

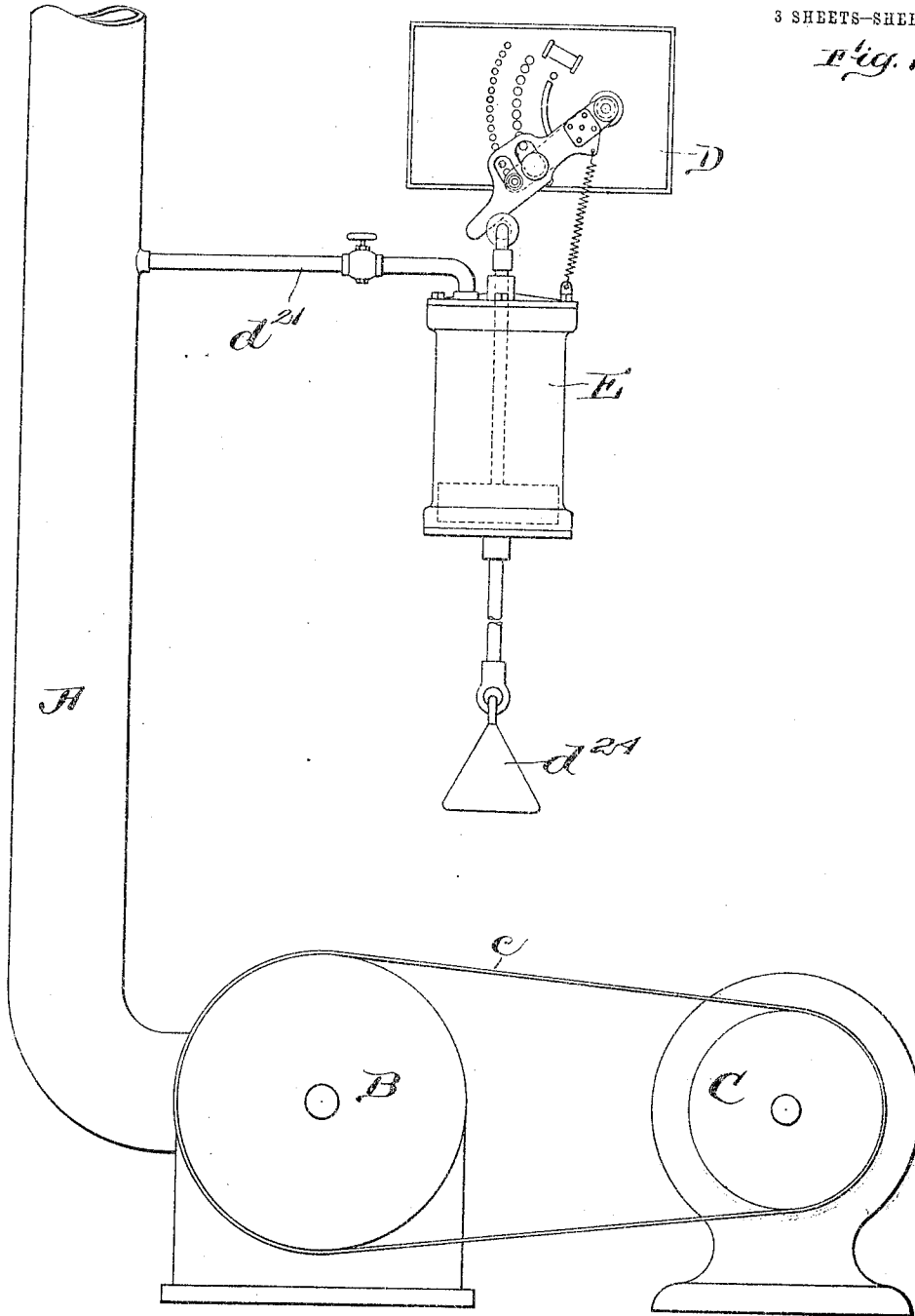
C. S. JENNINGS.
 AUTOMATIC PRESSURE SWITCH CONTROLLER.
 APPLICATION FILED MAY 31, 1907.

1,084,277.

Patented Jan. 13, 1914.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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 A. L. Merritt

Inventor:

