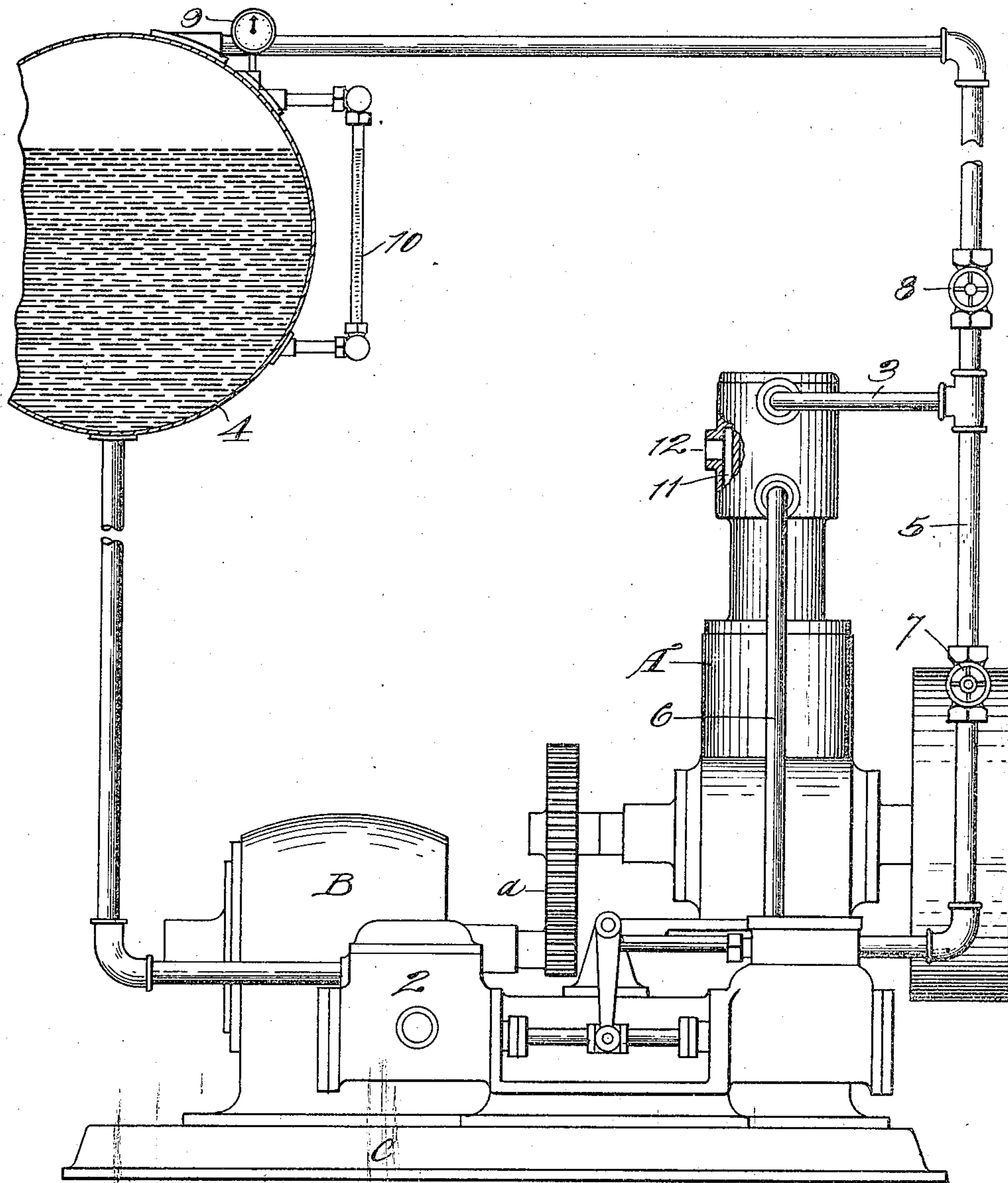


E. A. RIX.  
POWER SET FOR AUTOMATIC SPRINKLERS.  
APPLICATION FILED OCT. 21, 1909.

952,640.

Patented Mar. 22, 1910.



Witnesses;  
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# UNITED STATES PATENT OFFICE.

EDWARD A. RIX, OF SAN FRANCISCO, CALIFORNIA.

POWER SET FOR AUTOMATIC SPRINKLERS.

952,640.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed October 21, 1909. Serial No. 523,800.

To all whom it may concern:

Be it known that I, EDWARD A. RIX, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Power Sets for Automatic Sprinklers, of which the following is a specification.

My invention relates to an apparatus known as a power set which is designed to furnish water and air under pressure to be used for sprinkling purposes, and is especially designed for systems using water in this manner for the protection of buildings from fires.

Most large buildings with valuable stocks are now installing automatic sprinkler systems, which consist in putting on the roof of the building, tanks of water, holding about 6000 gallons, more or less, and the upper portion of such a tank is filled with compressed air of about seventy-five pounds to the inch. Pipes to lead to the ceilings of the various rooms of the building and sprinkler heads are in the ceiling. These heads are plugged with a material which melts at a very low heat or other automatic means for releasing water in case of fire. When the plugs melt, the water from the tanks is sprinkled over the contents of the room by means of gravity, and also by the pressure of the compressed air in the tank.

