April 10, 1962 R. W. COUFFER, JR., ETAL 3,029,324

PNEUMATIC RELAY SYSTEM

Filed Feb. 9, 1959 2 Sheets-Sheet 1

Fig. 1

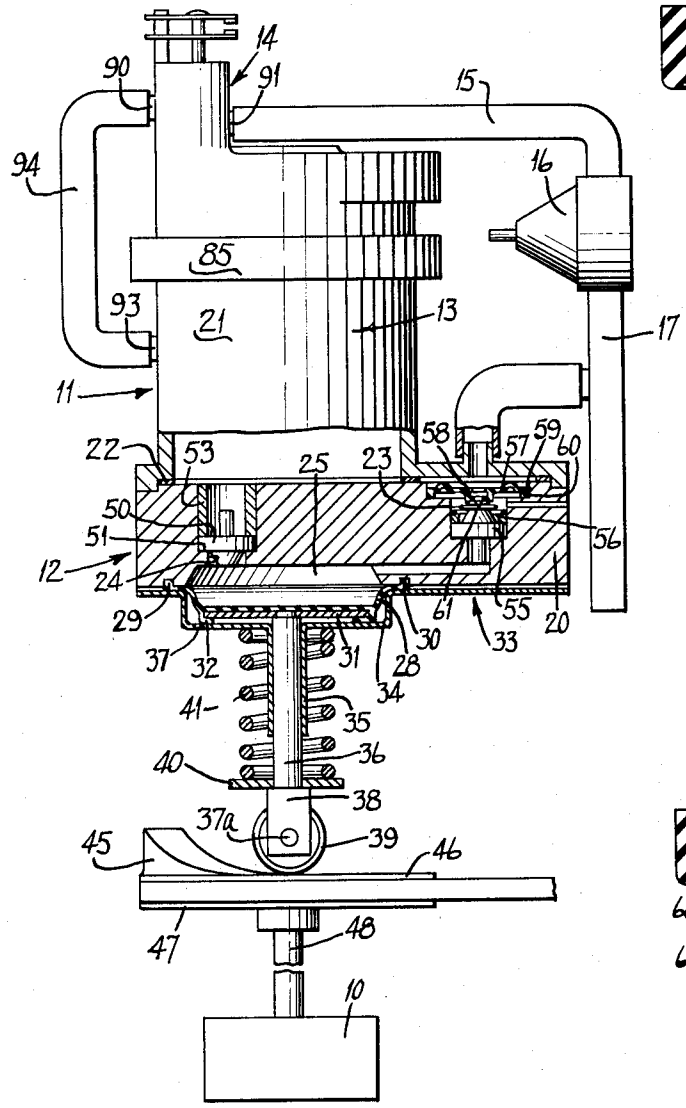


Fig. 4

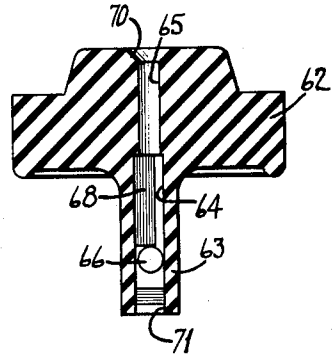
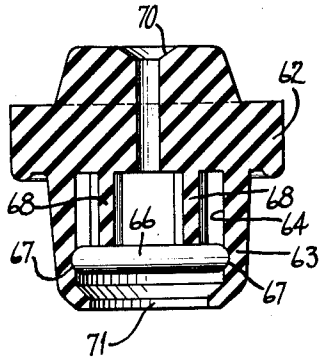


Fig. 5



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Filed Feb. 9, 1959 2 Sheets-Sheet 2

