No. 676,148. Patented June 11, 1901.

J. H. McCONNELL.

FIRE EXTINGUISHER.

(Application filed Apr. 6, 1901.)

(No Model.)

Fig. 1.

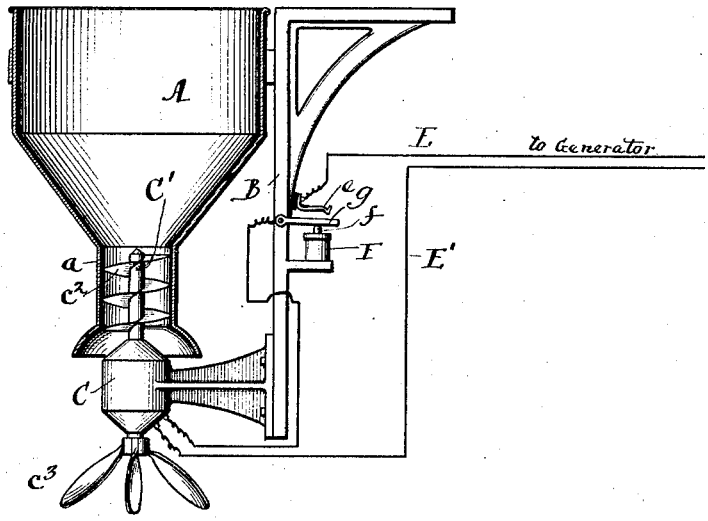



Fig. 2.

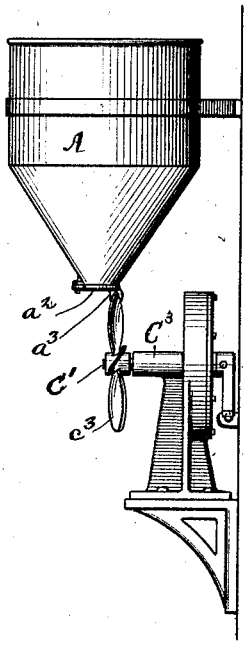
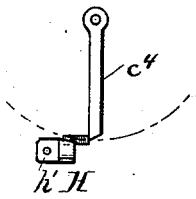



Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 676,148, dated June 11, 1901.

Application filed April 6, 1901. Serial No. 54,585. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. McCONNELL, a resident of the city of Evanston, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a full, clear, and exact description.

This invention has relation to that class of fire-extinguishers commonly known as "automatic fire-extinguishers," in which the extinguisher is automatically brought into operation in case of fire by means of a suitable thermostat. One familiar form of automatic fire-extinguishers consists of a perforated distributing pipe or pipes located usually at the ceiling of a room, the valve for the admission of water to such pipe or pipes being controlled by a thermostat, so that when the temperature within the room reaches an abnormal or dangerous point, as in case of fire, a supply of water will be discharged through the distributing pipe or pipes, and thus extinguish the fire. Various objections exist to this common form of automatic fire-extinguisher, not the least of which is the fact that the injury to the contents of the room or building caused by water is often of a most serious character. It has also been heretofore proposed to extinguish fires by means of a powder which when subjected to high temperature is converted into a fire-extinguishing gas. Powder of this kind is variously sold upon the market under the commercial names "fyricide," "kilfyre," "pyrocide," and the like; but in each case the general character of the powder is the same, and it is ordinarily inclosed within canisters or tubes, whereby it may be conveniently distributed by hand onto the fire to be extinguished.

The object of my invention is to provide an automatic fire-extinguisher whereby a fire-extinguishing composition in powdered or comminuted form may be readily distributed over the point or points where a fire starts.

To this end the invention consists, broadly, in combining with a suitable reservoir or source of supply for the powder a suitable power-actuated means for distributing the powder and a suitable thermostat, whereby in case of fire the power-actuated means will be brought into operation in order to deliver the powder onto the fire.

In carrying out the invention it is manifest that any suitable form of reservoir, of power-actuated means, or of controlling-thermostat may be employed, and I do not wish the invention, therefore, to be understood as restricted in its scope, since manifestly the details of these several devices and their relative arrangement may be widely varied without departure from the spirit of the invention. Thus, for example, in the accompanying drawings I have shown two simple and familiar forms of thermostats; but it is obvious that any equivalent mechanism that will serve to bring into operation the power-actuated means for distributing the powder may be used.

Figure 1 is a view in side elevation through mechanism embodying one form of my invention, the reservoir for the powder being shown in vertical section. Fig. 2 is a view showing in side elevation a modified construction and arrangement of the parts. Fig. 3 is a detail view of the thermostatic device for controlling the mechanism shown in Fig. 2.

