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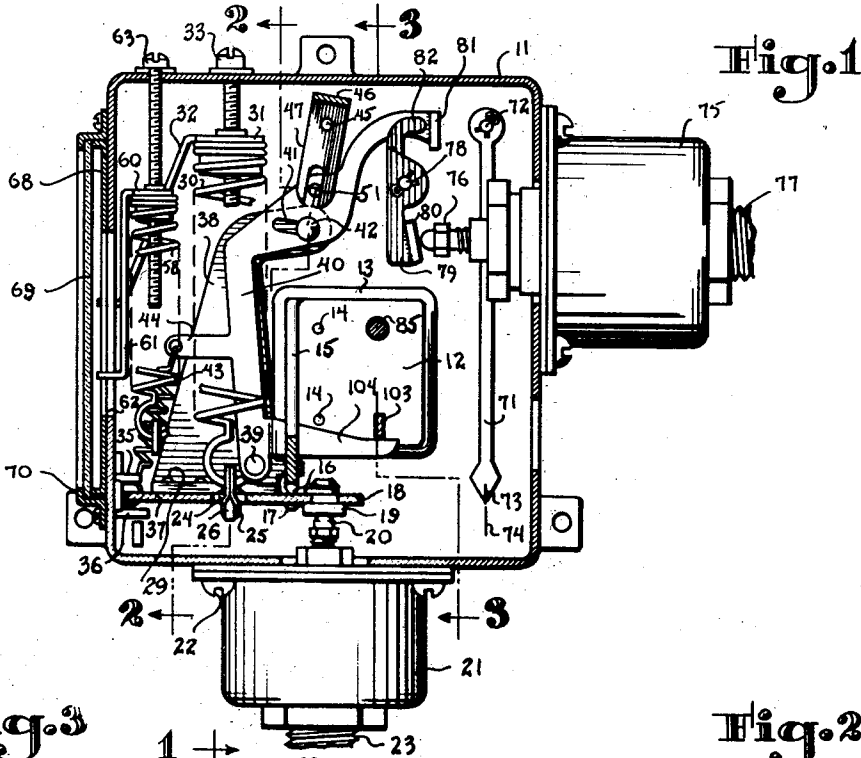
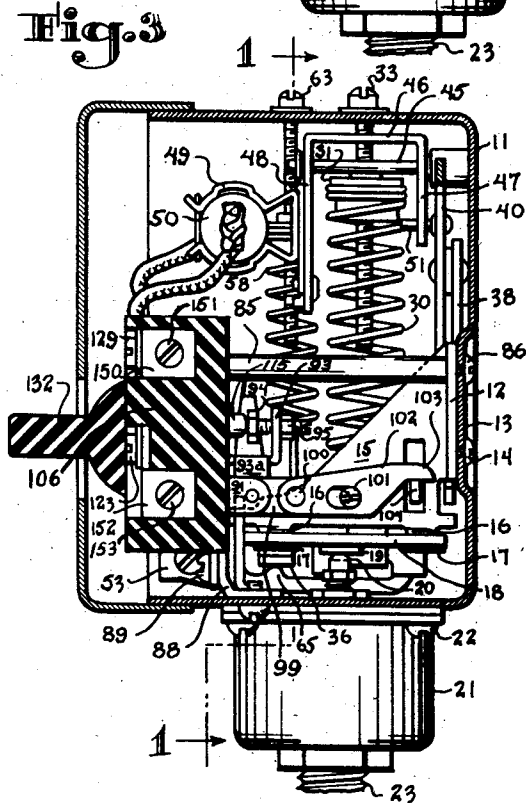
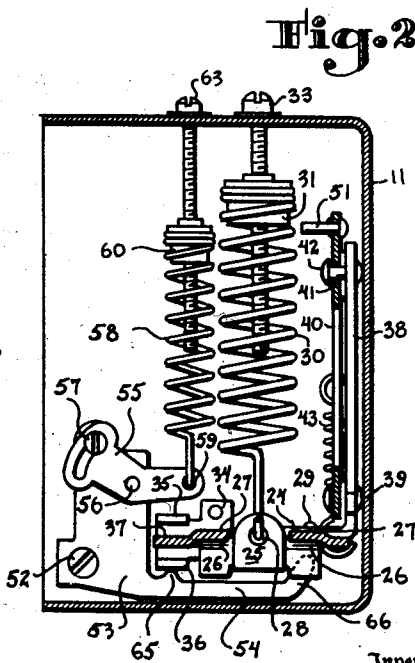
A. L. JUDSON

