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2,734,281

DRYERS

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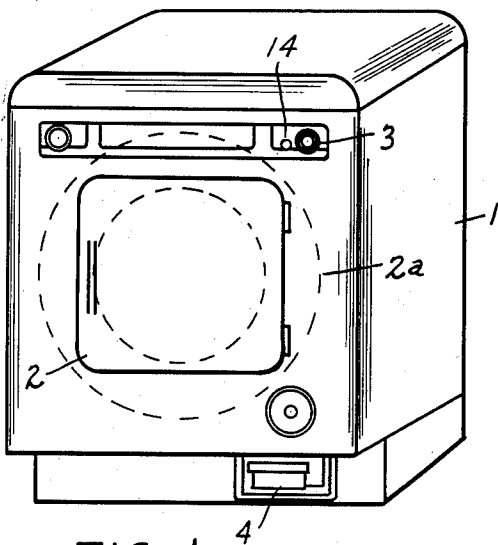


FIG. 1

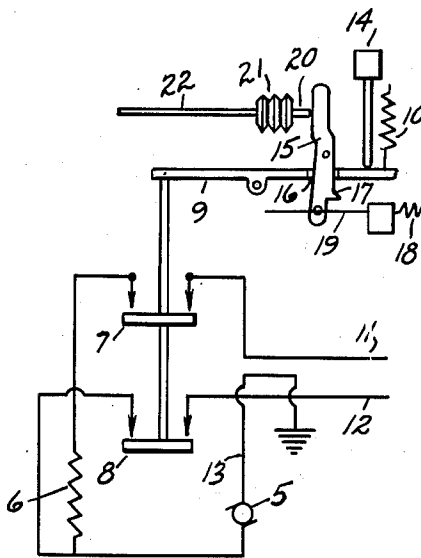


FIG. 4

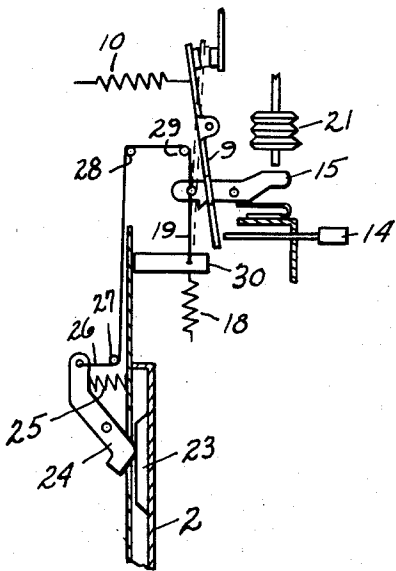


FIG. 2

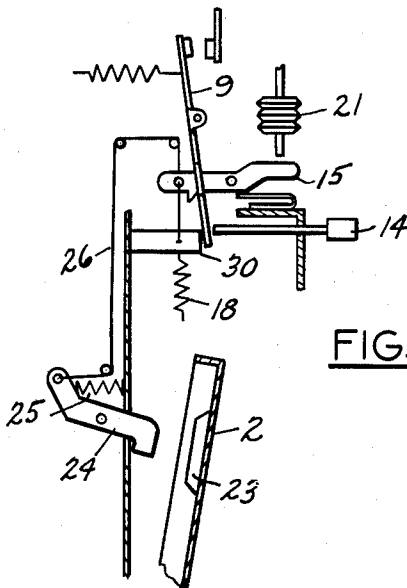


FIG. 3

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DRYERS

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2 Claims. (Cl. 34—87)

This invention is a dryer control in which the dryer is stopped whenever the door is opened and does not automatically restart when the door is closed, thereby obtaining the convenience and safety of having the dryer stop whenever the door is opened without the danger of having the dryer start when the door is closed since the starting of the dryer is not the normal or expected concomitance of closing a door.

In the drawing Fig. 1 is a perspective of a dryer, Fig. 2 is a diagrammatic view of the door switch control in the position assumed when the door is shut; Fig. 3 is a similar view in the open position; and Fig. 4 is a control diagram.

The invention is shown applied to a domestic dryer having a cabinet 1 with a hinged door 2 at the front through which clothes are loaded and unloaded into a horizontal drum 2a which during the drying operation is rotated on its axis to tumble the clothes. Within the cabinet there is a suitable heating means for heating the clothes to drive off the moisture. In the upper part of the cabinet is a control 3 for controlling the duration of the drying cycle and at the bottom of the cabinet is an exhaust opening 4 through which moisture laden air is removed. The parts so far mentioned are well known and need not be further illustrated for the purposes of the present application. See for example Patent 2,583,850 January 29, 1952 for a more detailed disclosure of a specific embodiment.

