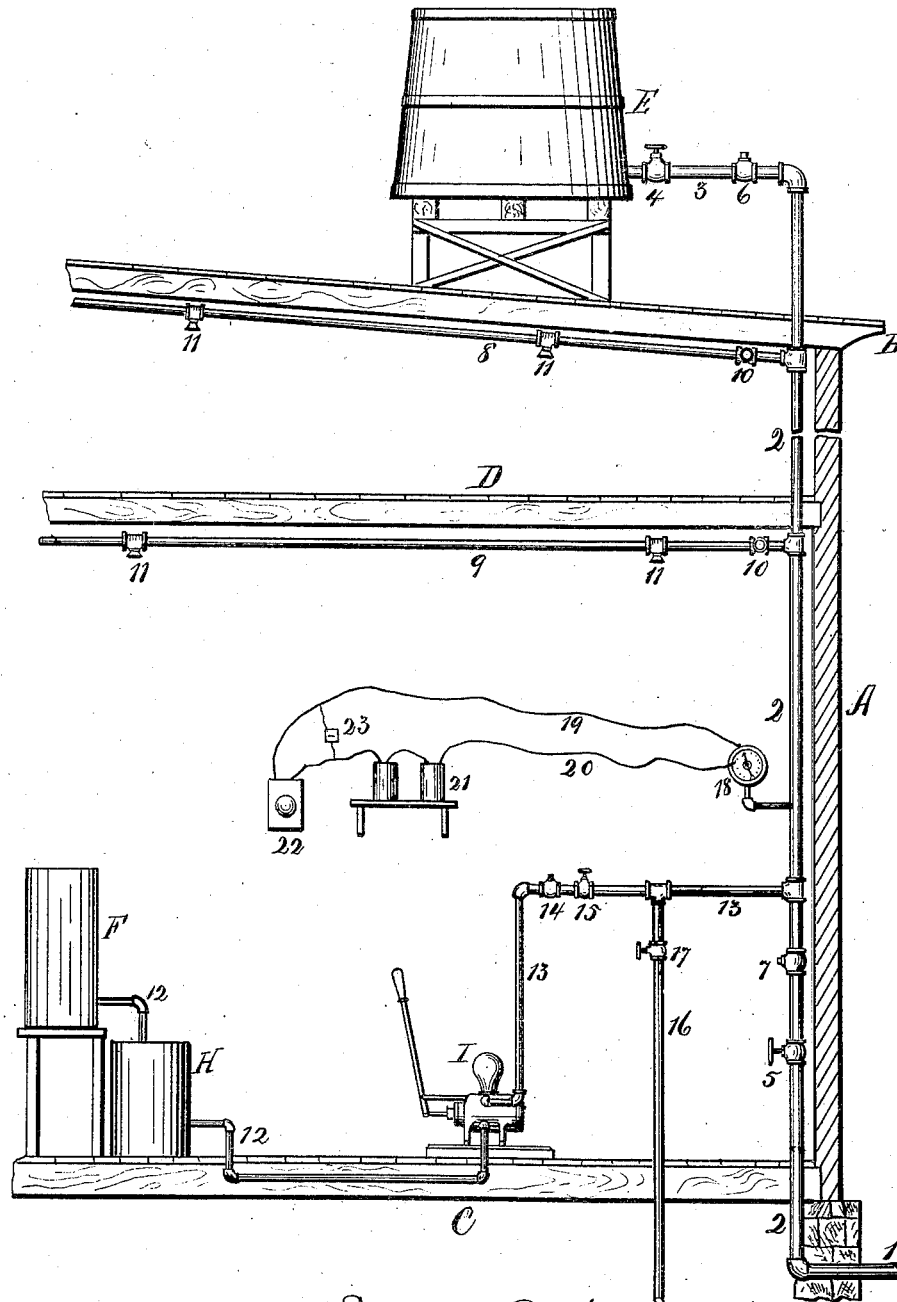


(No Model.)

E. P. WAGGONER.  
PIPING SYSTEM.

No. 417,798.

Patented Dec. 24, 1889.



Witnesses

*H. P. Denison*  
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# UNITED STATES PATENT OFFICE.

EDWARD P. WAGGONER, OF SYRACUSE, NEW YORK.

## PIPING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 417,798, dated December 24, 1889.

Application filed March 13, 1889. Serial No. 303,132. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD P. WAGGONER, of Syracuse, county of Onondaga, in the State of New York, a citizen of the United States, have invented certain new and useful Improvements in Piping Systems, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to systems for piping buildings for fire purposes adapted to use automatic sprinklers and other appliances under pressure.

The object of my invention is to furnish a simple compact system adapted to use water either from a water-main or from a tank on the roof, and also the filling of the pipes with a non-freezing chemical or other preparation under pressure.

My invention consists in the several novel features of construction and operation hereinafter described, and which are set forth in the claims annexed.

It is constructed as follows: A is a vertical wall of a building.

B is the roof, and C D floors thereof.

Upon the roof I show a tank E, connected to the water-main 1, connected by the vertical pipe 2 and branch 3. In this pipe I insert two stop-valves 4 and 5, 4 being nearer the tank and 5 nearer the first floor of the building, and 6 is a check-valve adjacent to the stop-valve 4. 7 is another check-valve adjacent to the stop-valve 5. To the stand-pipe 2 the sprinkler-pipes 8 and 9 are connected in any ordinary manner, and each is provided with a cut-off valve 10.

