

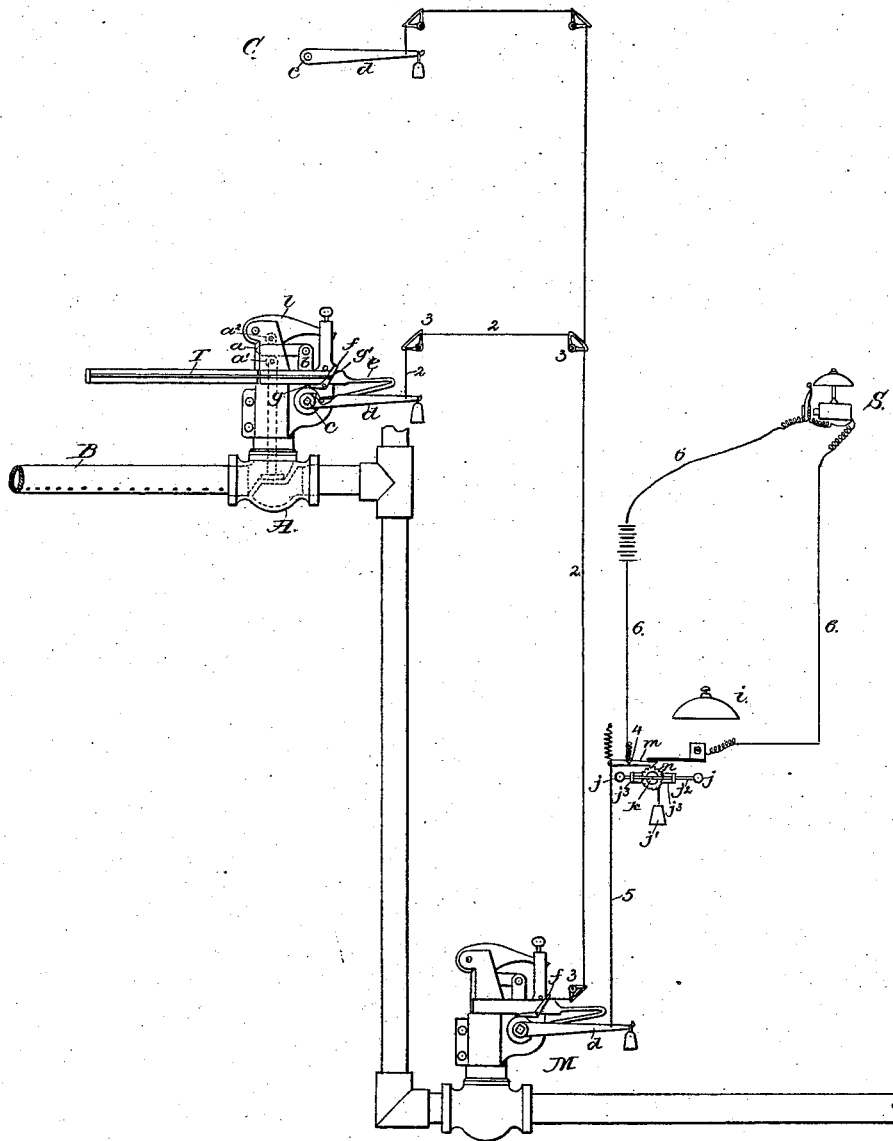
(No Model.)

D. C. STILLSON.

AUTOMATIC FIRE ALARM AND EXTINGUISHER.

No. 260,252.

Patented June 27, 1882.



Witnesses.

John F. C. Reinhardt

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC FIRE ALARM AND EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 260,252, dated June 27, 1882.

Application filed December 7, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL C. STILLSON, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Automatic Fire Alarms and Extinguishers, of which the following description, in connection with the accompanying drawing, is a specification.

My invention relates to an automatic fire extinguisher and alarm, and is shown as used in connection with apparatus patented to me January 4, 1881, to which reference may be had. In the said patent I have shown a water-valve controlling perforated distributing-pipes, and mechanism operated by the expansion of a metallic bar to permit the said valve to open when the said bar is sufficiently heated, as by an accidental fire. In my present invention, in addition to the valve located near the said expanding bar and operated directly thereby, I employ a main valve, which may be located at any suitable point beyond the action of frost, the said main valve having similar operating mechanism to that described in my former patent; but the tripping pawl or trigger by which it is released to permit the valve to open is mechanically connected with the other valves operated by the expansion of the bars in such manner that when one of the said valves is released it will release the main valve, thus permitting the water to enter the pipes and to be discharged from the section which is controlled by the valve which was released by the expanding bar. I also employ a mechanical and audible alarm, normally held inoperative by a detent so connected with the valve-operating mechanism that when any of the said valves are permitted to operate it will release the actuating mechanism of the said alarm, which is thus caused to be sounded. The said detent also forms a portion of a circuit-closer of one or more electrical alarms, which may be located at any desired point more or less remote from the building containing the fire-extinguishing apparatus.

