

(No Model.)

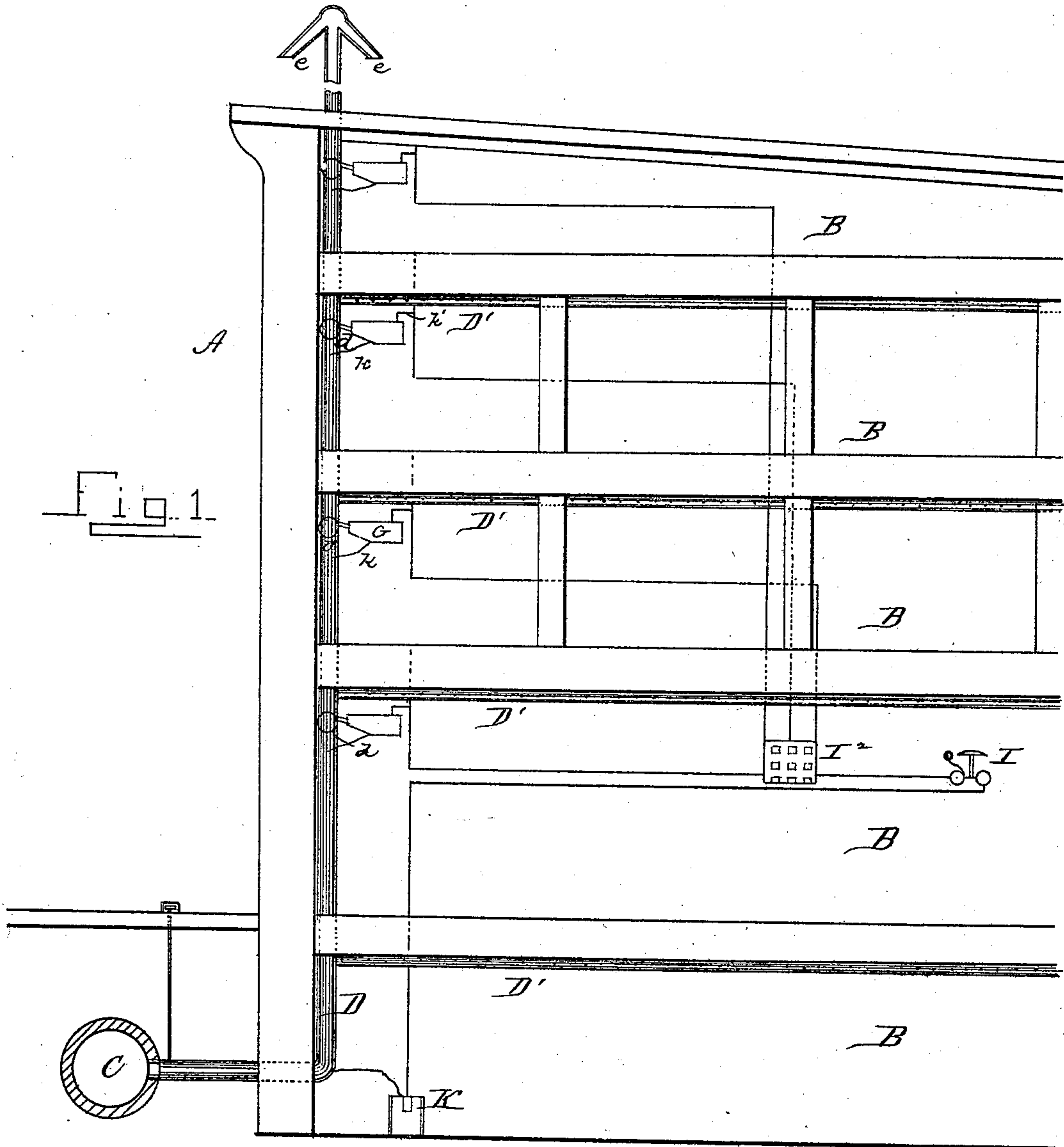
2 Sheets—Sheet 1.

C. ARBOGAST & J. W. KUNZLER.

SYSTEM AND APPARATUS FOR EXTINGUISHING FIRES.

No. 396,385.

Patented Jan. 22, 1889.



WITNESSES:

*H. C. Over*  
*A. B. Blackwood*

*Charles Arbogast*  
*John W. Kunzler*

INVENTOR S.

BY *Conroy Bros*

ATTORNEYS.

(No Model.)