Fig. 2

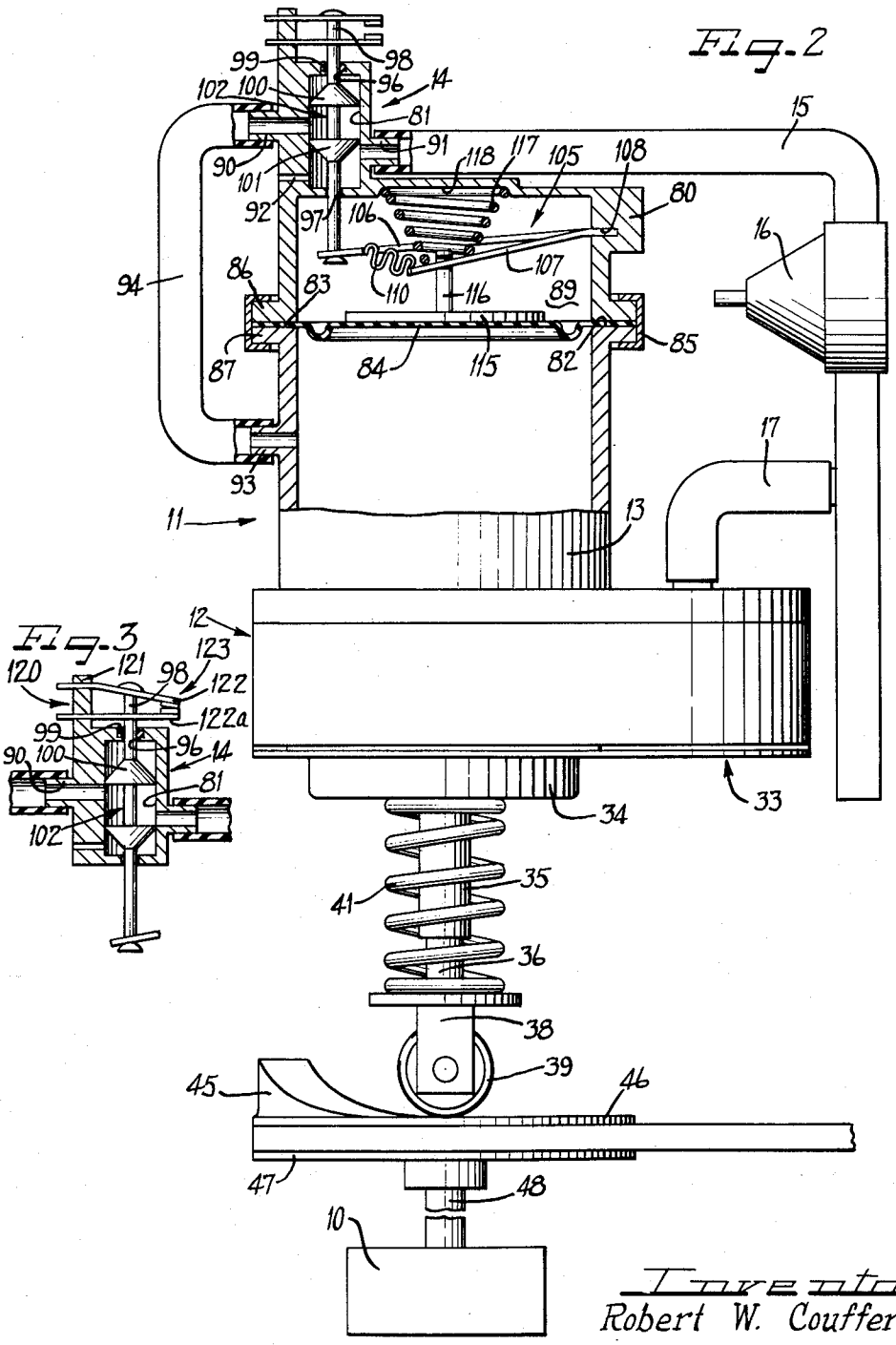


Fig. 3

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PNEUMATIC RELAY SYSTEM

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This invention is directed generally to pneumatic relay systems and the like and is more particularly directed to a pneumatic relay system particularly adapted to be used in controlling the electric and pneumatic actuation of various mechanisms such as might be found in a washing machine.

In recent years it has been found to be quite advantageous to control the operation of various component parts of washing machines, such as the agitator mechanism, the shut off and/or mixing valve, the cycling mechanism, etc. pneumatically and to provide a central pneumatic relay system coupled with a suitable timing mechanism to effect actuation of each of these components.

It will be understood that such pneumatic systems require a pneumatic pump to feed pressurized air to the timing device or to the individual pneumatically controllable mechanisms and that a power source must be utilized to drive the air pump of the pneumatic system. In the past, such pneumatic pumps have generally been driven through separate electric motors and gear reduction units or have been driven off the main washing machine motor itself constantly throughout the washing machine cycle. The foregoing means for driving the pneumatic pump have not proved entirely satisfactory, however, for the following reasons: Washing machine motors, as is well known in the art, are generally one-third horsepower units, or less, and are frequently used to full capacity at various points in the cycle of operation of the washing machine so that any additional load which the motor might be subjected to, such as the load applied in operating a pneumatic pump, would tend to overload the motor and the machine would stop. For exemplary purposes, it will be noted that the main motor might be used to full capacity in a situation wherein the machine cycle is stopped by the operator and is again restarted during the rinse operation so that the motor must bring the tub full of water and clothes up to the spin speed. Furthermore, it would obviously not be economically practical to substantially increase the horsepower of the main washing machine motor simply to power a pneumatic pump. In this same regard, it is obviously not economically practical to provide a separate electric motor and gear reduction unit for driving the pneumatic pump for a pneumatic relay system as has been done in the past.