2,255,666

PRESSURE SWITCH

Filed July 2, 1938

2 Sheets-Sheet 1



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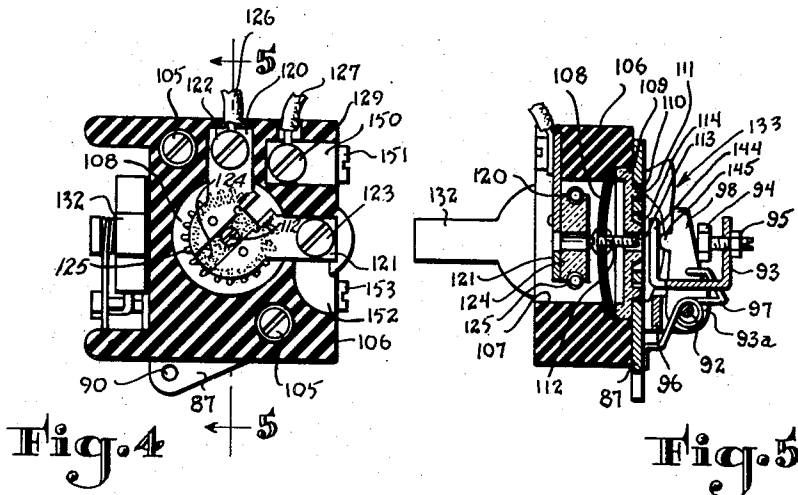
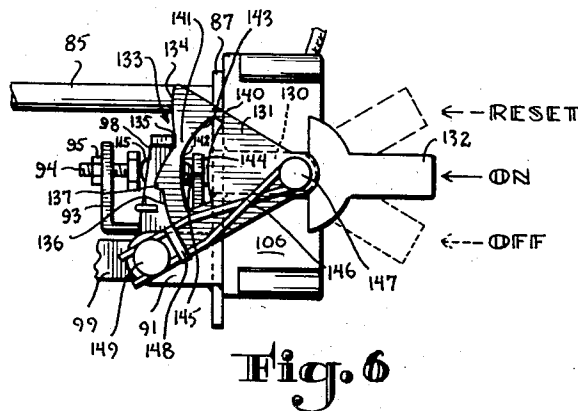
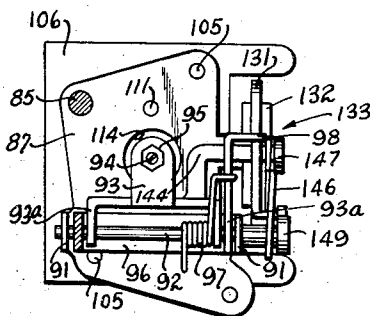
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PRESSURE SWITCH

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,255,666

PRESSURE SWITCH

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Application July 2, 1938, Serial No. 217,244

11 Claims. (Cl. 200—83)

This invention relates generally to the art of automatic switching and is more particularly concerned with a safety feature to be applied to a pressure or temperature operated switch.

It is now common practice to operate a mercury or open contact type of switch by means of a bellows, which may be connected with either a source of pressure or a bulb containing a thermostatic fluid, and to oppose operation of the bellows by means of a main adjusting spring. A second spring is provided with these instruments for the purpose of producing a differential of operation, which is accomplished by furnishing a stop for said spring so that movement of said bellows is opposed during only part of its travel. The bellows will therefore operate the switch in one direction after it has picked up the differential spring against the action of both springs, and in the other direction under the influence of only the main adjusting spring after the differential spring has engaged its stop.

