

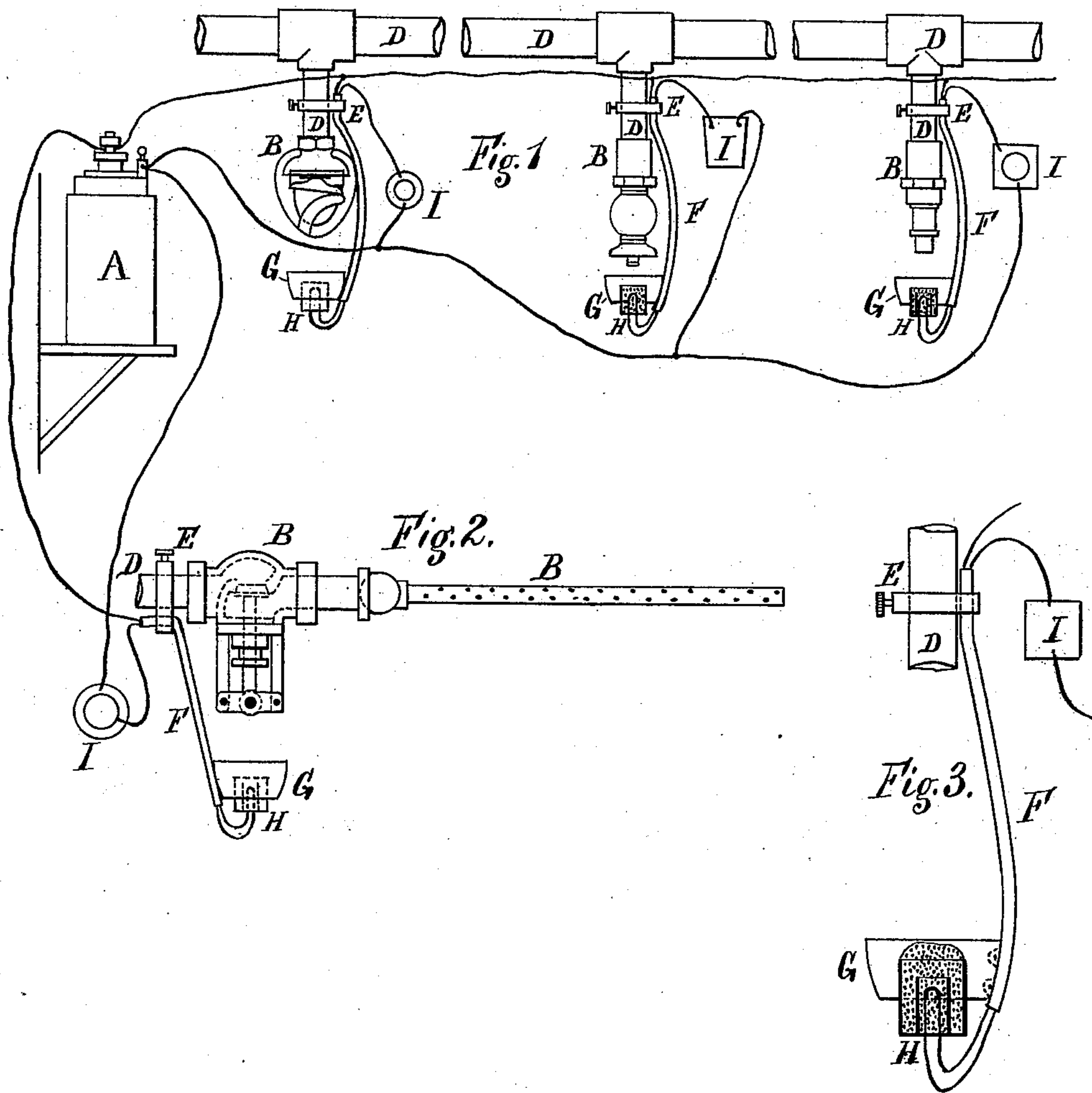
(No Model.)

E. T. COPELAND.

AUTOMATIC FIRE EXTINGUISHING APPARATUS.

No. 358,336.

Patented Feb. 22, 1887.



WITNESSES:-

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# UNITED STATES PATENT OFFICE.

EDWIN T. COPELAND, OF BROOKLYN, NEW YORK.