Mindful of the foregoing and in an attempt to obviate the disadvantageous features set forth above, applicant has devised a pneumatic relay system including a pneumatic pump wherein the pump is driven intermittently by the main washing machine motor but wherein the main motor is not utilized to operate the air pump during those intervals when machine loads are applied to the motor.

In general, applicant's pneumatic relay system, which is hereinafter set forth with particularity, includes a pneumatic pump having a reciprocably movable compressor diaphragm therein and having a reservoir associated therewith which is associated with the main washing machine motor in such a manner that the compressor diaphragm is arranged to be reciprocably driven by the motor. A pressure switch is associated with the compressor reservoir which is effective to selectively control the passage of pressurized air from the compressor reservoir to a main pneumatic line which, in turn, leads to a pneumatic timer or similar control device that is arranged to direct a flow of

pressurized air to its point of utilization. The control valve is arranged to close communication between the reservoir associated with the pneumatic pump and the main pneumatic line until the pressure within the reservoir has been built up to a predetermined level by reciprocation of the diaphragm within the pneumatic pump and is thereafter operable to open communication between the reservoir and the main pneumatic line to direct pressurized air to the pneumatic timer within the washing machine from whence it is subsequently diverted to its point of utilization. In the embodiment of the invention illustrated in the drawings appended to this specification a pressure regulator is shown as being situated within the main pneumatic line to maintain the pneumatic pressure in the line on the downstream side thereof at a preselected maximum.

The atmospheric inlet to the pneumatic pump has a check valve associated therewith which is operable to permit unidirectional air flow into the compression chamber of the pump which, in turn, has an air operated valve associated therewith which is effective to close communication between the atmosphere and the compression chamber of the pneumatic pump. A second check valve is also seated within the pneumatic pump which is effective to permit unidirectional air flow from the compression chamber of the pump into the pressure reservoir. When the check valve at the inlet to the pump is closed, upward movement of the diaphragm within the pneumatic pump will effect compression of the air within the compression chamber to force the same through the second mentioned check valve and into the reservoir but a vacuum will be created within the compression chamber to thereby hold the diaphragm in its "compression-stroke" position to thereby inactivate the diaphragm thus releasing the pneumatic pump load from the main washing machine motor.

The pressure switch which forms a part of the present invention comprises generally a switch body which is sealed to the compressor reservoir and which has a flexible diaphragm associated therewith forming a common wall between the interior of the compressor reservoir and a chamber within the switch body. A cylinder is also formed within the switch body which has an inlet leading thereinto and an outlet leading therefrom and a reciprocably movable spool valve disposed therein which is effective to selectively communicate the inlet with the outlet. A snap acting or overcenter mechanism is disposed within the chamber of the switch body which is operably connected to the spool valve and the diaphragm so that when the diaphragm is urged to move in different directions the spool valve will be axially moved within the cylinder. A spring is also positioned within the switch chamber to urge the diaphragm to move in one direction while pneumatic pressure within the compressor reservoir is effective to urge the diaphragm to move in an opposite direction. The inlet to the cylinder is communicated, by means of suitable tubing or the like, with the interior of the compressor reservoir so that when the spool valve is positioned to communicate the cylinder inlet with the cylinder outlet, pressurized air will be diverted to the main pneumatic line from the compressor reservoir.

The various parts of the pressure switch are so designed that the spool valve within the cylinder will be maintained in a position to close communication between the cylinder inlet and outlet until the pneumatic pressure within the compressor reservoir has been built up to a predetermined level. When the air pressure does reach this predetermined level, the pneumatic force within the compressor reservoir will be effective to urge the diaphragm forming the common wall between the compressor reservoir and the pressure switch upwardly to effect overcenter movement of the snap acting mechanism and to thereby axially move the spool valve within.

the cylinder to open communication between the cylinder inlet and outlet so that the pressurized air within the compressor reservoir will be openly communicated with the main pneumatic line.