As used in the field of refrigeration control the main bellows just described is connected with the suction line leading from the evaporator to the compressor to maintain a substantially constant low pressure in the evaporator. In this case the bellows will operate to open the switch on a predetermined low pressure or temperature to stop the compressor motor and close the switch on a predetermined higher pressure or temperature to start it again.

These instruments are frequently provided with a high pressure cut-out in the form of a bellows adapted to open the switch through a strain release connection upon the occurrence of a predetermined high pressure in the high pressure line leading from the compressor to the condenser. This is a safety feature to prevent the pressure from attaining a dangerously high value.

It is an object of the present invention to provide an instrument of the above type with a means responsive to an overload condition of the compressor motor for opening the circuit thereto independently of the two pressure controls.

A further object is to provide an overload device which is responsive to the heat produced by an excessive amount of current flowing in a load circuit and which opens the switch in series with the load, requiring manual operation to reset the mechanism and close the switch.

A further object is to provide an overload cut-out for an instrument of the described type and also a manual means for positively holding the switch in an open position.

A still further object is to provide an overload cut-out for opening a switch which has a manual lever which is operated in one direction to reset the device while holding the switch in open position, and in the other direction to positively hold the switch in open position when it is desired to shut down the system for any reason.

These and other objects will become apparent as the following specification is read in the light of the accompanying drawings in which:

Figure 1 is a front view of an instrument embodying my invention shown partly in section taken on the line 1—1 of Figure 3 looking in the direction of the arrows;

Figure 2 is a section taken on the line 2—2 of Figure 1 looking in the direction of the arrows;

Figure 3 is a section taken on the line 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4 is a front elevation of the overload cut-out mechanism showing the heating element;

Figure 5 is a section taken on the line 5—5 of Figure 4 looking in the direction of the arrows;

Figure 6 is a side elevation of the overload cut-out showing the manual reset mechanism and looking toward the right as seen in Figure 4, and

Figure 7 is a rear view of the overhead cut-out mechanism.

The mechanism which comprises this invention is mounted in a casing 11 and includes an angle arm 12 which is fastened to a depressed portion 13 at the back of casing 11 by means of screws 14. The angle arm 12 has a forwardly extending portion 15 which is provided on the lower edge with a pair of knife edges 16. These knife edges are adapted to seat in a pair of depressions 17 in a main operating lever 18 which is provided at one end with a bearing member 19 adapted to cooperate with an operating pin 20. The pin 20 is carried by a bellows (not shown) which is mounted within a casing 21 connected outside of the casing 11 and at the bottom thereof by means of screws 22. A connection 23 is provided at the bottom of casing 21 for the purpose of connecting it to a source of pressure or to a thermally responsive bulb by means of capillary tubing (not shown). The lever 18 has a hole 24 near the center thereof for accommodating a carriage 25 which is provided with a pair of knife edges 26 adapted to seat in dwells 27 in