11 are the automatic sprinkler-heads used upon the pipings.

F is a mixing-tank, in which I mix up the chloride of sodium or other chemical solutions from the pipe 12, opening out of the tank above the bottom, to allow for settling of the chemicals, carrying the saturated solution into the storage-tank H, whence the pipe 12 conducts it to the force-pump I, and from this pipe 13 conducts it to the stand-pipe 2. In this pipe 13 I place a check-valve 14 and stop-valve 15, and to this pipe, between the stop-valve and stand-pipe 2, I connect the drip-pipe 16, provided with a stop-valve 17. This pipe is the drainage-pipe, through which I can draw off all the water in the piping system for

any purpose by shutting the stop-valves 4 and 5. When I have so drawn off the water from the piping, I close the valve 17 and open the valve 15. To fill the system under pressure, the valves 4 and 5 being closed, I then operate the pump and force the prepared liquid through the pipe 13 into the pipe 2, and thence into the pipes 8 9, filling them with the solution and forcing it into them until the pressure upon the gage 18, connected to the stand-pipe 2, indicates a pressure at least equal to twenty pounds per square inch above the pressure from the tank E or pipe 1 exerted upon the stand-pipe 2. The construction of this gage upon the valves 4 and 5 in the main supply-pipe will not be specifically here given, because I intend to make it the subject-matter of a subsequent application, so that I will simply say that the face is provided with an adjustable electrical contact-point, to which one of wires, as 19 or 20 in the circuit shown, is connected, the other wire being also connected to the arbor of the needle in the gage, so that when the needle is in contact with the contact-point the circuit is complete from the battery 21—one way on the gage and the other way on the bell 22—and from the bell to the gage, so that whenever from any cause the water-pressure in the stand-pipe 2 is reduced by leakage, by the opening of the sprinkler-head, &c., the removal of the needle to the contact-point closes the circuit and sounds an alarm upon the bell.

At 23 I show a switch by which I cut out the bell whenever desired—as, for instance, when I am filling the pipes with the solution, and also for testing the bell and battery.

It is operated as follows: Having prepared the non-freezing liquid in the tank or tanks, and the pipes through the building being empty and the valves 4 and 5 being closed and 15 opened, I operate the pump I, drawing the liquid from the tank and forcing it through the pipe 13 into the main pipe 2, and thence into the ceiling-pipes 8 9, filling them and continuing the pumping until the pressure on the gage 18 indicates a pressure of, say, twenty pounds per square inch greater than the pressure in the water-main 1. Then when the valve 5 is open the water from the main cannot pass upward into the piping against the increased pressure, nor can it open the check-

valve 7, and in like manner when the valve 4 is open the check-valve 6 will prevent the liquid from entering the tank E. After having obtained this pressure I close the valve

5 15. Then when the pressure, either from leakage or from the opening of an automatic sprinkler-head 11, is reduced the operation of the needle of the gage connected to the battery and bell will sound an alarm upon the

10 bell 22, and I then know that if a head is off there is a fire in the building, and if not there is a leakage in the pipes, and in case of leakage I restore the pressure by operating the pump. In case a sprinkler-head is open and

15 the valves 4 and 5 are opened, the water from the tank E or from the water-main will replace the non-freezing liquid in the pipes and operate to extinguish the fire, and in case the tank E becomes empty all the water will flow

20 from the water-main, the check-valve 6 preventing the flowing of water into the tank E. It will be observed that thus the stand-pipe, exterior to either or both check-valves, is normally filled with the non-freezing liquids,

25 which are separated from the fresh water by the check valve or valves, and that whenever a sprinkler is opened the check valve or valves will open to admit fresh water into the stand-pipe to replace the liquid discharged through

30 the sprinkler; and it will be further seen that by keeping the piping full of this liquid there is no danger of the pipes freezing up in the coldest weather, even in a building in which there is no heating apparatus.

35 What I claim as my invention is—

1. A piping system for fire purposes, comprising a main stand-pipe, branch pipes carrying automatic sprinklers, a tank upon the roof connected to the main stand-pipe, a storage-reservoir, and a pump connected to the

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reservoir and to the main stand-pipe, substantially as described.

2. A piping system for fire purposes, consisting of a main stand-pipe connected to a water-main, branch pipes carrying automatic sprinklers connected to said main, a stop-valve 5 in said main, a reservoir, and a pump connected to the reservoir and to the stand-pipe above the stop-valve, substantially as described.

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3. A piping system for fire purposes, comprising a stand-pipe connected at the lower end to the water-main, at the upper end to a tank on the roof, and provided with stop-valves 4 and 5 and check-valves 6 and 7, branch pipes carrying automatic sprinklers connected to the main pipe, a reservoir connected to a pump, a pump, and a pipe provided with a stop and check valve leading to the stand-pipe, substantially as described.

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4. A piping system for fire purposes, consisting of a main stand-pipe connected to a water-supply, branch pipes carrying automatic sprinklers connected thereto to the stand-pipe, a stop-valve 5 in the stand-pipe, a reservoir, and a pump connected to the reservoir and to the stand-pipe above the stop-valve, in combination with a pressure-gage connected to the stand-pipe above the stop-valve, a battery, an alarm-bell, a circuit connecting the gage and bell to the battery, and a switch to disconnect the bell from the circuit.

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In witness whereof I have hereunto set my hand this 7th day of February, 1889.

EDWARD P. WAGGONER.

In presence of—

H. P. DENISON,

F. T. DENISON.