## AUTOMATIC FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 358,336, dated February 22, 1887.

Application filed May 12, 1886. Serial No. 201,919. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN T. COPELAND, of Brooklyn, Kings county, in the State of New York, have invented certain new and useful Improvements in Automatic Fire-Extinguishing Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

My invention specially relates to that class of apparatus employed in connection with lines of piping located and attached overhead in any apartment or in the several rooms or floors of a building, the same being provided with sprinklers for showering a room or special locality in case a fire breaks out. These sprinklers are supplied with sealed valves, sealed by means of a solder the melting point of which is at quite a low degree of temperature. In consequence of this low temperature it often happens that a valve opens when there is no fire; also, in consequence of the heat-absorbing ability of the surrounding portions of the sprinklers, the heat does not reach the solder and act upon it as promptly as it should. The solder is intended to melt at once through the effects or influence of heat of a higher temperature than ordinary, either by direct flame contact or by radiation. In the case of radiation, a greater portion of the heat is absorbed by the surrounding objects or portions of the sprinkler, the valves, pipes, and contained water taking up their share of the heat before it can act successfully upon the solder; hence the necessity for a positive, effective, and local application of heat to the solder or seal, so that it shall at once melt and release the sprinkler-valve.

The object of my invention is to overcome the objections already mentioned and to bring about a positive and instantaneous combustion and flame contact upon the solder or seal, and so melt it without delay. For such purpose I use a battery and develop electrical incandescence within a highly-inflammable composition or material located immediately beneath or within easy flame reach of the solder or seal of the sprinkler. By such means a sudden heat is developed to act directly upon the solder and melt it, releasing the valve of the sprinkler and opening the water-supply, ac-

cording to the method of showering apparatus, when a certain predetermined temperature acts upon the thermostat.

Where it is preferable or desirable, the thermostat may be operated to act upon a general supply-valve, admitting water to a series of sprinklers or sprinkler-pipes.

In the drawings, Figure 1 represents a method embodying my invention, in which A designates a battery for generating an electric current. B designates a series of one or more sprinklers of any variety of construction. G designates a small cup or receptacle for containing highly-inflammable material, located directly beneath each sprinkler, to melt the sealing-solder at once on combustion taking place. The portion containing the fuse may point at an angle or in any direction to act promptly upon the solder. The wires for electrical purposes are connected, after the usual manner, to form a circuit through and to the several cups of combustible material.

Fig. 2 represents a method of applying the system and operating upon a valve feeding a series of sprinklers or sprinkler-pipes. As represented, the wires pass from the battery to and through the thermostat, thence through the combustible material in the cups, and thence to the battery, whereby a small particle of carbon, platinum, or like material is brought to an incandescent heat and sets fire to the combustible. As soon as sufficient heat is generated to act upon the thermostat the electric current acts upon the combustible. These thermostats are scattered throughout the buildings and floors where fire is most likely to break out.

Electric connections have been already used for alarm purposes in case of fire; but in no case have they been used as a means of direct heat effect upon the sprinklers or the valves furnishing the water-supply itself. Automatic sprinklers have been provided with combustible materials suspended in close proximity to the seal of fusible metal or solder, whereby through the burning of the combustible the solder is melted, the valve released, and the water freely discharged. In all such cases special fuses, radiation, or effects communicated direct from the fire itself are relied upon



to operate the sprinklers. No electricity is brought into play for the purpose. In my invention, however, reliance is specially placed upon an electric thermostat and an electric current due to the sensitive action of such thermostat consequent upon any rise in temperature, the specific sensitiveness of the thermostat being the reliable feature depended upon for the hasty and efficient firing of the combustible material and the melting of the seal upon the sprinkler or supply-valve.

Fig. 3 represents an enlarged view of method of supporting the combustion-cup and the connecting of the wires. Any efficient method of support for combustion-cup may be adopted, as also for carrying the wires. In the figures a ring is fastened to the water-pipe D. This ring E supports the pipe F, through which the wires pass to the cup. The cup G has the fuse-box H fixed within the cup, so that no overflow of burning material will drop out of the cup. The thermostat I is connected in the usual manner.

Similar letters of reference designate like parts in all the figures.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic fire-extinguishing apparatus, the combination of a thermostat developing electrical communication through a

slight increase of temperature, a fuse of combustible material fired by a conductor heated or rendered incandescent by the current flowing through the circuit closed by the thermostat, a water-supply valve held closed by solder, and a receptacle for containing the combustible material located within heat-reaching distance of the water-supply valve, whereby the solder holding the valve closed is melted and the valve opened, substantially as and for the purposes specified.

2. In an automatic fire-extinguishing system, the combination of one or more thermostats developing electrical communication through a slight increase of temperature, a series of automatic water-supply valves, and a suspended bowl or receptacle hanging within heat-reaching distance of each valve and containing combustible material adapted to ignite instantly by a conductor heated or rendered incandescent by an electric current flowing through the circuit closed by the thermostat, whereby the solder holding the valves closed is melted and the system caused to operate, substantially as and for the purposes specified.

EDWIN T. COPELAND.

Witnesses:

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D. P. DAVIS.