the lever 18. Looped through a hole 28 in the carriage 25 is one end of a main adjusting spring 30, the other end of which is rigidly connected to a nut 31 having an extension arm 32 the extreme end of which is inserted through a slot in the side of the casing 11. Depending loosely through a hole in the top of the casing 11 and threaded through the nut 31 is an adjusting screw 33 which upon rotation causes vertical movement of the nut 31 due to the fact that it is held against rotation by means of the extension arm 32. The movement of nut 31 varies the tension of the spring 30 to provide an adjustment of the pressure at which the bellows will move the lever 18. Suitably connected to the side of the casing 11 and near the bottom thereof is a bracket 34 provided with two stops 35 and 36 between which the end 37 of the lever 18 is adapted to move. The purpose of these stops is to limit the travel of lever 18 about the knife edges 16 under the influence of the bellows and spring 30. Suitably connected to the lever 18 as by means of rivets 29 is an upstanding arm 38. Pivotaly mounted on arm 38 as shown at 39 is a lever 40 which is provided with an arcuate slot 41 which cooperates with a headed pin 42 connected to the arm 38. A spring 43 is connected at its lower end to the end 37 of lever 18 and at its upper end with a projection 44 on the lever 40 and operates to normally maintain the lever 40 in the relation shown in Figure 1 with respect to the arm 38 so that the pin 42 is engaged with the extreme right end of the slot 41. Mounted on the rear of the casing 11 immediately above the lever 40 is a pin 45 on which is mounted a U-shaped switch carrier 46 having two legs 47 and 48. The leg 48 carries a switch clip 49 in which is mounted a mercury switch 50. The leg 47 is bifurcated at its lower end and the two pieces thus formed straddle operating bar 51 which is mounted on the lever 40 just above the slot 41. Rotation of the lever 40 will therefore cause rotation of the switch carrier 46 about the pin 45 and will actuate the switch 50 to open and closed positions. Pivotaly mounted on one side of the casing 11 adjacent the bracket 34 as shown at 52 is a lever 53 having an arm 54. A second lever 55 is adjustably pivoted to the lever 54 as shown at 56 by means of a pin and slot connection indicated at 57. The tension spring 58 is connected at its lower end to the hole 59 in lever 55 and at its upper end is rigidly attached to nut 60 which has an extension arm 61 the extreme outer end of which passes through a slot 62 in the side of casing 11. A screw 63 projects loosely through a hole in the top of casing 11 and is threaded through the nut 60 so that rotation of the screw 63 will cause vertical movement of the nut 60, due to the fact that the extension arm 61 will prevent its rotation, and thereby adjust the tension of the spring 58. The arm 54 on lever 53 is provided with a projection 65 which is adapted to engage the stop 36 at which time an upturned portion 66 on the arm 54 will be located just beneath the end 37 of lever 18 and about midway of its travel between the stops 35 and 36.

It will be seen from the structure described above that the main adjusting spring 30 constantly opposes upward movement of the pin 20 under the influence of the bellows and tends to hold the bearing 19 against the pin 20. Adjustment of the tension of this spring by the screw 33 will therefore adjust the pressure at

which the bellows will start to rotate the lever 18 in a counter-clockwise direction. Assuming that the lever is engaging the stop 35 an increase in pressure within the casing 21 will cause upward movement of pin 20 which will cause the lever 18 to rotate in a counter-clockwise direction about the knife edges 16 and the end 37 of the lever 18 will leave the stop 35 at a pressure which is determined by the tension on the spring 30. As it continues its rotation it will eventually strike the upturned end 66 of the arm 54 and any continued movement of the lever 18 will then move the lower end of the spring 58. This means that the pressure at which the end 37 will strike the stop 36 is determined also by the tension of the spring 58 in addition to that of spring 30. Moving in the other direction tension of both springs will determine the pressure at which the end 37 leaves the stop 36 and after the projection 65 on the arm 54 strikes the stop 36 the further movement of the end 37 until it engages the stop 35 will be determined only by the tension of the spring 30.

It will be noted that there is a slight amount of lost motion between the pin 51 and the legs formed by the bifurcated end 47 of the switch carrier 46. The mercury switch 50 is so positioned on the carrier 46 that the switch will be closed after the end 37 of the lever 18 has engaged the arm 66 and picked up the spring 58 and upon movement of the lever in the opposite direction the switch will not open until after the end 37 of lever 18 has separated from the arm 66 with the result that the pressure at which the switch will be closed will be determined by the combined force exerted by the spring 58 and 30 and the pressure at which it will be opened will be determined only by force exerted by the spring 30. In other words, the spring 30 provides for the main adjustment of the switch and the spring 58 provides for an adjustment of the differential of operation of the switch. The ends of the extension arms 32 and 61 as stated before extend through slots in the side of the casing 11 and the position of these ends is an indication of the force exerted by their respective springs due to the fact that they indicate the position of the nuts carrying the upper end of these springs. In order to take advantage of this fact a scale plate 68, a glass protector 69 and a frame 70 have been provided about these slots for the purpose of indicating the positions of the arms 32 and 61 so that the main adjustment of the switch and the adjustable differential of the switch may be easily read.

An arm 71 is loosely suspended from a pivot 72 near the upper end of the casing and is provided with a pointer 73 at the bottom thereof which cooperates with a mark 74 on the back of the casing 11 for the purpose of indicating when the instrument is in a proper vertical position so that the mercury switch used will function correctly.

