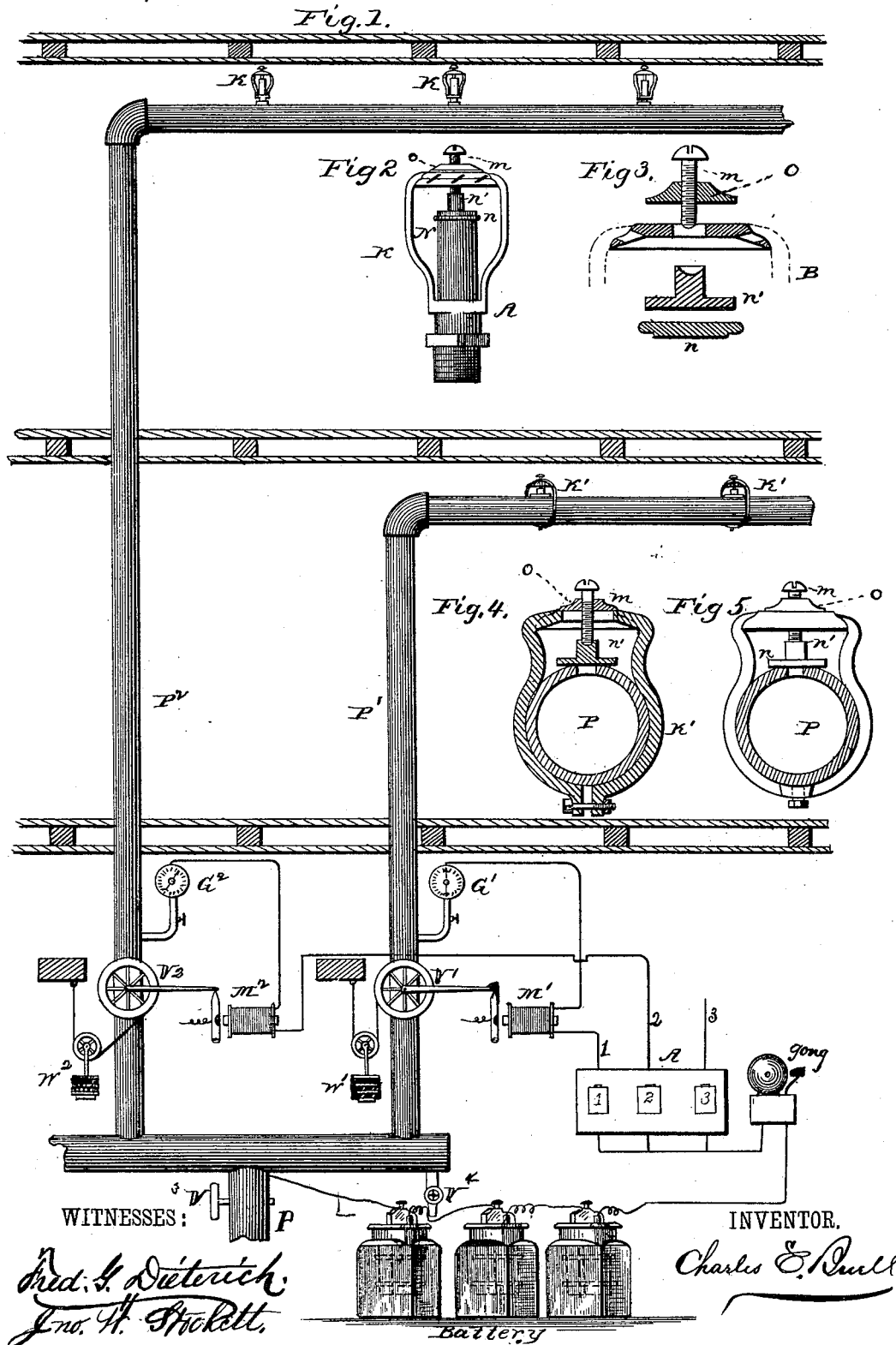


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No. 266,579.

