

(No Model.)

C. L. HORACK.

AUTOMATIC FIRE EXTINGUISHER.

No. 272,693.

Patented Feb. 20, 1883.

Fig. 1.

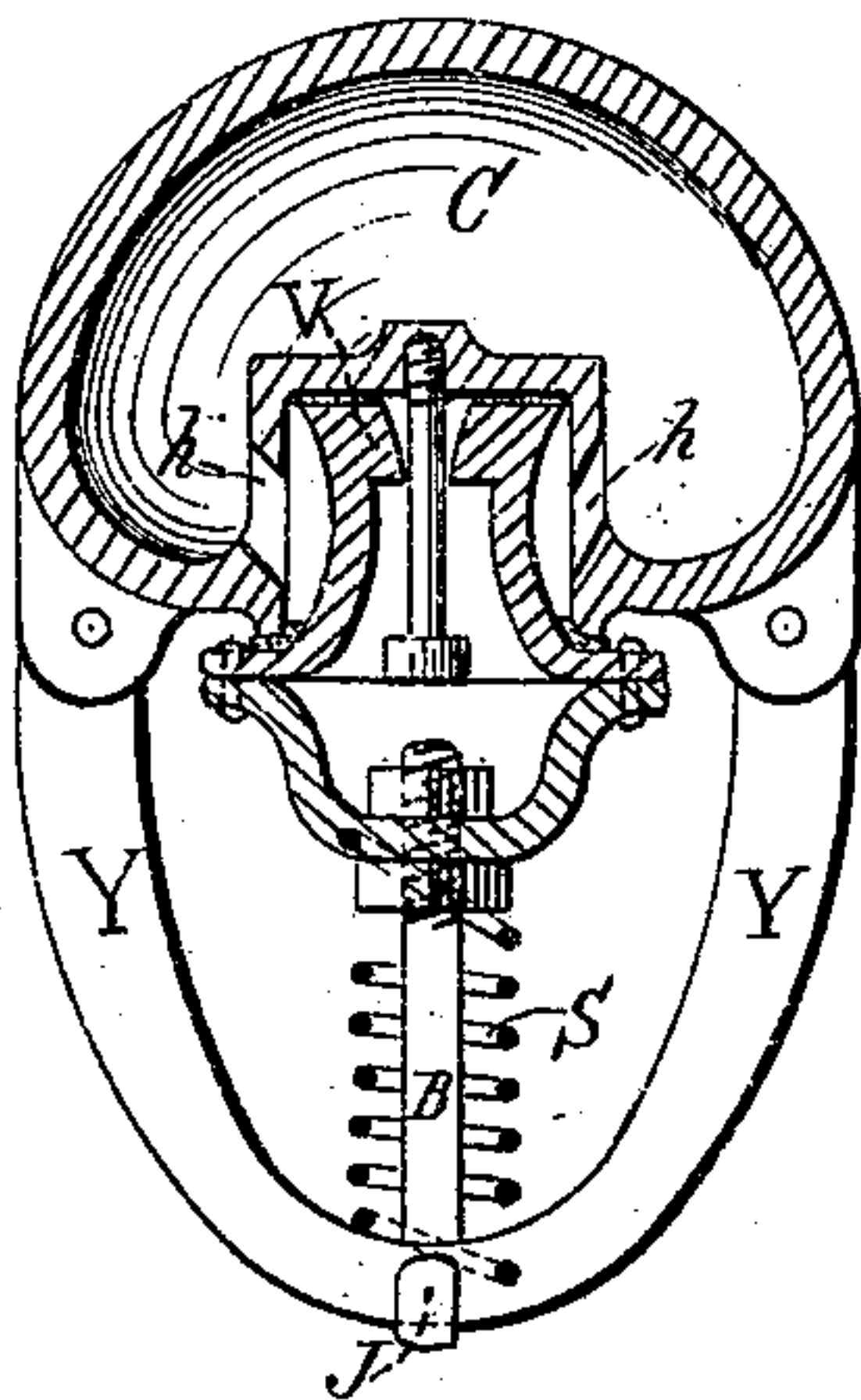
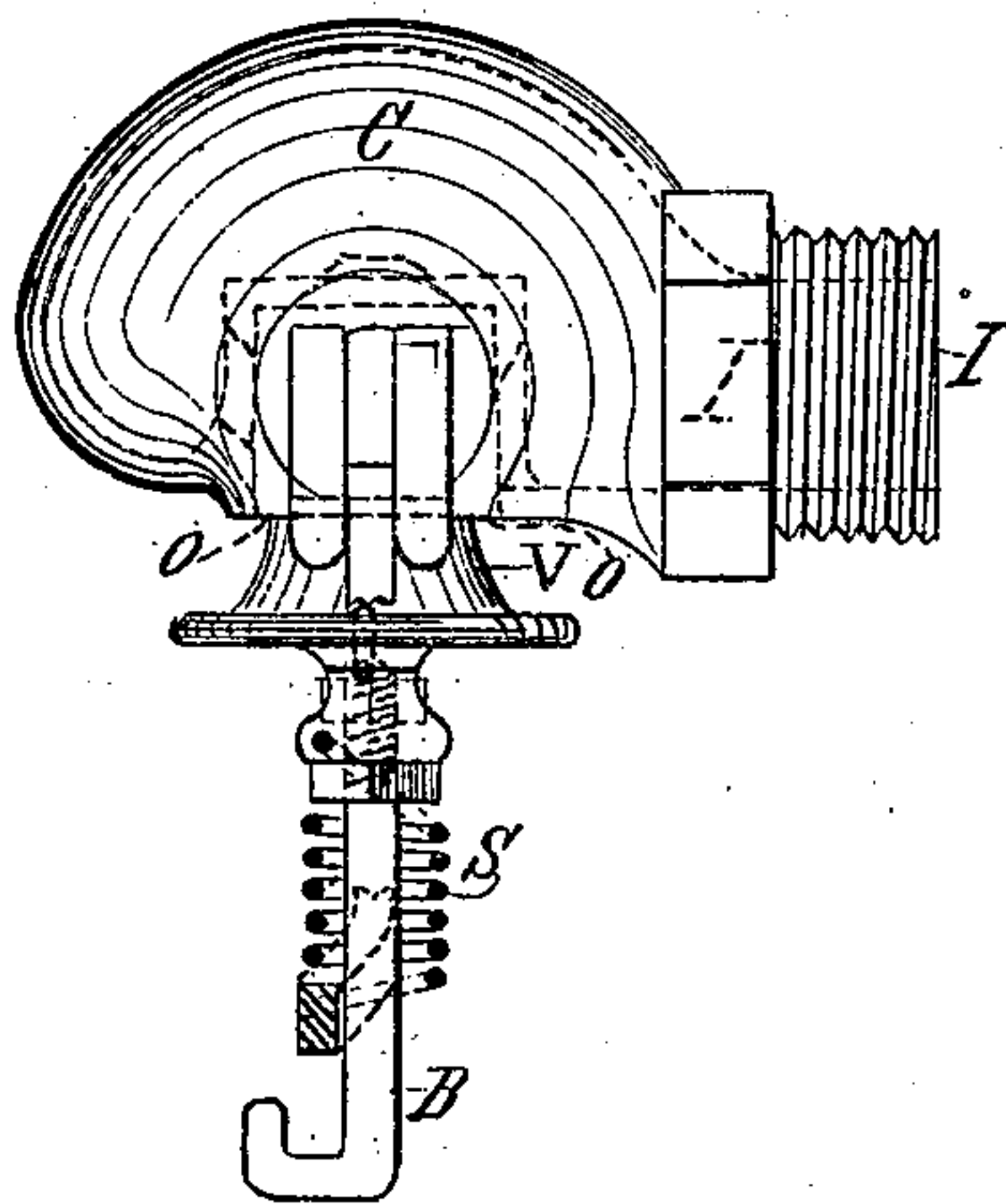


