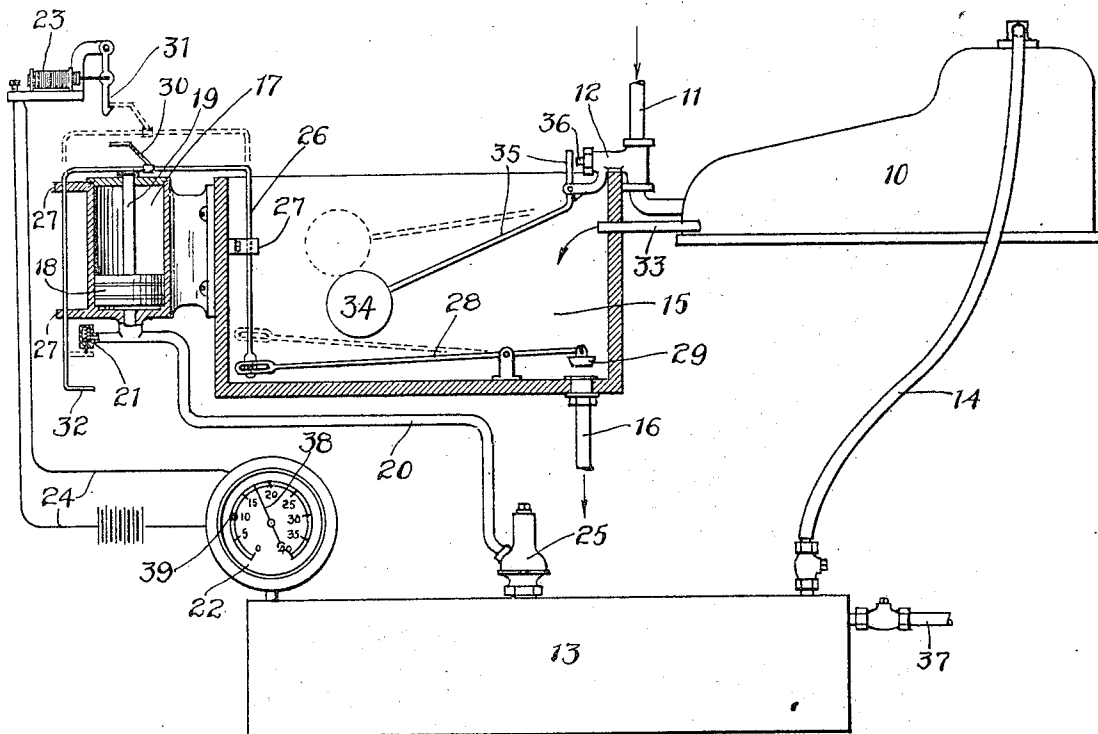


W. L. PICKETT.
 AUTOMATIC CONTROL FOR AIR COMPRESSORS.
 APPLICATION FILED MAR. 26, 1912.

1,052,619.

Patented Feb. 11, 1913.



WITNESSES:

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WILLIAM L. PICKETT, OF BRIDGEPORT, CONNECTICUT.

AUTOMATIC CONTROL FOR AIR-COMPRESSORS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM L. PICKETT, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Automatic Control for Air-Compressors, of which the following is a specification.

This invention relates to the class of air compressors which operate by water pressure and are adapted for general use as for providing light power for any purpose whatever, for use in connection with atomizers and other appliances in surgeons', physicians' and dentists' offices and with beer drawing apparatus in saloons; and the invention has for its object to provide an automatic control which will effect an important saving in the consumption of water and will retain the pressure in the storage tank between a predetermined maximum and minimum pressure, the structure as a whole being relatively inexpensive to produce and so constructed that there will be little or no wear, the parts being quick acting, always ready to work and practically impossible to get out of repair.

With these and other objects in view, I have devised the novel automatic controlling mechanism which I will now describe referring to the accompanying drawing forming a part of this specification and using reference characters to indicate the several parts.

The single figure of the drawing is a diagrammatic view, partly in section, illustrating an arrangement of the parts, which together comprise the control, and their operation in use.