On the side of casing 11 and opposite the adjusting spring is attached a second bellows casing 75 in which is located a bellows (not shown) which carries an operating pin 76. The casing 75 is provided with a connection 77 which may cooperate with a capillary tube to connect the bellows with either a source of pressure or a thermal bulb as may be desired. Pivotaly mounted on pin 78 within the casing is a lever 79 having a flat portion 80 adapted to cooperate with the pin 76. Lever 40 has at its upper

end an extension 81 which normally lies adjacent to an arm 82 on the lever 79. In the event of a high temperature or pressure, whichever the bellows within the casing 75 is adapted to respond to, the pin 76 will be forced to the left as viewed in Figure 1 which will cause a clockwise rotation of the lever 79 and a consequent clockwise rotation of the lever 40 about its pivot 39. The lever 18 and arm 38 will remain stationary under this action and the spring 43 will be elongated and the pin 42 will slide in the slot 41 so that the pin 51 will tilt the switch carrier 46 to open the switch 50 independently of the lever 18 and the bellows within the casing 21. The purpose of this is to provide a safety device for breaking the circuit independently of the main control. After the condition to which the bellows 75 responds has returned to a safe value the pin 76 will move to the right and the spring 43 will cause the lever 40 to assume its original position with respect to the arm 38 and the control of the switch 50 will be placed again on the bellows within the casing 21.

One of the main objects of this invention is to provide an instrument of this character with an overload cut-out for independently opening the switch 50. Such a cut-out is supported by means of a post 85 which is connected through the angle arm 12 to the back of casing 11 by means of screw 86. The post 85 carries at its opposite end by a suitable connection a plate 87 which is additionally connected to the casing 11 by means of bracket 88 and screw 89 which passes through the hole 90 in the plate 87. The plate 87 is provided with a pair of ears 91 one on each side of the plate as shown in Figure 7 and between which is mounted a spindle 92. Freely rotatably mounted on the spindle 92 by means of a pair of arms 93a, shown in Figure 7, is a lever 93 which adjustably carries a headed screw 94 which is held in its adjusted position by means of a locknut 95. Also rotatably mounted on the spindle 92 is a second lever 96 which is normally biased in a counterclockwise direction as viewed in Figure 5 by means of the spring 97 one end of which engages the plate 87 and after being wrapped around the spindle 92 the other end engages an upstanding arm 98 on the lever 96. An arm 99 of the lever 96 (see Figure 3) has adjustably mounted thereon by means of a pivot 100 and a slot and eccentric screw connection 101, a second arm 102 having extension 103 which lies immediately over an arm 104 which extends from the lever 40. Mounted on the plate 87 by means of screws 105 is a block of insulation 106 through the center of which is a hole 107. Mounted in a cut-away portion about the hole 107 and adjacent the plate 87 is a bimetallic snap acting disc 108 which is retained in position by means of an insulating disc 109 which is held in engagement with the plate 87 by means of the block of insulation 106. The plate 87 is provided with a pair of holes 110 in which are inserted a pair of projections 111 on the insulating disc 109 for the purpose of properly centering it with relation to the plate 87. A screw 112 is threaded through the center of the thermostatic disc and projects through a hole 113 and the insulating disc 109 and through hole 114 in the plate 87 and carries at its outer end a bearing member 115 which is adapted to engage the headed screw 94 carried by the lever 93. It will be noted that bearing member 115 has been omitted from Figure 5 in order to show up other parts of the mechanism more clearly. A pair of