In the embodiment of the invention shown in the accompanying drawings, A designates a reservoir, within which will be contained the fire-extinguishing powder. This reservoir is suitably sustained—as, for example, by connection to a bracket B, that may be conveniently attached to the ceiling of the room. From the lower part of the bracket B projects the support $c$ of a power-driven distributing device C, the construction of the device shown in Fig. 1 being very similar to that of an ordinary electric fan—that is to say, the support $c$ carries at its outer end the motor, through which passes a shaft C', affixed to the usual revoluble armature of the motor. The upper end of the shaft C' is shown as provided with a screw or spiral blade $c^2$, that enters the lower end $a$ of the powder-reservoir A. The screw or spiral $c^2$, if formed directly upon the shaft C', is preferably of shallow pitch, as the shaft will revolve at a high rate of speed; but, if preferred, the screw may be sustained by the base of the reservoir and may be connected by reducing-gear with the shaft of the power-actuated distributing device, and in such case the screw or spiral $c^2$ may be of steeper pitch. The lower end of the shaft C' has connected thereto a scatter-

ing device, consisting, preferably, of blades $c^6$, similar to those of an electric fan and adapted to distribute the powder uniformly over the surface below it. As shown in Fig. 1, the power-actuated device is adapted to be driven by an electric current, although manifestly any other suitable form of power, such as a spring or weight, might be employed for this purpose. Where electric current is relied upon to impart motion to the power-actuated device, wires E and E' lead from the motor to a suitable source of current, such as a motor-generator or the like. (Not shown.) In the circuit of this source of current and of the power-actuated device is interposed a suitable thermostat F, the purpose of which is to close the normally open circuit that connects the power-actuated device with the source of current. The thermostat F (conventionally shown in Fig. 1 of the drawings) consists of a cylinder adapted to be filled with an expansible fluid, and from the top of this cylinder projects a piston-stem $f$, upon which rests a pivoted arm $g$. One end of the arm $g$ is permanently connected to the wire E of the electric circuit, while its opposite end, resting upon the top of the plunger $f$, is normally out of contact with the terminal $e$ of the circuit-wire E. When the parts are in the position shown in Fig. 1, the power-actuated device C will be motionless; but when the temperature of the room reaches a dangerous height, due to an incipient fire, the expansion of the fluid within the cylinder of the thermostat F will cause the plunger-stem $f$ to lift the arm $g$ until it contacts with the terminal $e$, and thus close the electric circuit between the source of current and the power-actuated device C. The effect of closing the electric circuit will be to impart motion to the power-actuated device, thereby causing its blades $c^3$ and shaft C' to rapidly revolve, thus causing the screw or spiral $c^2$ to feed the powder from the reservoir A down over the scattering-blades $c^3$, the revolution of which blades will serve to distribute the powder over any flame beneath it, and thus extinguish the fire.

In the form of the invention shown in Figs. 2 and 3 of the drawings the powder-reservoir A is similar to that illustrated in Fig. 1, except that its bottom is closed by a pivoted gate $a^2$, having a depending arm $a^3$, that projects normally into the path of the blades $c^3$ of the power-actuated distributing device C. In this form of the invention the shaft C' of the power-actuated device extends through a casing $C^3$, that will contain a strong coiled spring—such, for example, as a heavy clock-spring—that is adapted to impart rapid revolution to the blades $c^3$. The opposite end of the shaft C' has fixed thereto an arm $c^4$, that is normally checked or locked against revolution by a fusible pin H, which in this form of the invention constitutes a thermostat. The pin H (which may be of sealing-wax or like material) is shown as supported by a plate $h'$, that is out of the path of the arm $c^4$. When the form of the invention illustrated in Fig. 2 is employed, it will be seen that if the temperature of the room reaches an abnormal height, due to an incipient fire, the fusible stem H will drop away, thereby releasing the arm $c^4$ and permitting the spring of the power-actuated distributing device to impart rapid revolution to the blades $c^3$. The initial movement of the blades $c^3$ will serve to swing open the pivoted gate $a^2$ at the bottom of the reservoir A, thereby permitting the powder to descend into the path of the blades $c^3$ or of the air-current created thereby. The powder will thus be scattered by the blades $c^3$ and will serve to extinguish the fire upon which it may fall.

It is manifest that any other suitable means controlled by a thermostatic device may be used to distribute the powder instead of the means illustrated, and the details of construction may be varied within wide limits without departing from the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An automatic fire-extinguisher comprising in combination, a reservoir for powder or comminuted material, a power-actuated means for distributing said powder and a thermostat for controlling the operation of said power-actuated means.

2. An automatic fire-extinguisher comprising in combination, a reservoir for powder or comminuted material, a power-actuated means for distributing said powder, comprising a scatterer and a thermostat for controlling the operation of said power-actuated means.

3. An automatic fire-extinguisher comprising in combination, a reservoir for powder or comminuted material, means for normally closing the discharge-opening of said reservoir, power-actuated means for distributing said powder adapted to release the powder from the reservoir and a thermostat for controlling the operation of said power-actuated means.

4. An automatic fire-extinguisher comprising in combination, a reservoir for powder or comminuted material, means for normally arresting the passage of powder from the reservoir, power-actuated means for effecting the discharge of the powder from the reservoir, and provided with a scatterer for distributing the powder and a thermostat for controlling the operation of said power-actuated means.

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