The spool valve will remain in this latter mentioned position until the sum of the pneumatic force acting upwardly on the diaphragm and the spring force of the overcenter mechanism itself has been overcome by the opposing force of the spring within the switch chamber. When the force of the spring member does thus overcome the opposing biasing force of the overcenter mechanism and the pneumatic pressure within the compressor reservoir the diaphragm will be snapped downwardly by the action of the overcenter mechanism and the spool valve will be moved axially within the cylinder to close communication between the cylinder inlet and outlet.

Simultaneously with closure of communication between the cylinder inlet and outlet, the main pneumatic line will be vented to the atmosphere so that when the various parts of the pressure switch are thus positioned the pneumatic pump load will be impressed on the main washing machine motor. Conversely, when the cylinder inlet and outlet are in open communication with one another the pneumatic pump load will be released from the washing machine in the manner which has hereinbefore been described.

An electrical switch is also associated with the pneumatic relay system to control the energization of various electrical components in the washing machine such as, for instance, the pneumatic timer mechanism, and is so arranged that the switch is closed to energize the various electrical components only during those intervals when the pneumatic pump is inactivated and so that upon activation of the pump by the main washing machine motor, the electrical contacts in the switch are opened to deenergize the electrical components associated therewith.

Accordingly, it is a principal object of the present invention to provide a pneumatic relay system particularly adapted to control the pneumatic and electrical actuation of various components in a washing machine.

A further object of the present invention is to provide a pneumatic relay system having a pneumatic pump associated therewith which is intermittently driven by the main washing machine motor only during those intervals when little or no machine load is applied to the motor.

A still further object of the invention is to provide a control valve associated with a pneumatic relay system of the type herein described which is operable to close communication between the compressor reservoir associated with the pneumatic pump and the main pneumatic line until a predetermined fluid pressure has been built up within the compressor reservoir and to thereafter open communication therebetween until the pneumatic pressure within the compressor reservoir has been reduced to a predetermined level.

Yet another object of the invention is to provide a unitary structure in a pneumatic servo system which comprises a compressor, a compressor reservoir, and a pressure switch wherein the pressure switch is operative to selectively divert pressurized air from the compressor reservoir to the main pneumatic line.

These and other objects of the invention will appear from time to time as the following specification proceeds, and with reference to the accompanying drawings, wherein:

FIGURE 1 is a view of a pneumatic relay system constructed in accordance with the principles of the present invention and showing some parts diagrammatically, others in side elevation, and still others in vertical section;

FIGURE 2 is a view of the pneumatic pump and associated pressure switch showing the pressure switch and compressor reservoir in vertical section and the compressor in side elevation and showing the various parts within the switch in a first position;

FIGURE 3 is a view similar in nature to FIGURE 2 but which shows the various parts of the pressure switch in another position;

FIGURE 4 is a vertical sectional view through a check valve which is utilized in the illustrated embodiment of the present invention; and

FIGURE 5 is another vertical sectional view through the check valve illustrated in FIGURE 4 but taken on a plane perpendicular to that of FIGURE 4.

In the embodiment of the invention illustrated in the drawings, there is shown diagrammatically a main washing machine motor **10** which is operatively associated with a pneumatic pump **11** to drive the same. The pneumatic pump includes generally a compressor **12** and a compressor reservoir **13**.

A pneumatic control valve or pressure switch **14** is associated with the compressor reservoir **13** and is adapted to controllably direct pressurized air from the compressor reservoir **13** to a main pneumatic line **15**. The main pneumatic line **15** has a pressure regulator **16** associated therewith which is adapted to maintain a constant maximum pressure on the downstream side thereof within the pneumatic lines but which, it should be noted, is not an essential element in the pneumatic relay system which forms the subject of the present invention. A branch pneumatic line **17** leads from the main pneumatic line, on the downstream side of the pressure regulator **16**, to the compressor **12** to control the operation of the compressor in a manner which will hereinafter be more fully described in detail.

The compressor **12** comprises generally a valve block **20** to which a reservoir housing **21** is sealed by means of a gasket **22**. The reservoir housing **21** may be secured to the block **20** in any suitable manner. An inlet port **23** is formed within the valve block in communication with the line **17** while an outlet port **24** is formed therein in communication with the interior of the reservoir housing **21**.