The drawing illustrates a fire extinguishing and alarm apparatus constructed in accordance with this invention. The valve at A, which controls a certain section, B, of the pipes in a given portion of the building to be pro-

ected, is itself controlled by the expansion of the metal bar T, the same as in Letters Patent No. 236,378, granted to me January 4, 1881, the said valve being held to its seat by a wedge, *a*, interposed between a roller, *a'*, at the end of the valve-stem, and an abutment-roller, *a''*, mounted upon an adjustable lever, *l*. The said wedge *a* is pivoted to an arm, *b*, mounted on a rocker-shaft, *c*, provided with a horizontal actuating-arm, *d*, or with an actuating-spring, *e*, or both, tending to rotate the said shaft in such manner as to withdraw the wedge *a* from above the valve-stem and permit the valve to open. The said shaft is normally prevented from thus rotating by a detent pawl or trigger, *f*, engaging a stud, *g*, upon the said rock-shaft *c*, and provided with a projection, *g'*, which receives the end of the expanding bar T, so that when the latter is elongated by raising its temperature it will disengage the said pawl from the stud and permit the rock-shaft to rotate and open the valve.

It is preferable to have the water excluded from the system of pipes employed throughout large buildings, and to have the said pipes divided up in sections, each controlled by its own valve and expanding bar, as just described, so that only the section in which a conflagration is going on will be acted upon by the water distributed from the perforated pipes. For this purpose a main valve is employed, as shown at M, which controls the entire system of pipes leading to the valves at A C, and so on controlling different sections of distributing-pipes, it being operated in substantially the same manner as the one just described, except that its releasing pawl or trigger *f* is mechanically connected, as by a series of wires, 2, and bell-cranks 3, arranged in the same manner as for operating bells, with some portion of the actuating mechanism of each of the minor valves at A C, &c., herein shown as the arm *d* of the rock-shaft *c*.

In order that attention may be called as soon as a fire is started, I employ a mechanical alarm, located at any convenient point where it will be most likely to attract attention, as on the wall outside the building, the said alarm consisting in this instance of a gong, *i*, arranged to be struck by the hammers *j*, actu-

ated by any suitable mechanical force— such as that of a weight,  $j'$ , suspended from a cord wound upon the drum  $k$ —the stem  $j^2$  of the hammers being free to slide longitudinally in guides  $j^3$ , rotated by the said drum in such manner that one of the hammers  $j$  which is most remote from the center of rotation of the said drum will be retained there by centrifugal force until it has struck the bell, when the drum will be arrested for a moment, and the rod connecting the hammers will slide by gravity through the guide, bringing the other hammer into position to strike the bell in the further rotation of the said drum. The signal-motor, consisting of the said weight and drum, is normally held inactive by a detent, (shown as a hooked lever,)  $m$ , pivoted at 4, and engaging a projection, (shown as one of the series of ratchet-teeth,)  $n$ , upon the said drum. The end of the said detent-lever is connected mechanically, as by the wire 5 and bell-cranks, if necessary, with a portion of the actuating mechanism of the main valve at M, so that the moment the said valve is released the alarm is set in operation, and will continue so until the weight  $j'$  or other actuating-power is wholly run down or exhausted. The said detent-lever  $m$  also forms one portion of a circuit-closer of an electric circuit, 6, which may be employed to operate any usual form of electric alarm, S, at any desired point or points, the said detent-lever being brought by the same movement by which the mechanical alarm is released into contact with the co-operating portion of the circuit-closer and completing the electric circuit.

It is obvious that any form of mechanical

alarm may be employed, the one shown not forming any part of the present invention.

It is also obvious that the signal-controlling device may be operated by the minor valves, as at A and C, directly instead of indirectly, through the mechanism of the main valve, which latter is indirectly controlled by the rise in temperature of or action of heat upon the expanding bars T of the different minor valves.

I claim—

1. In an automatic fire-extinguishing apparatus, the combination of a valve and operating mechanism therefor automatically controlled by a rise in temperature, with a main valve and operating mechanism, and releasing device therefor mechanically connected with and controlled by the operating mechanism of the valve that is controlled directly by rise in temperature, whereby operation of the main valve is directly dependent on that of the other valve, substantially as and for the purpose described.

2. The valve and its operating mechanism, the alarm and its motor, and detent therefor, connected with the said valve-operating mechanism, combined with an electric circuit and alarm therein, including the said detent as a circuit-closer, whereby the said electric alarm is set in operation simultaneously with the release of the mechanical alarm-motor, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL C. STILLSON.

Witnesses:

JOS. P. LIVERMORE,  
BERNICE J. NOYES.