laundry counting and marking system including a laundry listing machine, having means for printing on a list the totals of the laundry articles counted, and a laundry marking machine having a printing head, a plurality of marking devices in said printing head, each settable from a normal position to any one of a plurality of marking positions, for marking the said articles with a distinguishing mark, means for resetting said marking devices from their marking positions to their normal positions, a platen for supporting the articles to be marked, and an air cylinder for operating said printing head to move the marking devices against the articles supported by the platen; the combination of an interlock, rendered effective by the list printing means, for preventing operation of the air cylinder of the marking machine until all of the marking devices have been reset to their normal positions, said interlock comprising an electromagnetic valve for controlling the flow of air into said air cylinder, a normally-open electrical circuit for said valve, manually-operable means for closing said electrical circuit to cause said valve to be operated and air to be admitted to said cylinder, a relay, controlled by the list printing mechanism, for breaking said electrical circuit and preventing operation of said valve by said manually-oper-

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able means, a holding circuit for said relay, and means, actuated by said resetting means, upon restoration of all of said marking devices to their normal positions, for breaking said holding circuit and deenergizing said relay, whereby said electrical circuit will be reestablished and said valve again rendered operable by said manually-operable means.

20. In a laundry counting and marking system comprising a laundry listing machine having means, including a plurality of type-bearing elements each movable from a normal position to any one of a plurality of printing positions, for printing a list of the articles counted, and means for resetting said elements from their printing to their normal positions, and a laundry marking machine having means, including a plurality of marking devices each settable from a normal position to any one of a plurality of marking positions, for marking the said articles with a distinguishing mark, and means for resetting all of said devices from their marking positions to their normal positions; the combination of an interlock, rendered effective by operation of the list printing means, for preventing operation of the marking means until all of the type-bearing elements and marking devices have been restored to their normal positions, said interlock comprising an electromagnetic valve for controlling the operation of said marking means, a normally-open electrical circuit for said valve, manually-operable means for closing said electrical circuit to cause operation of said valve, a first relay, means for energizing said relay each time the list printing means is operated, a second relay, a holding circuit for each of said relays, means, controlled by said first relay, for energizing said second relay whenever said first relay is energized, means rendered effective when said second relay is energized for interrupting said electrical circuit, means, controlled by the resetting means of the listing machine, for breaking the holding circuit for said first relay to deenergize said relay, and means, operable by said resetting means for said marking devices, for breaking the holding circuit for said second relay to deenergize said relay, when the first relay is deenergized, whereby said electrical circuit will be reestablished and said valve again rendered operable by said manually-operable means.

21. The interlock of claim 16 which includes a manually-operable member for resetting adjusted type-bearing elements to normal position; and a device carried thereby for opening the switch in the second relay holding circuit upon movement of said member to restore said elements to normal positions.

22. An interlock between a laundry listing machine having means for printing a list of items to be laundered and a laundry marking machine having means, including a plurality of marking devices each settable from a normal position to a marking position, for marking the articles to be laundered with a distinctive mark, said marking machine being provided with a power drive for said marking means, means for controlling the operation of said marking means by said power drive, and means for resetting all of said marking devices to their normal positions; said interlock comprising the combination of means, rendered effective each time the printing means of the listing machine is operated, for disabling said

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controlling means including a relay adapted to be energized each time said printing means is operated, and a holding circuit for said relay; and means, including a normally-closed switch in said holding circuit adapted to be operated by said resetting means, to break said holding circuit and deenergize said relay thereby rendering said disabling means ineffective.

23. An interlock between a laundry listing machine and a laundry marking machine, said laundry listing machine having a plurality of type carrying elements each individually movable from a normal position to an adjusted position, means for taking an impression from the type carrying elements, and means for simultaneously resetting all of the elements from their adjusted positions to their normal positions; and said laundry marking machine having a plurality of type bearing elements each individually adjustable from a normal position to a selected marking position, and power-actuated means for causing an impression to be taken from the type bearing elements; said interlock comprising means controlled by the impression taking means of the laundry listing machine for disabling said power-actuated means; means for maintaining said disabling means effective; and means for disabling said maintaining means, including a device adapted to be operated by said laundry listing machine resetting means when the type carrying elements are reset to their normal positions.

24. The interlock of claim 23 wherein said maintaining means is under the joint control of said device and a manually-operable switch.

25. The interlock of claim 23 in which the disabling means for said power-actuated means includes a relay; an electrical circuit for energizing said relay; a normally-open switch in said circuit; and means, controlled by the impression taking means of the laundry listing machine, for closing said switch.

26. The interlock of claim 25 in which said maintaining means includes a holding circuit for said relay, and said device comprises a normally-closed switch in said holding circuit.

27. The interlock of claim 26 in which said disabling means includes a second relay, and an energizing circuit therefor controlled by said first-mentioned relay.

28. The interlock of claim 27 in which said maintaining means includes a holding circuit for said second relay, a normally-closed switch in said last-mentioned holding circuit; and a manually-operable member for opening said last-named switch.

29. The interlock of claim 28 wherein the disabling means for said power-actuated means includes a control circuit for said power-actuated means which is controlled by said second relay.

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