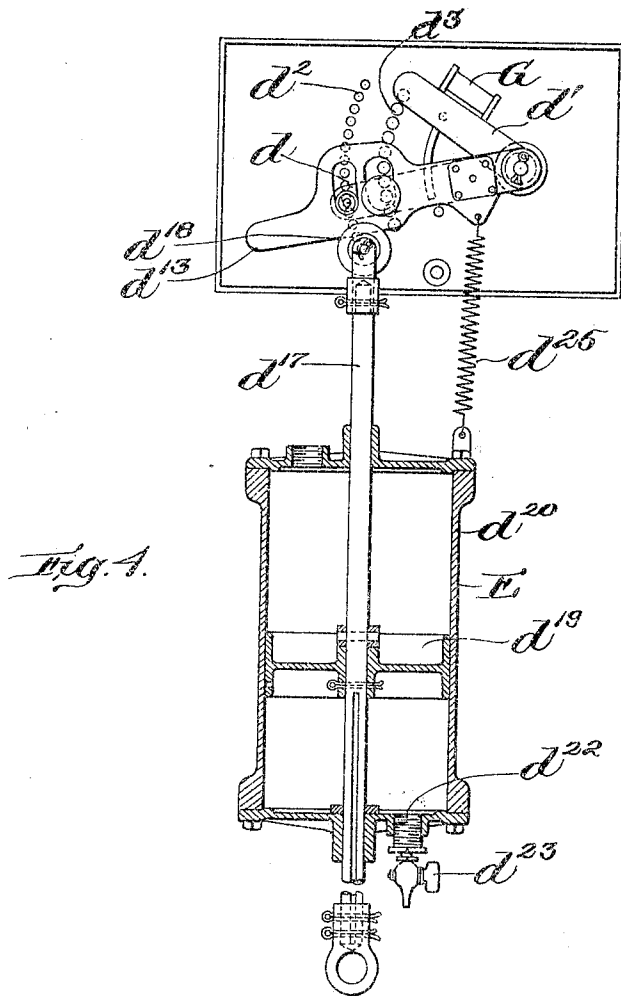
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Witnesses:
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UNITED STATES PATENT OFFICE.

CHESTER S. JENNINGS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO LAMSON COMPANY OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

AUTOMATIC PRESSURE-SWITCH CONTROLLER.

1,084,277.

Specification of Letters Patent.

Patented Jan. 13, 1914.

Application filed May 31, 1907. Serial No. 376,581.

To all whom it may concern:

Be it known that I, CHESTER S. JENNINGS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Pressure-Switch Controllers, of which the following is a specification.

My invention relates to improvements in power control to maintain a normal reserve pressure and is particularly adapted for use in connection with pneumatic despatch tube systems wherein a reserve air pressure or vacuum is maintained.

The object of this invention is to maintain a normal or predetermined working pressure in the system by providing a pressure actuated mechanism for operating the switch controlling the motor driving the pump and also to prevent violent fluctuations of the pressure from acting suddenly on said switch.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a view illustrating one form of my invention. Fig. 2 is a diagram of electric circuits hereinafter described. Fig. 3 is an elevation partly in section of the rheostat and controlling mechanism showing the position of the parts when the system is not in operation. Fig. 4 is a similar view to Fig. 3 showing the parts in operating position.

Like letters of reference refer to like parts throughout the several views.

The apparatus as shown is adapted to operate so as to maintain a constant or predetermined vacuum in the drum A which is a reserve supply for numerous transmission tubes. The air is exhausted from the drum A by a blower or pump B driven by a motor C through a belt c.

D is a rheostat for controlling the motor C and E is a controller for the rheostat. The rheostat D has two contact arms d and d', the arm d' cooperating with a series of contacts d³ while the arm d cooperates with a series of contacts d². As shown in Fig. 2 the contacts d² d³ are connected by resistances. The two arms d d' are pivoted on and electrically connected with one post d⁴ which is connected by wire d⁵ with a line wire d⁶ through the usual cut-out F. One end of the series of contacts d³ is connected by a wire d' with one brush d⁸ of the armature

of motor C and the other brush d⁸ of said motor is connected by a wire d⁹ with the other line wire d¹⁰ through the cut-out F. The field c' of motor C is a shunt including wire d¹¹, d¹², d¹³, contacts d² and arm d; to wire d⁵ which leads to the line wire d⁶. Thus the movement of arm d' over contacts d³ and plate d²⁰, which is connected by the wire d²⁷ with the field circuit, varies the resistance in the armature of motor C and the movement of arm d over contacts d² varies the resistance in the field of motor C. At G is the usual magnet for holding the arm d' at its highest point where the resistance in the armature circuit is at the minimum. One end of the coil of magnet G is connected by a wire g with the wire d⁹ and the other end by the wire g with one end of a series of resistances d². The arm d is pivoted on the post d⁴ and is made with a handle d¹² by means of which it is swung on said post to start and stop the motor.

Pivoted on the pin d⁴ and on top of the arm d is a lever d¹³ having a slot d¹⁴ into which projects a pin d¹⁵ on the arm d. In this way, the arm d and lever d¹³ are connected with provision for limited relative movement. The handle d¹² also extends through a slot d¹⁶ to permit this relative movement. Below the arm d is the arm d' cooperating with the contacts d³ as described. The two arms d and d' are connected as usual so that when the operator by means of the handle d¹² lifts the arm d and lever d¹³, the arm d' is lifted by the arm d until the arm d' is caught and retained by the magnet G; when the latter is deenergized the arm d' falls by gravity or through the action of a spring into its lowest position under the arm d.