Fig. 2.



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AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 272,693, dated February 20, 1883.

Application filed August 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. HORACK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Automatic Fire-Extinguishers, of which the following is a specification.

The object of this invention is to construct an automatic fire-extinguisher in such a manner as to employ a valve for closing one or more outlets, and to arrange the same in such a manner that it may become released by the action of the heat of a fire, and to so construct and adjust said valve that the same be provided with two seating-surfaces, and that the pressure of the extinguishing-fluid be applied between the same in order to reduce the resulting pressure on said valve, tending to open it.

A further object of this invention is to provide, in combination with an automatic fire-extinguisher, as described, a deflector of a suitable form, as a means of distributing the extinguishing-fluid over a large area, thereby escaping the disadvantages attending the use of distributors with many small perforations, very generally used heretofore, and also to make it possible to draw out the extinguishing-fluid from the distributor and to empty said distributor without detaching or disturbing it, thereby allowing all sediment which may have accumulated at or near the valve-seat to be withdrawn therefrom, and also guarding against a body of water remaining in contact with the valve and the valve-seat, which during cold weather might freeze and temporarily strain the valve, and thereby cause leaking.

I attain these objects in the manner indicated on the drawings accompanying and forming part of this specification.

Figure 1 represents a vertical section of an automatic fire-extinguisher arranged according to my invention, and Fig. 2 a side view of the same device.

Similar letters refer to similar parts throughout the several views.

The sprinkling-cup C contains a recess with vertical or nearly vertical walls. The perforations *h h* penetrate said walls, and the valve V prevents the extinguishing-fluid from escaping until relieved by the heat of a fire. For this purpose said valve is held in the position

shown in Fig. 1 by means of fusible solder applied at the point J between a stem or brace, B, attached to or resting against the valve, and a yoke, Y, attached to the sprinkling cup or reservoir C. Screw-thread arrangement is used to force the valve to its seats. One of these seats, as shown in the drawings, is above the perforations *h h*, which discharge the extinguishing-fluid upon the valve when the same serves as a deflector. The other seat is below the same. While, instead of a series of such perforations, only one outlet, partly or fully encircling the deflector, might be used to partly balance said valve, a better distribution of the fluid can be obtained by using a series of perforations, as described above, because where a continuous surface without projections—such as teeth, corrugations, &c—is used to deflect a solid stream of water the fluid is apt to be distributed in the form of a sheet, while making said fluid pass first through a series of perforations, as done by me, cuts up said stream and causes the fluid to leave the deflector in the form of a spray, which is much better adapted to reach and extinguish a fire.

The sides of the valve V, which face the perforations *h h* before a fire takes place, and which afterward serve to deflect the extinguishing-fluid and to discharge it upon a fire, are shown to be constructed concave. This is done in order to leave a space between the walls of the reservoir containing the perforations *h h* and the valve until said valve has been removed from its seats, thereby guarding against sticking of the valve, and, further, in order to obtain a more perfect lateral as well as upward distribution of the extinguishing-fluid after the valve or deflector has assumed the position shown in Fig. 2.

S represents a spring, having one end connected with the valve V and the other with the yoke Y. Said spring is held in tension as long as the valve V serves to confine the extinguishing-fluid, as shown in Fig. 1. As soon as the heat of a fire has broken the soldered joint J said spring S will draw the valve from its seat and will allow the extinguishing-fluid to escape, the weight of the valve V and the pressure of the extinguishing-fluid contributing toward this result. The valve or deflector will then assume the position shown in Fig. 2.

Instead of the spring S, held in tension as described, a compressed spring, either inside of and surrounded by the valve V or one outside of said valve, might be used to remove the valve from its seat or seats, as shown in another application for a patent which I now have before the Patent Office.

It will be seen that the valve V, after the space between it and the perforated part of the distributor has once been filled by the extinguishing-fluid, will prevent any further amount of said fluid from passing through the perforations *h h* until the heat of a fire has relieved said valve and the same has left its seat or seats, thereby, also, opening the horizontal main outlet O below the perforations, through which all the fluid has then to pass in order to reach the deflector and to be distributed by the same.

While an automatic fire-extinguisher might be constructed according to my invention using a valve partly balanced by the extinguishing fluid for closing the outlet or outlets from the cup C, and using a separate deflector for further distributing said fluid, the method described above of making the valve V also act as a deflector materially simplifies the device.

