(No Model.)

J. W. HILL.

WATER SERVICE APPARATUS.

No. 375,748. Patented Jan. 3, 1888.

Fig. 1.

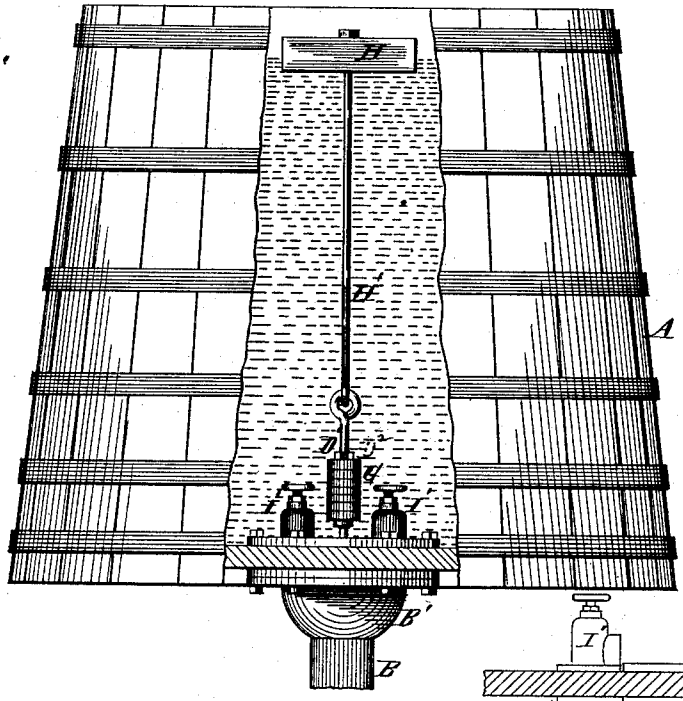


Fig. 3.

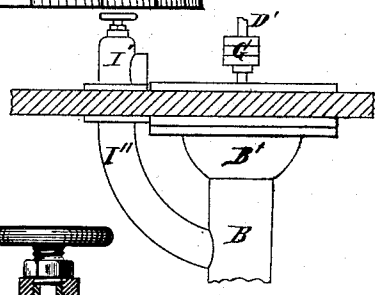
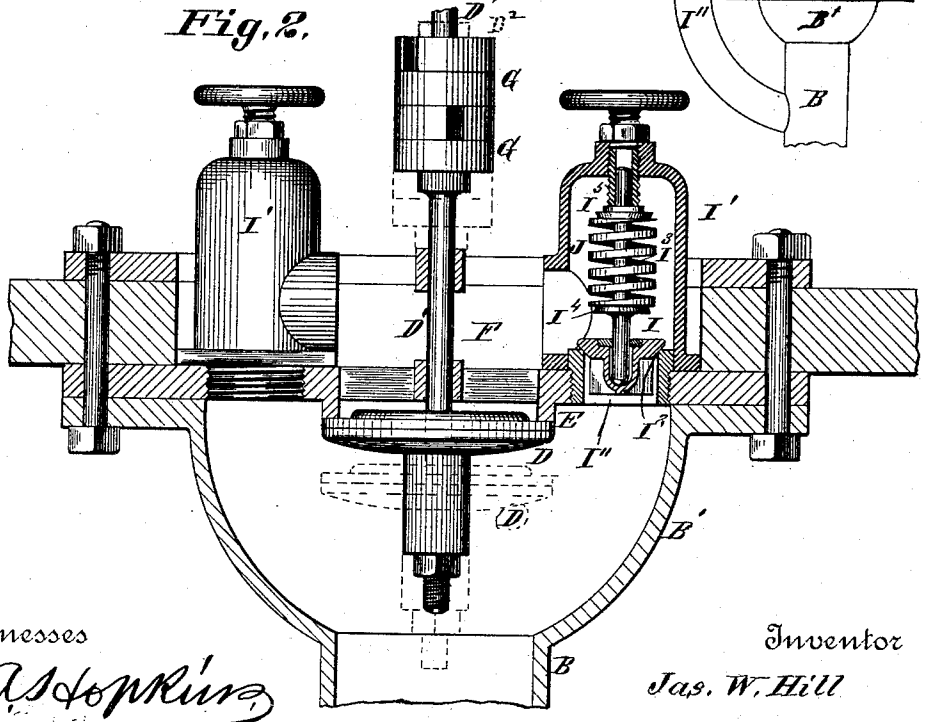


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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WATER-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 375,748, dated January 3, 1888.

Application filed October 2, 1886. Serial No. 215,163. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. HILL, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Water-Service Apparatuses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation of a water-reservoir, part broken away, with my improvement applied. Fig. 2 is a vertical section through one of the relief-valves, showing the main valve and the other relief-valve in side view, and showing the upper end of the pipe in section. Fig. 3 illustrates a modification.

My invention relates to water-services where the pump that forces the water to the reservoir is utilized to force the water through the fire-hose in times of fire. At such times a greater force is added than is required to force the water through the pipe to the reservoir—that is, it requires greater force to throw the water to the required distance from the hose.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents a reservoir, which may be of any size, and either formed of wood, stone, or other walls.