Patented Oct. 24, 1882.

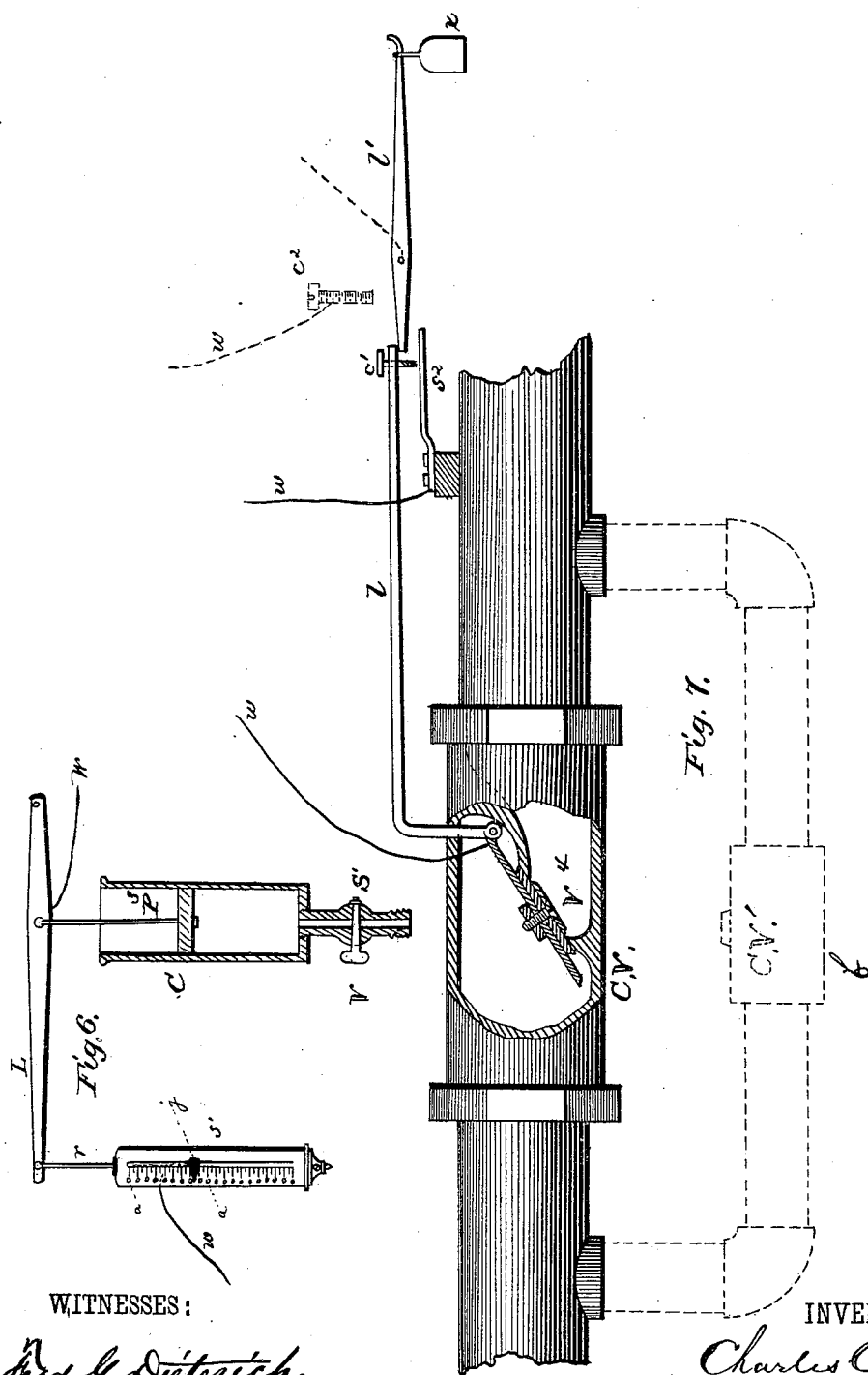


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Patented Oct. 24, 1882.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES E. BUELL, OF NEW HAVEN, CONNECTICUT.