A compression chamber **25** is formed and defined by a recessed portion in the bottom of the valve block **20** and by a flexible diaphragm **28** which extends thereacross. Preferably the diaphragm **28** has an outer annular raised bead **29** which is seated in a mating groove **30** formed in the valve block **20**.

The diaphragm **28** may be made out of rubber or any one of the known substitutes therefor and is provided with a reenforced central portion which is formed with an annular disk **31** held on the underside thereof by means of a depending lip **32** of the diaphragm **28**.

A base plate or cap **33** extends over the diaphragm member **28** and retains the marginal edge thereof seated against the valve block **20**. The base plate **33** includes a cup portion **34** and a hollow stem portion **35** which receives a reciprocable power shaft **36**. An air vent **37** is provided in the base plate **34** to keep the underside of the diaphragm **28** in communication with the atmosphere to prevent pressure buildup intermediate the diaphragm **28** and the base plate or cap **33**.

The power shaft **36** is operatively connected at its upper end to the diaphragm **28** and at its lower end to a yoke **38** within which is mounted a pin **37***a* rotatably supporting a cam follower wheel **39**. An annular disk **40** carried by the shaft **36** at its lower end portion provides a reaction means for a compression spring **41** which extends between the cap member **33** and the annular disk **40**.

The wheel or roller **39** rides on a cam **45** formed on the upper surface **46** of a cam wheel **47**. The cam wheel **47** is rotatably supported on an output power shaft **48** of the main washing machine motor **10** and is rotatably driven thereby.

An outlet check valve **50** is seated within the outlet port **24** on an annular flange **51** formed integrally with

the valve block 20 and is maintained in seating engagement therewith by means of a cylindrical ring 53 which frictionally engages the sidewall of the port 24. It will here be noted that the outlet check valve 50 is arranged to permit only unidirectional flow from the compression chamber 25 to the reservoir 21. Similarly, an inlet check valve 55 is seated within an enlarged diameter portion 56 of a fluid inlet passageway 57 which is arranged to provide fluid communication between the inlet port 23 and the compression chamber 25. It will further be noted that a flexible diaphragm 58 has a peripheral bead 59 seated within an annular groove 60 formed within the valve block 20 and that a valve member 61 is suitably centrally secured to the diaphragm 58 in coaxial alignment with the central passageway in the inlet check valve 55 to control fluid flow therethrough in a manner which will hereinafter become more fully apparent. The diaphragm 58 is normally urged to the position illustrated in FIGURE 1 by a spring 58*a* and is moved in an opposite direction by fluid pressure as will hereafter be described.

The check valves 50 and 55 are alike and each includes a valve body 62 formed of rubber or the like. The valve body 62 has a depending somewhat flattened hollow portion 63 which is generally of rectangular cross-section. Member 63 has an elongated passageway 64 therein in communication with a central passageway 65 in direct alignment therewith. Disposed within the hollow portion 63 is a pin 66 which extends lengthwise thereof and which is snugly retained at opposite ends by the end walls of the portions 63. The sidewalls of the portion 63 in conjunction with pin 66 form a valve to restrict the passage of air through the unit. Pin 66 has its opposite ends rounded as at 67 where it engages the opposite ends of passageway 64 and slightly stretches the member forming that passageway. Two depending tongues 68 extend downwardly toward pin 66 and serve to properly locate pin 66.

Whenever the pressure around the outside of the elongated passageway member 63 is less than the air pressure at the inlet 70 of the check valve, the walls of the passageways 64 yieldably expand and spread apart to permit the movement of air past the pin 66 to the outlet 71 of the check valve. When, however, the pressure surrounding the elongated passageway portion 63 is greater than the air pressure at the inlet 70 of the check valve, the greater air pressure on the exterior of the passageway member 63 will collapse the walls 63 and prevent the passage of air past the pin 66.

It will thus become apparent that the valve member or plunger which is connected to the diaphragm 58 acts as a valve and is arranged to open and close the inlet 70 of the inlet check valve 55.