For the purpose of illustrating the invention I have shown a wooden reservoir of much smaller size than reservoirs of water-services generally are.

B represents the pipe through which the water is forced by means of a pump and engine to the reservoir, and the water also passes out through this pipe when the pump is not running. The pipe B is preferably provided with a bell-mouth, B′, as shown.

D represents a valve located at the mouth of the pipe B and closing upward.

E represents the seat of the valve, above which is an opening or port, F, through which the water passes when the valve D is opened, or in the position shown by dotted lines in Fig. 2. The normal position of the valve is open, and it is held open against the pressure of water when the pump is operating merely for the purpose of filling the reservoir by weights G, surrounding a stem, D′, of the valve. The weights are removable, like those of an ordinary scale, for instance, so that the required number to hold the valve open against the normal velocity of the water are applied. They would be held in place upon the stem by a nut, D^2, on the stem D′. The stem D′ is supported in a vertical position by means of spiders F′, placed in the port F, and having openings or perforations for embracing said stem, the valve being thereby held at all times in a plane parallel with the plane of its seat. Connected to the stem D′ by a rod, H′, is a float, H, the object of which is to close the valve D when a certain amount of water enters the reservoir, to prevent an overflow.

Now, in case of a fire and the speed of the engine is increased, as stated, the valve D is closed, owing to the increased velocity of the water in the water-pipe B, as shown in full lines, Fig. 2, the weights G not being sufficient to resist this additional velocity in the water-pipe. It will thus be seen that the water will be closed off from the reservoir and be forced by the pump through the pipes leading directly to the fire-plugs. (Not shown.) To prevent a breakage of the pipe B at such times, owing to the sudden change in the speed of the engine, which causes a rapid movement of the water in the pipe, which, if suddenly checked, is apt to cause a breakage of the pipe, I have located on each side of the valve D a relief-valve, I, located in a housing, I′, and closing downward upon a seat, I^2, formed around the port or passage I′, which forms a communication between the bell-mouth B′ of the pipe B and the reservoir. Each valve is held upon its seat by a spring, J, surrounding the stem I^3 of the valve, and located between a fixed collar, I^4, and a loose collar, I^5, on the stem. Now, when the increased velocity of the water commences and the valve D closes, the momentum of the water will cause these valves I to be opened, allowing the water for a short time to pass through the valves, which prevents breakage of the pipe, which would otherwise be caused by the sudden resistance of the water, due to the high velocity and the sudden closing of the valve D. As soon, however, as the momentum of the water ceases, the valve will be closed by the spring J, as there is not (outside of the momentum of the water) sufficient force or pressure in the water-pipes to

hold them open, and thus the entire force or power of the engine is applied to force the water to the fire-plugs, as is desired.

While I have shown two relief-valves, one alone might be sufficient to answer the purpose, and, if desired, more than two could be applied.

In Fig. 3 I have shown a slight modification, where the relief-valve is placed in a branch of the main water-pipe.

It will be understood that, should the engine stop running for any cause when the valve is closed, the instant the pressure in the pipe B is removed the valve D will open, owing to the weight of itself and parts with the added weight of the column of water in the reservoir, this weight being sufficient to sink the float H that is used, provided the reservoir is full, the float H not being sufficient to hold the valve closed when unassisted by a pressure of water beneath the valve caused by the action of the pump.

I claim as my invention—

1. The combination, with a reservoir having a single port for the ingress and egress of water and a pipe communicating with said port, of a valve for closing said port, forced against its seat by an increase in the pressure of the water in the supply-pipe, and a counter-balance for holding said valve from its seat while the pressure in said pipe is normal, substantially as set forth.

2. The combination, with a reservoir having a single port for the ingress and egress of water and a pipe communicating with said port, of a valve for closing said port, a float having connection with the valve, whereby it is drawn to its seat when the water reaches a given level in the reservoir, and a weight for holding said valve away from its seat while not acted upon by the float and while the pressure of the water in the supply-pipe is normal, but which permits said valve to be forced against its seat by an increase in the pressure of the water in said supply-pipe, substantially as set forth.

3. The combination, with a reservoir having a single port for the ingress and egress of water and a single pipe communicating therewith, of a valve for closing said port, a counter-balance for holding the valve away from its seat while the pressure of the water within the supply-pipe is normal, but which counter-balance permits said valve to be forced against its seat by an increase in the pressure in said pipe, and a relief-valve forced from its seat by a sudden increase in the pressure of the water within the said supply-pipe for preventing the latter from bursting, substantially as set forth.

4. The combination, with a reservoir having a port, F, and a single pipe communicating with said port, of a valve, D, for closing said port, forced against its seat by an increase in the pressure of the water in the pipe, a stem secured to said valve, means for maintaining said stem in vertical position, and weights supported by said stem for holding the valve from its seat while the pressure within the pipe is normal, substantially as set forth.

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Witnesses:
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