metallic conducting plates 120 and 121 which are attached to the insulating block 106 by means of screws 122 and 123 support an annular insulating member 124 on which is mounted an electric heater 125 one end of which is electrically connected to the plate 121 the other end being electrically connected to the plate 120. Conductor 126 connects the plate 120 with one contact of the mercury switch and conductor 127 connects the other contact of the mercury switch with screw 129. The conducting plate 150 electrically connects screw 129 to terminal 151 and conducting plate 152 electrically connects screw 123 to terminal 153. The load circuit will be connected in series with the terminals 151 and 153 so that the current will pass from the terminal 153 through plates 152 and 121, heater 125, plate 120, screw 122, conductor 126 through the mercury switch 50, conductor 127, screw 129, and plate 150 to the other terminal 151. The plate 87 is provided with a projection 130 on which is pivotally mounted an arm 131. A handle 132 is provided on one end of the arm so that it may be manually operated. The other end of the arm is provided with an outside cam surface 133 comprising a high point 134, a low point 135, a second high point 136, and a shoulder 137. The arm 98 on the lever 96 is adapted to cooperate with the cam surface and the spring 97 acts to maintain the arm 98 in constant engagement with the surface 133. The arm 131 is provided with a slot 140 which has an inside cam surface 141 having a low point 142 and a high point 143. An extension 144 on the lever 93 extends within this slot and is adapted to cooperate with this internal cam surface 141. The arm 98 has a projection 145 which is adapted, at certain times to be disclosed later, to cooperate with the arm 144. A spring 146 is wrapped around the pin 147 on which the arm 131 is pivoted and the two ends engage opposite sides of a projection 148 on the arm 131 and also on opposite sides of an extension 149 on the spindle 92. The function of this spring is to bias the manually operable arm 131 to a mid or neutral position.

In considering the operation of this overload cut-out we will assume the parts to be in the position shown in Figure 6 at which time the thermostatic disc will be in its cold position which is shown in Figure 5. The lever 96 will be in the position where the extension 102 will be raised so that the lever 40 will be in the relationship shown in Figure 1 with respect to the arm 38 on the lever 18 at which time the mercury switch 50 will be under the control of the bellows within the casing 21. Assuming now that there is an overload in the circuit to which the heating element 125 is connected the said heating element will then become overheated causing the thermostat 108 to snap abruptly to the right from the position shown in Figure 5. This will cause the bearing member 115 to engage the headed screw 94 rotating the lever 93 in a clockwise direction as shown in Figure 5 at which time the projection 144 on the lever 93 will engage the projection 145 on the lever 96 rotating that in a clockwise direction as viewed in Figure 5 and depressing the extension 103 shown in Figure 3 which will cause lever 40 to rotate in a clockwise direction about its pivot 39 due to the cooperation between the extension 103 and the arm 104 on the lever 40. As explained above this pivotal movement of the lever 40 with respect to the arm 48 will cause opening of the switch 50 independently of the bellows within the casing 21

and in this case it will also be independent of the condition of the bellows within the casing 75. The construction of the thermostatic disc 108 is such that cooling of the heating element 125 will not cause it to snap back to its original position, hence the parts will remain in the position just described wherein the switch 50 is in open position until the device is reset manually. In order to reset the device the handle 132 is raised which causes the arm 131 to lower at which time the high point 143 of the inside cam surface 141 will engage the extension 144 on the lever 93 causing it to rotate in a counter-clockwise direction as viewed in Figure 5 at which time the headed screw 94 will press against the bearing member 115 on the screw 114 thus snapping the thermostat 108 back to its original position. At the same time it will be noted that the high part 134 on the extreme cam surface 133 will engage the extension 138 on the lever 96 holding it in the position where the extension 103 is depressing the arm 104 and thus maintain the switch 50 in its open position while the thermostat 108 is being reset. When the handle 132 is released the spring 146 will return it to neutral position at which time the arm 138 will engage the low part 135 of the outside cam surface due to the action of spring 97 and the switch 50 will be returned to closed position. The reason for maintaining the switch 50 in open position while the device is being manually reset is so that it will be impossible to manually hold the switch closed while an overload may exist in the circuit. In other words it will be impossible for the switch 50 to be in closed position while an overload exists except for the time necessary to heat the thermostat 108.

