

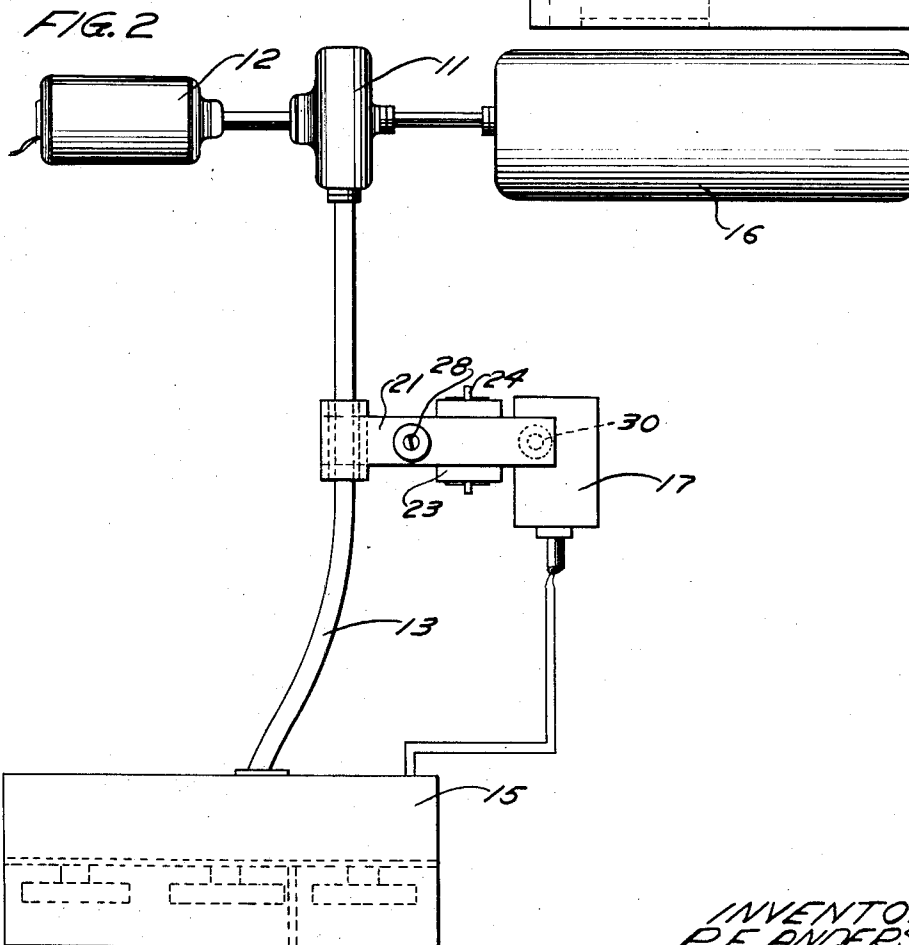
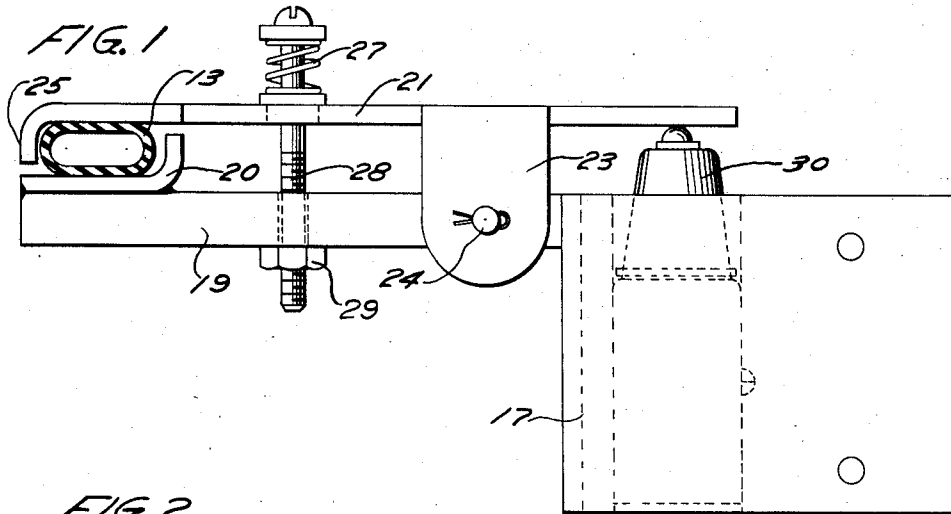
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FLUID PRESSURE SENSITIVE CONTROL DEVICES

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FLUID PRESSURE SENSITIVE CONTROL DEVICES

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1 Claim. (Cl. 200—81)

This invention relates to fluid pressure sensitive control devices, and more particularly to such devices for rendering article cleaning machines inoperative in case of failure of a supply of cleaning fluid being pumped into the machine.