The operation of the pump is somewhat as follows: Assume, for illustrative purposes, that the cam wheel or roller 39 is resting on the cam wheel 47 at the beginning of the cycle of operation. As the cam wheel 47 is rotated, cam roller 39 will ride up onto the high portion of the cam 45 which, in turn, will force shaft 36 upwardly against the action of spring 41 and the diaphragm 28 will be moved upwardly into juxtaposition with the uppermost portion of the compression chamber 25. The spring member 41 will act to return the roller 39 to the level illustrated in FIGURE 1 upon further rotational movement of the cam wheel 47. Since the outlet check valve 50 will not permit the passage of air from the reservoir chamber to the compression chamber 25, a partial vacuum will be formed within the compression chamber causing the air on the inlet side of check valve 55 to expand the sidewalls of the check valve to open the air passageway into the compression chamber 25 and permit the flow of air thereto from the atmosphere. When the power shaft 36 and the diaphragm are again raised to their uppermost position by the cam 45, the increased pressure air caused by the piston action of the upwardly moving diaphragm on the outer walls of the inlet check valve will be greater than the pressure on the inlet side of the valve 55, and the inlet check valve 55 will close. However, on the upstroke of the diaphragm the pressure at the inlet 70 of the outlet check valve 24 will be greater than the pressure surrounding the elongated passageway walls and thus air will pass through the valve from the compression chamber 25 to the reservoir 21.

Upon closure of the inlet check valve 55 by the valve member 61 associated with diaphragm 58, the diaphragm 28 will be rendered inoperative after moving through its compression stroke since a vacuum will be created above the diaphragm so that the air pressure acting upwardly on the diaphragm through the vent port 37 will be sufficiently great to overcome the opposing biasing force of spring member 41. The diaphragm 28 will thus remain in its upper position so long as the inlet check valve 55 remains closed by valve member 61. Thus, even though the cam wheel 47 is rotating, the diaphragm will not be moved and no additional air will be forced into the accumulator chamber or reservoir 13. Accordingly, the load of driving the pneumatic pump 11 will be released from the main motor 10.

Referring now particularly to FIGURES 2 and 3 of the drawings, the pressure switch 14 is shown as comprising generally a switch body 80 which is disposed at the upper open end of the reservoir 13 and which has a cylinder 81 formed therein. An annular groove 82 is formed at the upper open end of the reservoir 13 which is arranged to serve as a seat for an annular bead 83 formed about the periphery of a flexible annular diaphragm 84. The switch body 80 is seated on the resilient bead 83 so that the body 80 and the reservoir housing are sealed in fluid tight relation with one another. It will further be noted that the body 80 is secured to the reservoir housing by means of a circular clamp 85 which is C-shaped in cross-section and which fits about mating flanges 86 and 87 of the switch body 80 and the reservoir housing, respectively.

The interior of the switch body 80 is hollow so that the flexible annular diaphragm 84 forms a common wall between the interior of the compressor reservoir 13 and a chamber 89.

The cylinder 81 has an inlet 90 and an outlet 91 communicable therewith which are spaced longitudinally from one another along the cylinder 81 and has a vent port 92 formed therein through the wall of the switch body 80 which opens to the cylinder 81 adjacent the lower end thereof. An outlet 93 formed integrally with the reservoir housing has a tube 94 connected therewith which is connected at its opposite end, to the inlet 90 and which serves to communicate the interior of the compressor reservoir 13 with the interior of the cylinder 81.

A pair of apertures 96 and 97 are formed within the pressure switch body 80 at opposite ends of the cylinder 81 and are coaxially aligned therewith and are arranged to slidably receive a motion translation rod 98 therethrough. The switch body 80 is grooved about the aperture 96 so as to receive an O-ring seal 99 which serves to maintain the motion translation rod 98 and the wall portion of the switch body 80 defining the aperture 96 in fluid tight relation with one another.

A pair of resilient valve members 100 and 101 are affixed to the motion translation rod 98 and are disposed in spaced relation from one another within the cylinder 81 and form, in conjunction with that portion of the motion translation rod 98 disposed intermediate the valve members 100 and 101, a spool valve 102. It will be understood that when the spool valve 102 is positioned as shown in FIGURE 3 the inlet 90 and the outlet 91, which open to the cylinder 81, are in open fluid communication with one another. Upon axial upward movement of the motion translation rod 98 within the cylinder 81 to the position illustrated in FIGURE 2 the valve member 101 is moved to a point within the cylinder 81 intermediate the

inlet 90 and the outlet 91 so that fluid communication between the inlet and the outlet is closed.

A snap or overcenter mechanism 105 is disposed within the chamber 81 and comprises generally a snap lever 106 and a snap blade 107 which are formed integrally with one another and is seated in a suitable receiving groove 108 in the switch body 80. A resilient member or spring 110 is connected at its opposite ends to the outer free end portions of the lever 106 and the blade 107 so that movement of the blade 107 past the plane of the lever 106 will act to snap the lever in an opposite direction, as is well known in the art.