The Board of Fire Underwriters demand that a suitable pump and compressor, and means of driving same, be established at a convenient place in the building, so that the watchman can operate it at stated times, in order to maintain the level of the water and the air in the tank at a fixed point and pressure. A plant of this sort is known as a "set," and none of these sets heretofore have been convenient or wholly satisfactory. They are generally to run with a motor, and the great trouble has been to fix up a combination so that you can run either the pump or the compressor from the motor. This has resulted in a mass of gears and friction clutches and changes in mechanism that have been expensive and discouraging. Experience shows that I have solved the problem in a very convenient way.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompa-

nying drawing, in which the figure is a side elevation of the device, partly in section.

A is a small standard compressor which with the proper gear train *a* is connected up to an electric motor B mounted on a suitable base C with the compressor. Alongside of the motor is a small duplex direct-acting pump 2. The output of the motor and the compressor in compressed air is sufficient to drive the pump. The discharge 3 from the compressor is connected to the inclosed air-tight main sprinkler tank 4 located at any suitable point. Pipe 3 also has a branch pipe 5 leading to the power end of the pump, so that the pump is run either from the compressor or the tank 4 or by both. The exhaust from the pump can go anywhere, but for economical reasons I pipe this exhaust back to the inlet of the compressor, as at 6.

7 is a valve in branch air pipe 5, and 8 is a valve in pipe 3 between branch 5 and the storage tank 4.

In operation, when air is to be pumped into the sprinkler tank, simply open the cock 8 from the compressor to the tank, close cock 7, start the motor, and the compressor will deliver such air as is necessary. 9 is a pressure gage and 10 a gage glass on the tank for indicating, respectively, the air pressure and water level therein. If more water is wanted in tank 4, the cock 7 from the compressor to the pump is opened, and the compressor will run the pump and the pump will force water into the tank. As it is always desirable to have an air receiver intervene between a compressor and its work, I, therefore, prefer to leave the valve 8 in the pipe from the compressor to the sprinkler tank open, so that when the pump is started I will have the benefit of this air receiver back of the pump, and if necessary some of the air may flow from the sprinkler receiver into the pump, if the compressor is not making a sufficient quantity. It can be readily seen that the compressor need not supply all the air necessary to run the pump, because the pump could draw such a quantity of air from the sprinkler tank 4 for its use, which would be equivalent to what the water pump would displace by the water that it pumps into the sprinkler tank. In this way, it does not interfere at all with the pressures in the sprinkler tank, and the compressor would then only have to furnish



the difference necessary to maintain the equilibrium. The exhaust from the pump, of course, is very cold, and it is desirable to utilize this coolness about the compressor cylinder, and if the intake air of the compressor cylinder is cold, it results in a greater efficiency. My idea is to exhaust this air at the intake of the compressor in such a way that the compressor section will take this cold air in preference to the atmospheric air. The exhaust from the pump does not go into the compressor cylinder direct, but in an annular space 11 around the cylinder, which forms the intake passage, thus giving cold air to the intake and a slight pressure. Any excess will go out the opening marked 12.

While I have used the words "electric motor" in describing the method of driving the small compressor, any other form of motive power can be used, and any other form also of suitable air-driven pump can be used, and exhaust from the pump may also be connected directly to the compressor cylinder so that the cylinder will receive the air at any pressure desired.

The practical advantages of a construction such as herein described are many. There are no levers or clutches or complicated mechanism for an inexperienced hand, like a watchman, to handle; if he wants to run the motor, all he has to do is to turn a switch. If the air pressure in the tank is abnormal and the water level is low, all he has to do is to open the valves 7—8 and the pump will start up automatically from the reserve air pressure in the tank, without any need for starting the motor or the compressor; and after turning on the switch which starts the motor, and opening the valves 7—8, the air pressure and the water level in the tank are quickly built up to the desired points by the combined action of the compressor and the reserve air pressure working on the pump.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A power set comprising in combination a suitable pump, a suitable air compressor

and a pressure tank, air connection between the compressor and tank, connections with both the compressor and the tank by which the pump can be run either from the compressor or from the tank, or both, and water connections between the pumping end of the pump and the tank.

2. A power set comprising a compressor, a motor to drive the compressor, a duplex direct-acting pump, an inclosed sprinkler tank, water connections between the pumping end of the pump and the tank, an air connection between the compressor and the tank, and a branch pipe leading from said last-named connections to the power end of the pump, by which the pump is run either from the compressor or from the tank, or both.

3. A power set comprising a compressor, a motor to drive the compressor, a duplex direct-acting pump, an inclosed sprinkler tank, water connections between the pumping end of the pump and the tank, an air connection between the compressor and the tank, a branch pipe leading from said last-named connections to the power end of the pump, by which the pump is run either from the compressor or from the tank, or both, a valve in said branch connections, and a valve in the air connections leading to the tank between said branch and the tank.

4. A power set comprising a compressor, a motor to drive the compressor, a duplex direct-acting pump, an inclosed sprinkler tank, water connections between the pumping end of the pump and the tank, an air connection between the compressor and the tank, a branch pipe leading from said last-named connections to the power end of the pump, by which the pump is run either from the compressor or from the tank, or both, and an exhaust pipe leading from the pump back into the inlet to the compressor.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD A. RIX.

Witnesses:

CHARLES A. PENFIELD,  
FREDERICK E. MAYNARD.