An object of this invention is to provide a fluid pressure control device for rendering a machine inoperative in case of failure of a supply of fluid being pumped into the machine.

Another object of this invention is to provide a machine disabling device which is responsive to the pressure of fluid in a flexible tube.

One embodiment of the present invention for rendering an article cleaning machine inoperative in case of failure of a supply of cleaning fluid being pumped into the machine may include means for pumping the fluid through a flexible tube which is slightly compressed between two members which are pivoted to each other and urged together by a spring. A limit switch for controlling the machine is mounted between the members whereby, when the fluid supply fails, the tube collapses to permit the members to move together and open the switch to disconnect power and render the article cleaning machine inoperative.

Other objects and advantages of the invention will become apparent by reference to the following detailed description thereof and the accompanying drawings illustrating a preferred embodiment of the invention, in which

Fig. 1 is a front elevational view of the device showing the manner in which a flexible tube is compressed therein; and

Fig. 2 is a plan view showing the device attached to a flexible tube which carries fluid from a pump into an article cleaning machine.

Referring now in detail to the drawing, a base 17 of the control device is positioned adjacent to a flexible fluid supply tube 13 and has a projecting stationary base portion 19 extending horizontally beneath the tube 13 (Fig. 1). An L-shaped or flanged member 20 secured to the end of the stationary base portion 19 supports the fluid supply tube 13 and prevents movement of the tube toward the base 17.

A lever 21 having a pair of depending flanges 23 is pivotally secured to the base portion 19 by a pin 24 which passes through these flanges and the base portion 19. The lever 21 extends above the tube 13 and has a depending portion or flange 25 at one end which cooperates with the stationary L-shaped member 20 to retain and compress the tube 13 therebetween.

A bolt 28 freely passing through the lever 21 and threaded into the base portion 19 supports a compression spring 27 (Fig. 1) which urges the end 25 of the lever 21 toward the stationary member 20 on the end of the base portion 19 to compress the flexible tube therebetween, the amount the tube is compressed depending upon the fluid pressure inside the tube. A nut 29 threaded on the bolt 28 secures the bolt in position after it has been threaded further into or out of the base

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portion 19 to adjust the compression force of the spring applied to the lever 21, and thus the fluid pressure at which the lever 21 will move toward the stationary member 20.

A pump 11 driven by a motor 12 is connected by the flexible tube 13 to an article cleaning machine 15 which is supplied with a continuous flow of a cleaning fluid of a desirable type from a supply tank 16. A limit switch 30 actuated by the lever 21 is attached to the base 17 and connected to the article washing machine 15 for controlling it. When the fluid pressure in the tube 13 falls below a desirable value the tube 13 collapses under the force applied by the lever 21 and the base portion 19 and the lever 21 moves to actuate the limit switch 30 to disable the washing machine by shutting off the electric power thereto.

In operation, a continuous flow of fluid for cleaning articles is pumped from the storage tank 16 through the flexible tube 13 into the article cleaning machine 15. While the fluid pressure is maintained at the proper value, the flexible tube 13 will tend to expand to its normal cylindrical shape and thus urge the lever 21 clockwise (Fig. 1) about the pin 24 to keep the switch 30 closed so that the machine will continue to operate.

If the flow of fluid passing through the tube 13 should fail for any reason, the fluid pressure will drop and the tube 13 will collapse under the force exerted by the spring 27 through the lever 21 and the stationary member 20 secured to the base portion 19. When the flexible tube 13 collapses, the end 25 of the lever 21 pivots counterclockwise (Fig. 1) about the pin 24 in the base portion 19. On counterclockwise movement of the lever 21, the switch 30 opens to disconnect power to the article washing machine 15, thus assuring that the machine will not be operated without a continuous and ample flow of cleaning fluid. The structure of the device is such that one tube may be quickly removed therefrom and replaced by another without the necessity of disassembling the device.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of this invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

An apparatus control device responsive to fluid pressure in a quickly removable flexible tube, comprising a base having a projection extending therefrom and terminating in a free end, said projection having a transverse bore in its intermediate portion, an L-shaped member secured to the free end of the projection for engaging and supporting a flexible tube containing fluid under pressure, a portion of said L-shaped member extending upward from the projection on one side of the tube, a switch connected to the controlled apparatus and mounted on the base, a lever positioned above the projection and having at the intermediate portion thereof a pair of flanges depending on opposite sides of said projection, said flanges each having an aperture in alignment with the bore in the projection, a pin extending through said apertures and bore for pivotally supporting the lever with one end thereof engaging the switch mounted on the base, said lever having at the other end thereof a flange which depends on the side of the tube opposite to said portion of the L-shaped member, said flange and said portion cooperating to retain the tube therebetween, an element adjustably secured to the projection and extending past the lever, and a spring mounted on said element for engaging the lever and urging the flanged end thereof toward the projection to partially collapse

said tube when the fluid pressure falls below a predetermined value.

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