## AUTOMATIC FIRE EXTINGUISHER AND ALARM.

SPECIFICATION forming part of Letters Patent No. 266,579, dated October 24, 1882.

Application filed September 22, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. BUELL, of the city and county of New Haven, State of Connecticut, have invented Improvements in Automatic Fire Extinguishers and Alarms, of which the following is a specification.

My invention consists primarily of the combination, with pipes arranged to distribute water through a building, having a series of valves or sprinklers which will open by heat, of automatic devices for indicating the pressure of water in said pipes and for turning on a water-supply and sounding an alarm when a decrease of the pressure in the pipes occurs, substantially as hereinafter described.

My invention further consists in the combination, with a water-pipe of a fire-extinguisher system, of a valve covering an opening in said pipe, said valve consisting of a lead washer held to cover the exterior of said opening, and a screw, the said screw passing through a nut that is secured to a support, so as to be out of contact with said pipe, and to become detached from said support when heated, and to allow said valve to be forced from the opening by water in said pipe, the whole arranged and operating substantially as and for the purpose hereinafter described.

My invention further consists in certain novel combinations and sub-combinations, as will be hereinafter described, and pointed out in the claims.

Figure 1 is a view in elevation of a fire extinguisher and alarm system arranged according to my invention. Figs. 2, 3, 4, and 5 represent sprinklers and parts of the same made in accordance with my invention. Figs. 6 and 7 are views in cross-section of devices which respond to variations of pressure in the pipes.

P represents a vertical main supply-pipe, with branch pipes P' P<sup>2</sup>, leading to the ceiling of each story of a building, each branch being provided with a series of sprinklers, K K K' K', which open by heat. The main pipe P is provided with the cocks V<sup>3</sup> and V<sup>4</sup> for controlling the water-supply and emptying the system of pipes when desired, respectively. The pipes P' and P<sup>2</sup> are each provided with the compression-cocks V' V<sup>2</sup>, adapted to be turned to open by their respective weights w' w<sup>2</sup>, and to be retained from opening by the interlocking of their parts with

the armature-levers of the electro-magnets m' m<sup>2</sup>. The electro-magnets are included in an electric circuit, together with the indicating and alarm apparatus, the said circuit being made operative by the action of the gages G' G<sup>2</sup>, which indicate the pressure in the pipes and respond to a decrease of the pressure.

In Fig. 2 is shown a form of sprinkler, K, consisting of a nozzle, N, held closed by the washer, of lead or other suitable material, n, and plate n', secured by the screw m, so as to be adjustable. The nut o, through which the screw m passes, is secured to the top of the support, which is shown as a slitted plate, to serve in spreading the water discharged from the uncovered opening. The several parts above described are shown in cross-section detached from the nozzle in Fig. 3.

The preferred form of sprinkler is shown in Figs. 4 and 5, and consists of a plate held to cover an orifice in the pipe by the screw m, nut and support, or clamp, without the use of the nozzle N, as will be readily understood. As shown, the device for closing the outlet of the distributor may be made in two pieces, or in a single piece, as desired. I consider this form of sprinkler to possess many advantages. It is easily placed on the pipes, and is secure against leakage, while it is easily removed by heat and certain and efficient in its operation. It avoids the employment of T's and elbows and the labor of their fitting in constructing a system. Besides, it avoids leakage about the joints, which are necessary when such fittings are required.

Fig. 6 represents a pressure-gage consisting of the piston P<sup>3</sup> in a cylinder, C, provided with the stem S' for connecting it to a pipe, with cock V for controlling the connection between the interior of the pipe and said cylinder. The piston-rod acts to raise the lever L, a weight or spring being used to retract it. A scale is shown at S', the indicator j and scale-plate being adapted to control an electric circuit at any desired pressure over wires w w, lever L, rod r, and contact-pin inserted in the holes a a, or either of them, to come in contact with the projection j.