The snap lever 106 is operatively connected at its outer free end portion to the lower end portion of the motion translation rod 98 so that vertical movement of the outer free end of the lever 106 will effect reciprocable movement of the spool valve 102 within the cylinder 81.

The diaphragm 84 has a supporting plate 115 suitably connected thereto as by bonding or the like which has an upstanding post 116 affixed centrally thereto which abuts, and extends through the snap blade 107 adjacent the outer free end thereof. A conically shaped compression spring 117 has its base seated within a recess portion 118 of the switch body 80 and abuts, at its apex, the snap blade 107. It will be noted that the spring 117 fits about the protruding upper end portion of the post 116 so that the spring will not slide out of engagement with the blade 107.

It will accordingly be noted that upward movement of the diaphragm 84 will compress spring member 117 and move the snap blade 107 past the plane of the snap lever 106. At the time when the blade 107 moves past the plane of the lever 106, the overcenter spring 110 will act to snap the lever 106 downwardly from the position illustrated in FIGURE 2 to the position illustrated in FIGURE 3. Such downward movement of the lever 106 will act to move the spool valve 102 axially downwardly within the cylinder 81.

As shown most clearly in FIGURES 2 and 3, a bracket 120 is affixed to the upper end of the cylinder 81 and has an upstanding portion 121 on which are mounted a pair of spaced electrical contacts 122 and 122*a* forming a switch 123. Contact 122 is suitably affixed to the protruding portion of the motion translation rod 98 so that axial movement of the rod 98 will move the contact 122 relatively with respect to contact 122*a* to open and close an energizing circuit through the switch 123. Various electrical components of the washing machine may be energized through the switch 123 so as to be electrically controlled as a function of the position of the motion translation rod 98 within the valve body 80.

In operation the pneumatic relay system functions in substantially the following manner: Rotation of the cam wheel 47 acts to effect reciprocable movement of the power shaft 36 and the diaphragm 28 connected therewith to initiate a buildup of pressure within the compressor reservoir 13. The pneumatic pressure within the reservoir tends to urge the diaphragm 84 upwardly against the opposing biasing force of spring member 117 and overcenter spring 110. The diaphragm 84 remains substantially unmoved, however, until the pneumatic pressure within reservoir 13 is sufficient to overcome the opposing biasing force of springs 117 and 110 tending to urge the diaphragm 84 downwardly. In this position of the diaphragm 84 and the overcenter mechanism the spool valve 102 is positioned within the cylinder 81 in the manner shown in FIGURE 2 and communication between the cylinder inlet and outlet 90 and 91, respectively, is closed. It will further be understood that in this position of the spool valve 102, the valve member 101 is positioned within the cylinder 81 intermediate the inlet 90 and the outlet 91 so that the main pneumatic line 15 connected to the outlet nipple 91 is openly communicated with the atmosphere through the vent port 92. Furthermore, the location of the motion translation rod 98 relative to the cylinder 81 acts to maintain the contacts 122 and 122*a* out of engagement with one another so that an electrical energizing circuit through the switch 123 is opened.

When the pneumatic pressure within reservoir 13 reaches a level sufficient to move the diaphragm 84 upwardly against the opposing biasing force of spring member 117 and overcenter spring 110, the blade 107 is moved past the plane of the lever 106 and the lever 106 is consequently snapped downwardly within the chamber 89 by the overcenter spring 110. Such downward movement of the outer free end of the lever 106 acts to move the motion translation rod 98 axially downwardly within the cylinder 81 to thereby move the electrical contacts 122 and 122*a* of switch 123 into engagement with one another and to move the spool valve 102 to the position illustrated in FIGURE 3 wherein the cylinder inlet and outlet 90 and 91, respectively, are openly communicated with one another. In this latter position of the spool valve, the valve member 101 is positioned within the cylinder 81 intermediate the outlet 91 and the vent port 92 so that communication between the atmosphere and the main pneumatic line 15 is closed.

When pressurized air is communicated with the main pneumatic line 15 in the foregoing manner, the pressurized air flows through the pressure regulator 16 and into the branch pneumatic line 17 which, in turn, acts to direct the pressurized air to the diaphragm 58 to effect closure of the inlet check valve to the pneumatic pump so that the pneumatic load is released from the main washing machine motor.