If it is desired to place the switch in an off position and leave it there for an indefinite period of time the handle 132 is depressed from the position shown in Figure 6 until the extension 138 on the lever 96 engages the high part 136 of the outside cam and engages the shoulder 137. This rotates the lever 96 in a clockwise direction as viewed in Figure 5 causing opening of the switch due to the coaction of the extension 103 with arm 104 as described above and upon release of the handle 132 the shoulder 137 will prevent the spring 146 from returning the arm 131 to the neutral position. In this manner the switch may be kept in open position as long as desired and when it is again desired to place the system in operation the handle 32 may be manually raised which will cause the extension 138 to again engage the low portion 135 of the outside cam surface which permits closing of the switch 50 and places the control of this switch back on the bellows within the casing 21.

It will therefore be seen that I have added to the low pressure and high pressure operated switch which is now in common use, an overload cut-out which is simple in operation, durable in construction, and which may be easily positioned in the instrument casing. It will be noted that if this overload cut-out feature is not desired it is necessary only to remove the screws 86 and 89 and disconnect the conductors 126 and 127 at which time the overload mechanism along with the positive manual shut-off may be lifted out of the casing as a unit.

Modifications of this invention may occur to those who are skilled in the art and it is therefore to be understood that the embodiment disclosed is intended to be illustrative rather than

limiting. For the limits of my invention reference should be had to the appended claims.

I claim as my invention:

1. A device of the character described comprising in combination, an operating member, a first condition responsive means for moving said operating member back and forth, an actuating member normally movable with said operating member, a switch mounted for actuation by said actuating member, a support, a lever mounted on said support, a one way acting bimetallic thermostat mounted on said support for rotating said lever, connections between said lever and said actuating member whereby said thermostat is capable of moving said actuating member independently of said operating member, manual means for actuating said thermostat in one direction, and connections between said manual means and said lever whereby said manual means is capable of moving said lever and hence said actuating member independently of said condition responsive means and said thermostat.

2. In a device of the class described, in combination, an operating member, a bellows for moving said member back and forth, an actuating member pivotally mounted on said operating member and normally biased to move therewith, a pivotally mounted mercury switch, means on said actuating member for rocking said mercury switch about its pivot, a support, a one way acting bimetallic thermostat mounted on said support, an electric heating element mounted adjacent said thermostat, a lever pivotally mounted on said support, connections between said lever and actuating member whereby the thermostat upon overheating by said electric heating element will actuate said lever to move the actuating member relatively to said operating member to open said switch, and manual means for actuating said thermostat in one direction.

3. In a device of the class described, in combination, an operating member, a bellows for moving said member back and forth, an actuating member pivotally mounted on said operating member and normally biased to move therewith, a pivotally mounted mercury switch, means on said actuating member for rocking said mercury switch about its pivot, a support, an electric heating element mounted on said support, a bimetallic thermostat mounted adjacent said heating element and adapted to snap over center upon being overheated by said heating element but being incapable of returning to its original position by itself, a lever pivoted on said support, and overlying a portion of said actuating member, and connections between said thermostat and said lever whereby said thermostat in snapping due to overheating causes said lever to move said actuating means to open said switch independently of said operating member.

4. In a device of the class described, in combination, an operating member, a bellows for moving said member back and forth, an actuating member pivotally mounted on said operating member and normally biased to move therewith, a pivotally mounted mercury switch, means on said actuating member for rocking said mercury switch about its pivot, a support, an electric heating element mounted on said support, a bimetallic thermostat mounted adjacent said heating element and adapted to snap over center upon being overheated by said heating element but being incapable of returning to its original position by itself, a lever pivoted on said support, and overlying a portion of said actuating member, connections

between said thermostat and said lever whereby said thermostat in snapping due to overheating causes said lever to move said actuating means to open said switch independently of said operating member, a manually operated arm having a neutral position, means on said arm for snapping said thermostat to its original position from its overheated position as said arm is moved in one direction from neutral position, and means on said arm for maintaining said switch in open position while said thermostat is being snapped.