Automatic fire-extinguishers using deflectors are generally attached to lines of pipes running close to the ceilings of buildings, and in the position shown in the drawings—viz., so arranged that the extinguishing-fluid, after it leaves the pipes through the discharge-nozzle C, has to take a downward course to reach the deflector, and is then distributed by the same sidewise and upward in order to protect the ceilings of the room, as well as the space below. Heretofore the inlet to the cup C, through which the fluid has to pass on its way from the pipes to the deflector, has been placed directly above the valve and the deflector, making the extinguishing-fluid descend from the system of piping in a vertical column until it reached the valve closing the outlet. As a consequence it has been impossible to entirely empty the cup C, as might become necessary in order to prevent the freezing of fluid in said cup in rooms not heated during cold weather. I overcome this difficulty by providing the side inlet, I, as represented in Fig. 2, the inside of it being shown in dotted lines, and by placing it low enough to make it possible to use it as an outlet for all the fluid in the cup C without changing the position of said valve or said cup C.

While in the absence of the side inlet or outlet I it might be desirable to be able to lower the valve V somewhat in order to empty the cup C without severing the soldered joint J, the existence of said side inlet makes it feasible to destroy the screw-thread after the valve has once been forced to its seat, or to otherwise permanently fix the valve V in its position until relieved by the heat of a fire, thereby guarding against accidents and leaking. Where the cup C and the valve V meet before

said valve has been relieved by the heat of a fire, suitable packing of lead or other soft metal, rubber, or any other suitable material would have to be provided to make the joints tight without making them stick.

As I describe and claim certain details of the valve V and of the methods employed to hold it in position in another application for a patent, I do not wish to do so here.

A valve partly balanced by the pressure of the extinguishing-fluid might be constructed so as to employ several soldered joints for confining the extinguishing-fluid and holding said valve in position. However, in that case it might happen that while one joint would unsolder sufficiently to allow some of the fluid to pass, another might be kept unyielding, and might thereby prevent the whole valve from moving, particularly owing to the cooling influence of the fluid. This difficulty I overcome by using only one joint entirely removed from contact with the fluid.

I claim as my invention and wish to secure by Letters Patent—

1. The combination, with a discharge-nozzle or distributor provided with an outlet or outlets, and recessed, as shown, of a plug shaped valve provided with receding walls, as shown, and with two seating-surfaces, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, substantially as set forth.

2. The combination, with a distributor provided with an outlet or outlets, of a plug-shaped valve provided with receding walls, as shown, and of a seal confining said valve in its position until said seal is broken by the heat of a fire, substantially as set forth.

3. The combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-surfaces, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, and a spring adapted to force the valve, after it has been released by the heat of a fire, into a position where it will serve as a deflector, substantially as set forth.

4. In an automatic fire-extinguisher, the combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-surfaces, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, and that said valve becomes a deflector after having been relieved by the heat of a fire, substantially as set forth.

5. In an automatic fire-extinguisher, the combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-surfaces, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, said valve being forced to its seats by a screw-thread arrange-

ment, and adapted, after it has been released by the heat of a fire, to serve as a deflector, substantially as set forth.

5 6. The combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-surfaces, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, said
10 valve being held in position by means of a single soldered joint, substantially as set forth.

15 7. The combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-surfaces, and a device for forcing said valve against its seats, the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, substantially as set forth.

20 8. The combination, with a discharge-nozzle or distributor provided with an outlet or outlets, of a valve provided with two seating-sur-

faces, and a connecting-piece for transmitting the pressure on said valve to a soldered joint entirely removed from contact with the water, 25 the construction being such that the pressure of the extinguishing-fluid is exerted upon the valve between its two seats, substantially as set forth.

9. In an automatic fire-extinguisher, a cas- 30 ing forming a nozzle or distributor, and provided with an outlet or outlets for discharging the water downward, and with an inlet, I, having its lowest point even with or below the discharge area or areas, combined with a valve 35 seated upon said casing and closing said outlet or outlets and adjusted to assume a downward motion upon being relieved by the heat of a fire, all substantially as and for the purposes specified.

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Witnesses:

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