10 denotes a hydraulic air compressor, 11 a water supply pipe provided with a valve 12, 13 a storage tank which receives air from the compressor by a pipe 14, 15 a water tank from which a waste pipe 16 leads, 17 an air cylinder, 18 a piston therein, 19 a rod extending from the piston and through one head of the cylinder, 20 an air pipe leading from the storage tank to the cylinder and provided with an escape valve 21, 22 a pressure gage, 23 an electromagnet and 24 an electric circuit including a battery, the pressure gage and the electromagnet.

As soon as the compressor is started, air will begin to accumulate in the storage tank. When the pressure reaches its predetermined maximum—say, for example, twenty pounds, a pop safety valve 25 upon the stor-

age tank will be opened and air will pass through pipe 20 to cylinder 17 and will raise the piston and rod 19 more or less. As soon as the excess of pressure is relieved, the valve will close but the piston and rod 19 will remain in the raised position. The compressor will continue working until stopped in the manner I shall presently describe. As soon as the pressure in the storage tank has been raised above the predetermined minimum, say for example, ten pounds, air may be drawn from the storage tank for use as from outlet 37. As soon as the pressure in the storage tank again reaches the predetermined maximum, the safety valve will again open and permit air to pass to the cylinder and the piston will be again raised. 26 denotes another rod in the present instance shown as U-shaped, which rests upon rod 19 and is retained in place by guides 27. One arm of rod 26 is pivoted to a lever 28 fulcrumed in tank 15 and carrying at its other end a pivoted stopper 29 which is adapted to close waste pipe 16. Rod 26 also carries a catch 30 which is adapted to be engaged by a spring controlled hook 31 forming part of electromagnet 23. After the necessary number of actuations (the number depending, of course, upon various conditions), the piston and rod 19 will be carried high enough to place catch 30 in engagement with hook 31. Practically simultaneously with the engagement of catch 30 by the hook, an arm 32 extending from rod 26 will engage a plunger extending through the case of escape valve 21 and will open said valve which will permit the air to escape from the cylinder and the piston to drop, leaving the catch in engagement with the hook and rod 26 and lever 28 in the position indicated by dotted lines, the stopper now closing waste pipe 16.

During the time that air has been accumulating in the storage tank and prior to the engagement of catch 30 by the hook and the closing of waste pipe 16 by the stopper, water will have been passing from the compressor to tank 15 through a pipe 33 and water will have been passing from the tank through the waste pipe. The water supply may be either ordinary service pressure or pressure from a tank, as most convenient.

Water valve 12 in the supply pipe is of a type that will normally be held open either by the pressure of the water or by spring pressure. The closing of waste pipe 16 has

already been described. As the compressor is still in operation, tank 15 will now fill with water. As the water rises in the tank it will raise a float 34 therein and swing the upper arm of a lever 35 by which the float is carried until said arm is caused to engage a plunger 36 in valve 12 and close said valve, thereby shutting off the supply of water to the compressor and stopping its action. The parts will remain in the position just described, the float being in the raised position indicated by dotted lines, and the compressor not working until the electric circuit is closed, the effect of which is to energize the electromagnet and disengage hook 31 from catch 30 on rod 26. This permits the rod to drop to the full line position and tilts lever 28 raising the stopper and allowing the water to drain from tank 15, which causes the float to fall, relieving the pressure of the upper arm of lever 35 upon plunger 36 in valve 12. The valve will now open and permit water to pass to the compressor starting it into operation again.

The closing of the electric circuit is effected as follows: One of the circuit wires is connected to the hub of pointer 38 of the pressure gage and the other wire is connected to an adjustable contact 39 which is placed at the point in the scale corresponding with the predetermined minimum pressure. As soon, therefore, as the pressure in the storage tank drops to the minimum, the gage pointer will be placed in engagement with contact 39 which will close the circuit, energize the electromagnet and release rod 26, which will cause the tank to be drained and the water valve opened to start the compressor into operation again. It will thus be seen that when the storage tank has been charged to the maximum pressure and catch 30 has been engaged by the hook of the electromagnet, the compressor will be stopped and will not be started again until the pressure in the storage tank has been reduced to the predetermined minimum.