The arm d¹³ is of insulating material and is normally engaged and adapted to be operated by a grooved roller d¹⁸ mounted on the upper end of a piston rod d¹⁷, said lever d¹³ being normally held against said roll by a spring d²⁵. The rod d¹⁷ is fixed to a piston d¹⁹ in a cylinder d²⁰ connected at its upper end with pipe A by a pipe d²¹; at the lower end of the cylinder d²⁰ is a port d²² opening to the atmosphere whose capacity is regulated by a valve d²³ so that rapid movement of piston d¹⁹ in either direction is prevented. The lower end of rod d¹⁷ carries a weight d²⁴ which acts as a counterbalance against the vacuum in the drum A and when the

system is not in operation holds the piston d^{19} at the lower end of cylinder d^{20} as shown in Figs. 1 and 3.

When the system is to be started up to
 5 create and maintain a normal working pressure in the drum A, the operator starts the motor C by grasping the handle d^{12} and lifting the lever d^{13} , arm d and arm d' to their highest point. During their upward movement, the passage of the arms d and d' over
 10 their respective contacts reduces the resistance in both the armature and field circuits to the minimum. As the motor C operates the blower B, the air in the drum A and in
 15 the cylinder d^{20} above the piston d^{19} is exhausted and said piston is raised until the roll d^{18} engages the lever d^{13} . The operator then frees the handle d^{12} and thereafter the lever d^{13} is supported entirely by the roll d^{18} .
 20 During the use of the system, the pressure in the pipe or drum A fluctuates and therefore the piston d^{19} is raised and lowered, but as will now be obvious, the pin and slot connection d^{14} , d^{15} between the arm d and lever
 25 d^{12} permits limited movement of the latter independently of the arm d so that a change of pressure in drum A to a predetermined extent must occur before arm d is moved by lever d^{12} . When such a change of pressure
 30 occurs, the end of the slot d^{14} engages the pin d^{15} and arm d is moved with the lever d^{12} so as to vary the resistance in the field, such variations occurring so as to speed up
 35 the motor C when the pressure varies in one direction and to slow down the motor when the pressure varies in the other direction. Thus it will be seen that comparative slight variations from the normal or working pressure in the drum A do not affect the motor
 40 C while extended fluctuations in either direction act to regulate the speed of the motor C to maintain the normal pressure. When the system is shut down, the motor C is stopped by opening the switch or cut-out F
 45 whereupon the parts assume the non-operating position shown in Fig. 3.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new and
 50 desire to secure by Letters Patent of the United States is:

1. In an automatic pressure controller, the combination of a drum, means for exhausting air from said drum, a cylinder communicating at its upper end with said drum
 55 and having at its lower end a port to the outside air, an adjustable valve controlling said port, a piston in said cylinder movable therein through a difference in the pressures in the cylinder above and below the piston,
 60 a rod carried by said piston passing through the upper and lower ends of said cylinder,

a friction roll on the upper end of said rod, a hinged controller arm engaged by said roll and actuated by the movement of said
 65 rod, and a counterweight on the lower end of said rod to counterbalance the partial vacuum in the cylinder above the piston.

2. In an automatic pressure controller the combination of a drum, means for exhausting air from said drum, a casing having therein a movable partition, said partition co-acting with said casing to provide a chamber of variable size upon each side of
 70 said partition, connections between one of said chambers and said drum, means for affording a restricted communication between the other of said chambers and the outer air, said partition being movable in
 80 said casing by a difference in pressure upon the opposite sides thereof, means for normally returning said partition to a determined position as the pressure upon the sides thereof becomes stable and equalized,
 85 a controller arm for said air exhausting means, said arm having a tendency to move into a determined position, and mechanical connections between said partition and said arm which permit the latter to be moved independently of said partition from its normal
 90 position substantially to the limit of its travel, said partition and mechanical connections adapted to co-act to govern the return of said arm to its determined position.

3. In an automatic pressure controller, the
 95 combination of a drum, means for exhausting air from said drum, a controller arm for said air exhausting means, said arm having a tendency to move into a determined position, a controlling member for said arm,
 100 means for moving said member substantially in accordance with the pressure in said drum, means for impeding said movement of said member sufficiently to prevent momentary
 105 fluctuations in pressure in said drum from displacing said member and for preventing movement of said member at undue speed for changes in pressure other than mere momentary ones, separable connecting
 110 means between said member and arm, said arm adapted to be moved independently of said member from said position substantially to the limit of its travel, said member and connecting means adapted to co-act to govern
 115 the return of said arm to said determined position thereof.

In testimony whereof, I have signed my name to this specification in the presence
 two subscribing witnesses, this 17th day of
 May, A. D. 1907.

CHESTER S. JENNINGS.

Witnesses:

A. L. MESSEO,

LOUIS G. BARTLETT.