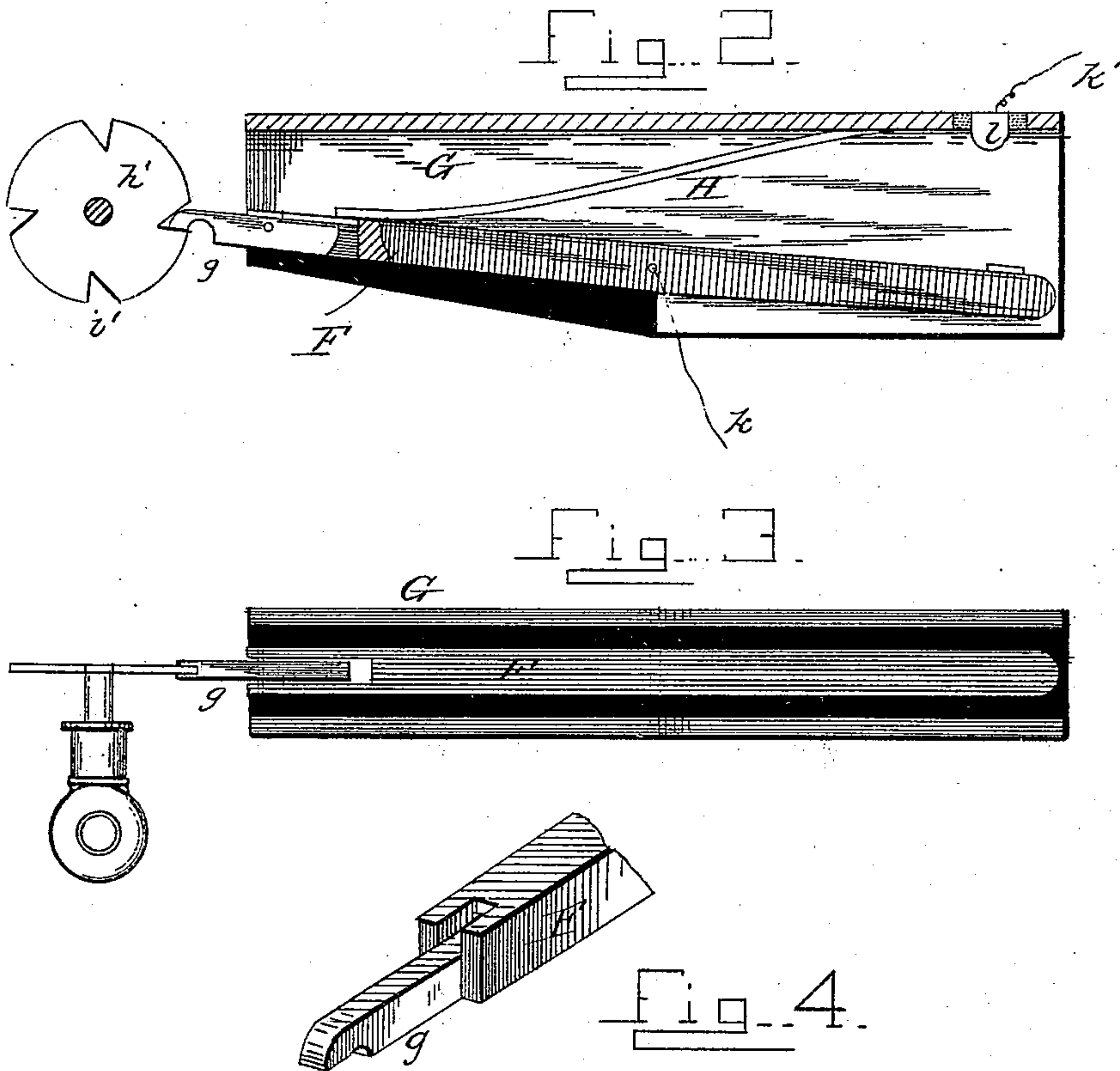
2 Sheets—Sheet 2.

C. ARBOGAST & J. W. KUNZLER.

SYSTEM AND APPARATUS FOR EXTINGUISHING FIRES.

No. 396,385.

Patented Jan. 22, 1889.



Charles Arbogast  
John W. Kunzler

WITNESSES:

H. C. Evert  
A. B. Blackwood

INVENTORS

BY *Connelly Bros*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

CHARLES ARBOGAST AND JOHN W. KUNZLER, OF PITTSBURG, PENN-  
SYLVANIA.

## SYSTEM AND APPARATUS FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 396,385, dated January 22, 1889.

Application filed January 30, 1888. Serial No. 262,462. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES ARBOGAST and JOHN W. KUNZLER, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Systems and Apparatus for Extinguishing Fires; and we do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention has relation to systems and appliances for the automatic extinguishment of fires in houses and other buildings, and has for its object the provision of novel means whereby when a fire occurs in any part of a building the heat generated will cause to be put in operation certain mechanism which will release a spring-operated valve or valves in a system of perforated water-distributing pipes communicating with the main supply, and so arranged that an indefinite number of jets may be thrown upon the flames and the spray or distribution confined to the exact floor or locality upon which the fire occurs.

Our invention consists in the novel construction and combination of devices, as hereinafter described and claimed.

In the accompanying drawings we have shown and shall hereinafter describe a special system of water-distributing pipes which we prefer using in conjunction with the automatic alarm and indicator, without, however, limiting ourselves to the employment of any particular system of distribution.

In the drawings, Figure 1 is a vertical longitudinal section of a building several stories in height, within which is arranged our improvements, and which, for better illustration, is represented as having the lower or first floor one large continuous room and the upper floors divided into smaller rooms or chambers. Fig. 2 is a vertical longitudinal section of the circuit-closer and automatic valve releaser or opener. Fig. 3 is a bottom side view of the same. Fig. 4 is a detail view.