Having thus described my invention I claim:

1. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith and provided with an outlet, a cylinder in communication with said tank, means independent of said outlet for intermittently permitting the passage of fluid under pressure from said tank to said cylinder when the pressure in said tank exceeds a predetermined point, a piston in said cylinder and operated by said fluid pressure, means for controlling said compressor, means actuated by said piston to operate said controlling means to stop the compressor, and means for permitting said piston to return to its normal position irrespective of said fluid pressure.

2. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith and provided with an outlet, a cylinder in communication with said tank, means independent of said outlet for intermittently permitting the passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder and operated by said fluid pressure, means for controlling said compressor, means actuated by said piston to operate said controlling means to stop the compressor, means for preventing further operation of said controlling means after being actuated by said piston, and means for permitting said piston to return to its normal position irrespective of said fluid pressure.

3. An apparatus of the character described comprising an air compressor, a storage tank having a discharge outlet and a pressure gage, mechanism for controlling the compressor, an electromagnet in circuit with the pressure gage, a cylinder, a safety valve independent of said outlet for intermittently permitting passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder operated by said fluid pressure, a rod actuated by the piston and connected with said controlling mechanism, means controlled by said magnet for locking said rod out of operative position, means at the pressure gage for controlling the circuit to said magnet, and means for permitting said piston to return to its normal position irrespective of said fluid pressure.

4. An automatic control of the character described comprising an air compressor, a storage tank having a pressure gage and a discharge outlet, means for controlling the compressor, a governor for said controlling means, means independent of said discharge outlet for intermittently admitting pressure from the tank to said governor to operate the same, an electromagnet provided with means for preventing further operation of said controlling means after being actuated by said governor, means connected with said pressure gage for controlling said magnet, and means for restoring said governor to its normal position irrespective of the pressure in said tank.

5. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith and provided with an outlet, a cylinder in communication with said tank, means independent of said outlet for intermittently permitting the passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder and operated by said fluid pressure, means for controlling said compressor, means actuated by said piston to operate said controlling means to stop the compressor, an electromagnet provided

with means for preventing further operation of said controlling means after being actuated by said piston, a pressure gage for said tank, means connected with said pressure gage for controlling said magnet, and means for permitting said piston to return to its normal position irrespective of said fluid pressure.

6. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith and provided with an outlet, a cylinder in communication with said tank, means independent of said outlet for intermittently permitting the passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder and operated by said fluid pressure, means for controlling said compressor, means actuated by said piston to operate said controlling means to stop the compressor, an electromagnet, a spring pressed detent controlled by said magnet, means connected with said controlling means for engaging said detent, and a pressure gage connected with said tank and provided with means for controlling said magnet, and means for permitting said piston to return to its normal position irrespective of said fluid pressure.

7. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith, a cylinder in communication with said tank, means for automatically controlling the passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder, means for controlling said compressor,

means actuated by said piston to operate said controlling means to stop the compressor, said operating means including a rod provided with a detent, an exhaust valve controlling the pressure in said cylinder, said rod being provided with means for actuating said valve, an electromagnet provided with means for engaging said detent, and a pressure gage connected with said tank and provided with means for controlling said magnet.

8. An automatic control of the character described comprising an air compressor, a storage tank in communication therewith and provided with an outlet, a cylinder in communication with said tank, means independent of said outlet for intermittently permitting the passage of fluid under pressure from said tank to said cylinder, a piston in said cylinder and operated by said fluid pressure, means for controlling said compressor, means actuated by said piston to operate said controlling means to stop the compressor, means for preventing further operation of said controlling means after being actuated by said piston, and means for permitting the piston to assume its normal position after the operation of the compressor has been arrested irrespective of the pressure in said tank.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM L. PICKETT.

Witnesses:

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M. L. HAGGEMAN.