It will be noted that the pneumatic pump is designed to build up the air pressure within the compressor reservoir to operating line pressure during the tub filling cycle of the washing machine so that the pneumatic pump load will be released from the washing machine motor prior to the time when other mechanical loads are impressed on the washing machine motor. It will further be understood that the various components of the pneumatic relay system which forms the subject of the present invention are so arranged that a sufficient pneumatic pressure will be built up within the compressor reservoir prior to the time when the pneumatic pump is inactivated and prior to the time when other machine loads are applied to the washing machine motor so that the pneumatic pump will be activated only once during a normal washing machine cycle.

It will further and again be understood that this embodiment of the invention has been used for illustrative purposes only and that the pneumatic relay system which forms the subject of the present invention may be used in conjunction with other pneumatic servo systems than those found in washing machines and that various modifications and variations may be effected in the present invention without departing from the spirit and scope of the novel concepts thereof.

We claim as our invention:

1. In combination a compressor reservoir having an inlet adapted to be communicated with a source of pressurized air, a switch body seated on said reservoir and having a switch chamber formed therein, a movable wall forming a common wall of said reservoir and said switch chamber, a valve chamber formed within said switch body having an inlet, an outlet, and a vent port opening thereinto, means for communicating said valve chamber inlet with the interior of said reservoir, a movable valve member disposed within said valve chamber adapted to selectively communicate said valve chamber outlet with said valve chamber inlet and said vent port, a snap acting mechanism disposed within said switch chamber operably interconnecting said movable wall and said valve member and adapted to position said valve member as a function of the movement of said movable wall, and electrical switch means operably connected with said valve member adapted to be actuated by movement of said valve member.

2. In combination a compressor reservoir having an inlet adapted to be communicated with a source of pressurized air, a switch body seated on said reservoir and having a switch chamber formed therein, a movable wall forming a common wall of said reservoir and said switch chamber, a valve chamber formed within said switch body having an inlet and an outlet opening thereinto, means for communicating said valve chamber inlet with the interior of said reservoir, a reciprocably movable valve member disposed within said valve chamber adapted to selectively communicate said valve chamber outlet with said valve chamber inlet, motion translation means interconnecting said movable wall with said reciprocably movable valve member to position said valve member as a function of the movement of said movable wall, and electrical switch means operably connected with said valve member adapted to be actuated by movement of said valve member.

3. In combination a compressor reservoir having an inlet adapted to be communicated with a source of pressurized air, a switch body seated on said reservoir and having a switch chamber formed therein, a movable wall forming a common wall of said reservoir and said switch chamber, a valve chamber formed within said switch body having an inlet and an outlet opening thereinto, means for communicating said valve chamber inlet with the interior of said reservoir, a movable valve member disposed within said valve chamber adapted to selectively communicate said valve chamber outlet with said valve chamber inlet, a snap lever and a snap blade formed integrally with one another and secured to said switch body and disposed within said switch chamber, means for interconnecting the inner free end of said snap lever with said movable valve member, an overcenter spring interconnecting the free end portions of said snap lever and said snap blade, means interconnecting said movable wall with said snap blade adjacent the inner free end thereof so that pressurized air within said reservoir tends to bias said movable wall and thereby said snap blade in one direction, and spring means disposed within said switch chamber tending to urge said snap blade and thereby said movable wall in an opposite direction.

4. In combination a compressor reservoir having an inlet adapted to be communicated with a source of pressurized air, a switch body seated on said reservoir and having a switch chamber formed therein, a movable wall forming a common wall of said reservoir and said switch chamber, a valve chamber formed within said switch body having an inlet and an outlet opening thereinto, means for communicating said valve chamber inlet with the interior of said reservoir, a movable valve member disposed within said valve chamber adapted to selectively communicate said valve chamber outlet with said valve chamber inlet, a snap lever and a snap blade formed integrally with one another and secured to said switch body and disposed within said switch chamber, means for interconnecting the inner free end of said snap lever with said movable valve member, an overcenter spring interconnecting the free end portions of said snap lever and said snap blade, means interconnecting said movable wall with said snap blade adjacent the inner free end thereof so that pressurized air within said reservoir tends to bias said movable wall and thereby said snap blade in one direction, spring means disposed within said switch chamber tending to urge said snap blade and thereby said movable wall in an opposite direction, and electrical switch means operably connected with said valve member adapted to be actuated by movement of said valve member.

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