Fig. 7 represents a check-valve of well-known construction, which may be used instead of the pressure-gages shown. A rigidly-attached

lever, *l*, is provided with an adjustable contact-screw, adapted to come in contact with the spring-electrode *s*<sup>2</sup> when valve *V*<sup>4</sup> is raised from its seat. Wires *w w* can thus be closed  
5 over spring *s*<sup>2</sup> and lever *l*.

A branch, *b*, in dotted lines, can be carried around the valve *C V* and be provided with a diaphragm or easily-moved check-valve at *C V*, of smaller dimensions, to take up the water-hammer.  
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A lever, *l'*, with weight *x*, can be used to hold the valve *V*<sup>4</sup> tightly on its seat and be withdrawn from obstructing the action of said valve after a predetermined movement of the  
15 valve. Lever *l'* may serve to control an electric circuit. (Shown in dotted lines, with the screw *C*<sup>2</sup> also dotted.)

The operation of the system and parts is as follows: The valves or sprinklers *K K K' K'* being closed, the pipes *P' P*<sup>2</sup> are air and water tight. The cocks *V' V*<sup>2</sup> and the pressure-gages *G' G*<sup>2</sup> being opened to receive the pressure from main *P*, the cock *V*<sup>3</sup> is opened. When the pressure in pipes *P' P*<sup>2</sup> is established cocks  
25 *V' V*<sup>2</sup> are closed and arranged to be opened by the action of the magnets *m' m*<sup>2</sup>, or either, as the case may be, the wires 1 and 2 being arranged to be closed by a predetermined movement of the pressure-gages, due to a decrease  
30 of pressure in the pipes, or either of them, as would be the case if the valves *K K K' K'*, or either of them, were opened or a leak occurs. The closing of either of said circuits turns the water from the main *P* into the respective  
35 pipe and announces the fact on the electric gong, and indicates where the alarm originates on the annunciator *A*.

A tank of water or carbonic-acid gas may be substituted for the water-supply shown.

40 What I claim is—

1. The combination, with pipes arranged to conduct water through a building and provided with valves which open by heat, of an electric circuit and automatic devices adapted  
45 to indicate the pressure in said pipes, and to make operative said electric circuit when the pressure in said pipes, or either of them, falls below a predetermined degree, substantially as set forth.

2. The combination, with a distributor adapted for fire-extinguishing purposes, of a plate closing the outlet thereof, a support having a nut secured thereto by easily-fusible solder, and a screw passing through said nut and adapted to secure said plate over the outlet of the distributor, substantially as and for the purpose set forth.  
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3. The combination, with the distributor and the support, of the nut *o*, screw *m*, and plates  
60 *n n*.

4. The combination, with a distributor adapted for fire-extinguishing purposes, of a clamp or support which clasps the distributor, and a device for closing the outlet of the distributor, the said device being held in position by being  
65 secured to the clamp or support by an easily-fusible alloy, substantially as described.

5. The combination, with the distributing-pipe of a fire-extinguishing system provided with an opening for the discharge of the extinguishing-fluid, of a plate closing the same, a clamp or support having a nut secured thereto by an easily-fusible alloy, and a screw passing through said nut and adapted to secure  
70 said plate over the opening in the pipe, substantially as and for the purpose set forth.

6. The combination, with the distributing-pipe, of a device for closing the opening therein, a clamp which clasps said pipe, and which is provided with a nut secured thereto by  
80 easily-fusible alloy, and a screw which secures said device over the opening in the pipe, substantially as described.

7. A distributing-pipe of a fire-extinguishing system, provided with openings for the  
85 discharge of the extinguishing-fluid, combined with devices for closing said openings, supports having nuts secured thereto by easily-fusible alloy, and screws passing through said nuts and holding said closing devices over the openings in the pipe, substantially as set forth.  
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CHARLES E. BUELL.

Witnesses:

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GEO. M. LOCKWOOD.