In the control diagram shown in Fig. 4, the motor for driving the drum and for operating the fan to exhaust air from the dryer cabinet is indicated by the reference numeral 5 and the heater for evaporating moisture from the clothes within the drum is indicated as the electric heating element 6. The circuit to the electric heating element is controlled by contacts 7 and 8 normally biased to the open position by a lever 9 and spring 10. The contacts 7 and 8 are in series with both sides 11 and 12 of a grounded neutral 220 volt supply line. The contacts 8 are also in series with the motor 5 which is connected by a line 13 to the grounded neutral of the supply line. Accordingly whenever the heating element 6 is energized, the motor runs. The contacts 7 and 8 are closed to start the drying operation by pushing on a start button 14 which cooperates with the lever 9 and moves the lever to the depressed position closing the contacts 7 and 8. The lever 9 is held in the contact closing position by a latch 15 extending through a clearance opening 16 in the lever and having a detent 17 which cooperates with the lever to hold it in the depressed or contact closing position. The latch 15 is biased to the latching position by a spring 18 connected to the latch by a cord 19. At the end of the drying operation, the latch is released to permit the opening of the contacts 7 and 8 by the spring 10. This is accomplished by a drying cycle duration control 20 which may for example comprise a thermostatic bellows 21 connected to a thermostatic bulb 22 responsive to the exhaust air temperature. The particular nature of the control is not important in-

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so far as the present application is concerned. With the thermostatic control illustrated, heating of the thermostatic bulb 22 to a temperature corresponding to the temperature of the air at the end of the drying operation causes expansion of the bellows 21 which engages the latch 15 and moves it to the latch releasing position against the tension of the spring 18. This opens both of the contacts 7 and 8 interrupting the circuit to the electric heating element 6 and to the driving motor 5, thereby terminating the drying operation. Of course the operator may at any time manually terminate the drying operation by moving the latch 15 to the latch releasing position, in which case the drying operation is restarted by pushing on the start button 14.

Occasionally during the operation of the dryer it is desirable that the door 2 be opened so as to put in additional pieces of clothing. Before the door is opened, it is necessary that the rotation of the drum be stopped as otherwise the clothes within the drum will tend to spill out through the open end of the drum. The present invention is directed to an arrangement in which the opening of the door stops the drum and cuts off the heating means thereby interrupting the drying operation but which is so arranged that the drying operation will not be restarted upon closing of the door. Another advantage is that while the door is opened the dryer cannot be started. The interlock preventing the starting of the dryer until the door is closed prevents unintentional starting of the dryer automatically upon merely closing of the door thereby making the dryer safer.

The control diagrams shown in Figs 2 and 3 both interrupt the drying operation upon opening of the door and prevent restarting while the door is open and until the door has been closed and the dryer control reset by pushing on the start button. The parts heretofore described have the same reference numerals as in Figs. 2 and 3 but there has been a slight rearrangement for facility in illustration. When the door 2 is closed as illustrated in Fig. 2 a projection 23 on the door engages a pivoted actuating lever 24 and moves it in a clockwise direction against the biasing force of a compression spring 25. The lever 24 is connected through a flexible cord 26 which rides over guides 27, 28 and 29 and is connected to the latch member 15. When the door is closed, the slack in the cord 26 is taken up by the tension spring 18. When the door is closed, the lever 24 and the parts connected thereto have no effect upon the operation of the control as previously described. When the door is opened as indicated in Fig. 3, the projection 23 moves away from the lever 24 and the compression spring 25 overcomes the biasing force of the spring 18 and moves the lever 24 in a counterclockwise direction. This pulls the latch member 15 to the latch releasing position and permits the opening of the contacts 7 and 8 by the spring 10 associated with the lever 9. At the same time, the cord 26 connected to the lever 24 pulls a blocking member 30 into a position between the contact control lever 9 and the cabinet 1 so that the blocking member 30 prevents movement of the contact lever 9 to the contact closing position. The blocking member 30 accordingly prevents restarting or resetting of the dryer control in operation by pushing on the start button 14. With this arrangement, opening of the dryer door 2 trips the dryer control and returns the control to the off position. The opening of the dryer door 2 also prevents resetting of the dryer control in operative position so long as the door is opened. When the door is closed, then the dryer control is actuated in the normal manner entirely independent of the interlocking mechanism associated with the door.

What is claimed as new is:

1. In a tumbler type clothes dryer having a door

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through which clothes are loaded and unloaded and cycle control means for stopping the dryer at the end of the drying cycle, a latch for holding the dryer in the operating position, door actuated means for releasing the latch when the door is opened, a manual reset operable to return the dryer to said operating position when the door is closed, and means moved into blocking position by opening of the door for blocking the reset while the door is open, said means being moved from the blocking position by closing the door.

2. In a tumbler type clothes dryer having a door through which clothes are loaded and unloaded, control means for the dryer including latch means for holding the dryer in operating position, cycle timing means for releasing the latch means at the end of the drying cycle, door actuated means for releasing the latch means upon opening of the door prior to the end of the drying cycle,

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a manual reset operable to return the dryer to said operating position when the door is closed, and means moved into blocking position by opening of the door for blocking the reset while the door is open, said means being moved from the blocking position by closing the door.

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