A designates the building in Fig. 1 of the drawings, and B B B B the several floors or stories.

C designates the street water-main, and D

a supply-pipe leading therefrom to the top of and above the roof of the building, with horizontal branch pipes D' D' D' D' leading therefrom through each compartment or story directly below the ceiling. Each branch pipe is formed with a line of perforations, from which the water may escape in fine streams and be distributed over a large area.

Upon each story the supply-pipe D' is provided with a cock, *d*, at or near the junction of the branch, so that the supply of water may be directed to one or any number of stories or floors and confined to those in which the fire occurs, or which are in immediate proximity and danger.

The supply-pipe D above the roof is provided with a spraying apparatus, consisting of a series of downwardly and outwardly inclined branches, *e e*, so as to admit of sprinkling of water upon the same. This apparatus or nozzle is rounded off at its top, so as to distribute the water from its branches uniformly. We call particular attention to this device, for it may be detached and a hose attached in its place, so as to directly convey the stream to the fire in case it is in one of the adjoining buildings.

Usually all the valves in the system are closed. In the event of a fire occurring in any part of the building—say the second or third floor—the valves at the junction of the branch pipes leading thereto are opened and the water allowed to flow into the branches, from which it escapes in the form of thin streams or jets, and is thereby confined to the floor upon which the fire occurs. Should the fire spread and other floors become endangered, other valves may be opened. Comparatively little water is employed in this system to extinguish a fire. There is no delay in immediately meeting the danger, and all unnecessary waste by water is avoided. The automatic distribution of water is effected by the mechanism shown in detail in Figs. 2 and 3 and in position in Fig. 1. This mechanism comprises a lever, F, pivotally attached to the side walls of a casing, G, which is in the form of an oblong box or casing having its ends and lower side open for the reception or application of a compound or material, to be hereinafter specified, which will melt or dis-



integrate under the influence of heat and allow the lever to drop. Above the lever is arranged a spring, H, which tends to press the forward end of the lever downward. The lever is, however, normally held in check or elevated by the compound lodged below it, and can only fall when the latter melts and releases it. To the forward end of the lever is pivotally attached a dog, g, which, when the lever is raised and restrained, lies horizontally, and is in engagement with a disk or wheel, h', said disk or wheel being formed with a notch or notches, i', to receive the end of the dog. The valve is turned when released by a suitable spring, and is therefore opened automatically. The lever is connected to a wire, k, included in circuit with a suitable electric generator, K, while another wire, k', leads from said battery to an insulated contact-stud, l, secured in the upper and rear part of the casing. Upon and in the same circuit is arranged an electro-magnetic gong, I, and a suitable drop-indicator, I<sup>2</sup>, located at any suitable points within the building.

The indicator-drops locate the portion of the building wherein the fire occurs, the circuits being so arranged, as shown in Fig. 1, that when several circuit-closers are in the building at different points each will lead to its own special drop-magnet.

The compound employed for packing the lower portion of the casing may be composed of any suitable ingredients, forming a plastic mass, which will harden after being placed in position, and will melt or soften under an increase of temperature to, say, about 120° Fahrenheit.

While not limiting ourselves to any particular compound or chemical, we suggest as available a compound consisting of cocoa-butter, one part; glue, six parts; white wax, three parts. This compound, when of proper consistency, is placed over the lower side of the casing, to which it adheres, the lever being first raised to a horizontal position and the dog brought into engagement with the disk or wheel on the valve-stem. When the lever is in this position, the electric circuit is open.

Now, when a fire takes place in a building

and the temperature rises to a sufficient degree to melt the compound in the casing, the latter drops off and the lever is pressed down by the spring. The dog is thus thrown out of engagement with the valve-stem and the latter allowed to turn under the force of its spring. The water is thereby admitted into the distributing-pipes occupying or running through the compartment in which the fire has started and is sprayed upon the latter. At the same time and by the descent of the lever the electric circuit is closed through the indicator and alarm and the latter sounded, while the drop of the indicator shows in what part of the building the fire occurred.

Having described our invention, we claim—

1. In a fire alarm and extinguisher, the combination, with the water-supply pipes of an extinguishing system and a series of spring-actuated cocks controlling the same, of a notched wheel or disk connected to said cocks or valves, a pivoted spring-lever adapted to engage with said wheels, and a fusible plug normally restraining said levers and preventing the movement of said cocks, substantially as described.

2. In a fire-extinguishing system comprising a water-supply pipe leading to the interior of a building and having one or more branch distributing-pipes, a spring-actuated or automatic cock or valve connected to said supply-pipe, a notched disk secured to the stem of said valve, a casing containing a pivoted lever engaging with said disk, a spring which presses upon said lever, and a fusible plug upon which said lever normally bears, all the parts being so arranged that when said plug is fused the lever will be pressed downward and out of engagement with the valve-stem, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 6th day of January, 1888.

CHARLES ARBOGAST.  
JOHN W. KUNZLER.

Witnesses:

THOS. A. CONNOLLY,  
H. C. EVERT.