5. In a device of the class described, in combination, an operating member, a bellows for moving said member back and forth, an actuating member pivotally mounted on said operating member and normally biased to move therewith, a pivotally mounted mercury switch, means on said actuating member for rocking said mercury switch about its pivot, a support, an electric heating element mounted on said support, a bimetallic thermostat mounted adjacent said heating element and adapted to snap over center upon being overheated by said heating element but being incapable of returning to its original position by itself, a lever pivoted on said support, and overlying a portion of said actuating member, connections between said thermostat and said lever whereby said thermostat in snapping due to overheating causes said lever to move said actuating means to open said switch independently of said operating member, a manually operated arm having a neutral position, means on said arm for snapping said thermostat to its original position from its overheated position as said arm is moved in one direction from neutral position, means on said arm for maintaining said switch in open position while said thermostat is being snapped, and means on said arm for moving said lever to open said switch independently of said bellows and thermostat as said arm is moved in the other direction from neutral position.

6. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, a snap action thermostat engaging said first lever and snapping from a first position to a second position in response to an excess of heat from said heating element for actuating said second lever to open said switch, and manual means for engaging said second lever to open said switch independently of said heat responsive means.

7. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, thermal means engaging said first lever and snapping from a first position to a second position in response to an excess of heat from said heating element for actuating said second lever to open said switch, said means being incapable of returning to said first position by itself, and manual means for exerting a force on said thermal means to return it to said first position while holding said second lever relatively stationary and said switch open.

8. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted

on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, means engaging said first lever and snapping from a first position to a second position in response to an excess of heat from said heating element for causing said second lever to open said switch, said means being incapable of returning to said first position by itself, a manually operable arm having a neutral position, connections whereby movement of said arm in one direction from its neutral position will return said heat responsive means to its first position while holding said second lever relatively stationary and said switch open, and connections whereby movement of said arm in the other direction from its neutral position will move said second lever to open said switch independently of said heat responsive means.

9. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, a snap acting bimetallic thermostat mounted adjacent said heating element and engaging said first lever, said thermostat snapping from a first position to a second position to cause said second lever to open said switch in response to an excess of heat from said heating element, a projection on said second lever, a manually operable arm, and a cam connected to said arm, movement of said arm in one direction causing said cam to rotate said second lever independently of said first lever and open said switch.

10. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, a snap acting bimetallic thermostat mounted adjacent said heating element and engaging said first lever, said thermostat snapping from a first position to a second position to cause said second lever to open said switch in response to an excess of heat from said heating element, said thermostat being incapable of snapping back to its first position under its own power on cooling, a projection on said first lever, a projection on said second lever, a manually operable arm pivoted for rotation, and a cam on said arm having first and second cam surfaces, rotation of said arm causing said first cam surface to engage the projection on said first lever and move it in a direction to return said thermostat to its first position, said second cam surface engaging the projection on said second lever to hold it relatively stationary while said first lever is being moved, thereby maintaining said switch in open position during the operation.

11. A device of the character described comprising in combination, a support, a first lever pivoted on said support, a second lever pivoted on said support, means biasing said second lever into engagement with said first lever whereby they normally move in unison, a switch mounted for actuation by said second lever, a heating element, a snap acting bimetallic thermostat mounted adjacent said heating element and engaging said first lever, said thermostat snapping from a first position to a second position to cause said sec-

ond lever to open said switch in response to an excess of heat from said heating element, said thermostat being incapable of snapping back to its first position under its own power on cooling, a projection on said first lever, a projection on said second lever, a manually operable arm pivoted for rotation, means to bias said arm to a neutral position, a cam on said arm having first and second cam surfaces, rotation of said arm in one direction from neutral causing said first cam surface to engage the projection on said first lever and move it in a direction to return said thermostat to its first position, said second cam surface engaging the projection on said

second lever to hold it relatively stationary while said first lever is being moved, thereby maintaining said switch in open position during the operation, said biasing means returning said arm to neutral position upon release thereof, a third cam surface on said cam, rotation of said arm in the other direction from neutral causing said third cam surface to engage the projection on said second lever and move it to open said switch independently of said first lever and thermostat, and means preventing said biasing means from returning said arm to neutral position upon release thereof.

ALBERT L. JUDSON.

CERTIFICATE OF CORRECTION.

Patent No. 2,255,666.

September 9, 1941.

ALBERT L. JUDSON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 31, for the word "overhead" read --overload--; page 5, second column, line 4, claim 8, for "actuating" read --actuation--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of November, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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