

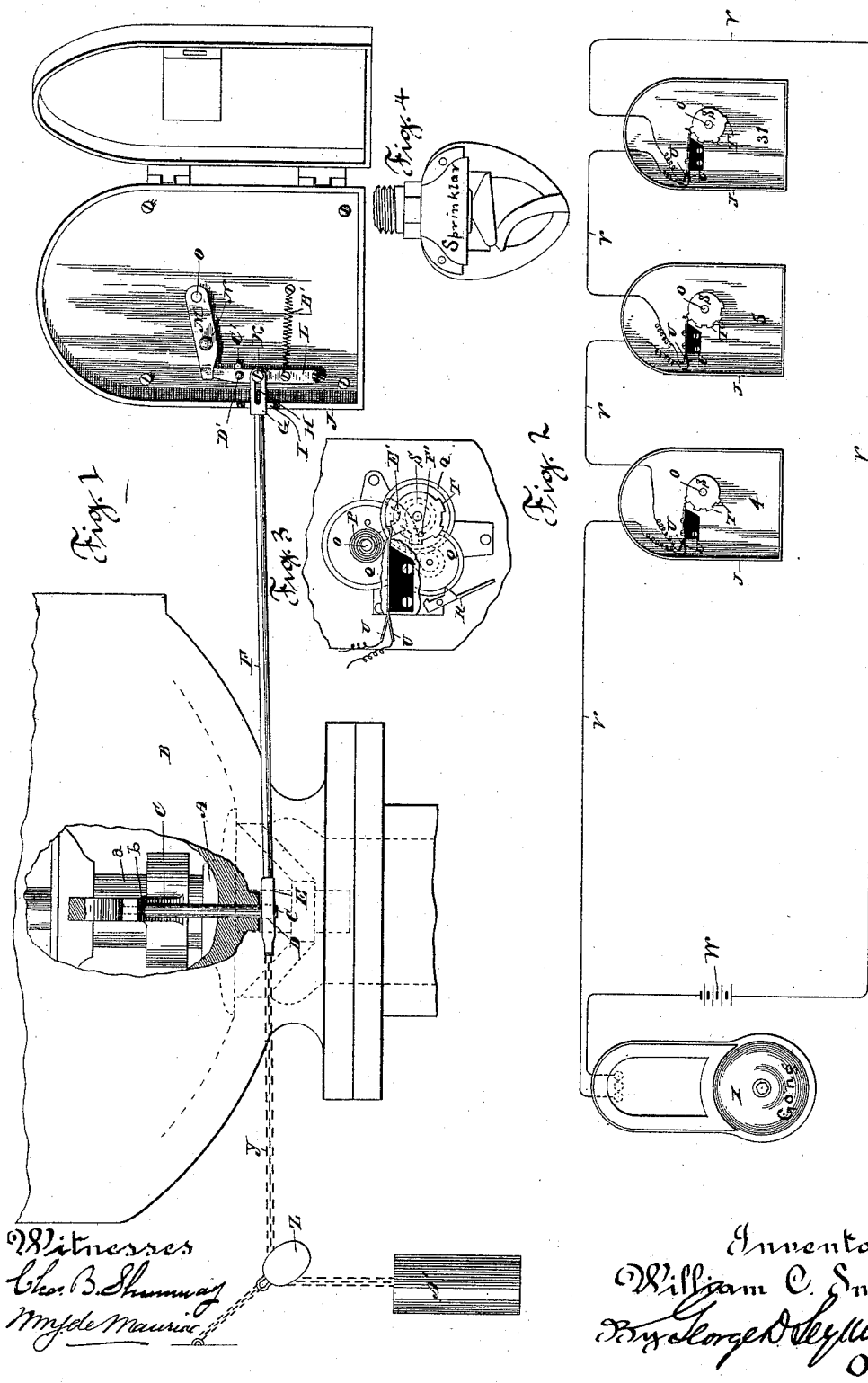
(No Model.)

W. C. SMITH.

STATIONARY FIRE EXTINGUISHING APPARATUS.

No. 423,286.

Patented Mar. 11, 1890.



# UNITED STATES PATENT OFFICE.

WILLIAM C. SMITH, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO CHARLES E. ROUNDS, OF SAME PLACE.

## STATIONARY FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 423,286, dated March 11, 1890.

Application filed February 6, 1889. Serial No. 298,883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. SMITH, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Stationary Fire-Extinguishing Apparatus; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in that class of stationary fire-extinguishing apparatus consisting of a series of automatic thermostatic sprinkler-heads distributed throughout a building and connected by branch pipes with a water-main common to them all, the object of the present invention being to provide means whereby any disturbance of such apparatus shall be automatically indicated at a point more or less distant from it by a predetermined signal.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

My invention is applicable to either dry or wet pipe systems of stationary fire-extinguishing apparatus, and may be connected with a valve or movable part affected by the flow of water located in any pipe of either system.

For the purpose of illustration I have elected to show my invention as applied to a dry-pipe system and utilizing the inlet-valve thereof.

In the accompanying drawings, Figure 1 is a view, partly in section and partly in elevation, showing the inlet-valve of a dry-pipe stationary fire-extinguishing apparatus, an automatic signal-transmitter, and connection between such valve and transmitter. Fig. 2 is a diagram showing the electric connections between several transmitters, each adapted to produce a different signal and severally representing distinct fire-extinguishing systems, with a signal-receiver, which, as herein shown, has the form of a gong. Fig. 3 is a detached broken view showing the train of a transmitter such as may be used for carrying out my invention; and Fig. 4 is a detached view in elevation of a sprinkler-head, which

is simply shown as a further identification of the fire-extinguishing apparatus.

As herein shown, the inlet-valve A is located in a casing B, which is interposed in the main pipe of a fire-extinguishing apparatus of the type specified. A pin C, connected at one end to a frame b, moving with the valve-stem a of the said valve so as to move therewith, projects through the casing for the entrance of its outer or free end into a small hole D, formed in a head E, located at one end of a connecting-rod F, the opposite end whereof is provided with a head G, having an elongated slot H and adapted to pass through an opening I, formed in the casing J of an automatic signal-transmitter of suitable construction. A screw K, passing through the said elongated slot, couples the connecting-rod with an oscillating stop-lever L, pivoted at its lower end within the casing J of the transmitter. The upper end of this stop normally supports the outer end of a rotative arm M, having a handle N for its manual operation, and rigidly secured to a center shaft O, to which is attached one end of a coiled spring P, furnishing the power for the automatic operation of the transmitter. An escape-train Q, driven from the said shaft and controlled by a pallet R, (see Fig. 3,) is employed to rotate a make-and-break wheel S, having contact-points T projecting from its edge and normally engaged, under the closed-circuit plan herein shown, by insulated spring contact-fingers U U, connected with the main-line wires V of the circuit, which includes a battery W and a gong X. If desired, the gong may be replaced by a register or supplemented by one or replaced or supplemented by any other form of oral or visual receiver. The said battery and gong are by preference located in the nearest fire-alarm station.

It will be understood that a different arrangement is adopted for the contact-points T of the make-and-break wheels S of the different transmitters, so that each transmitter, and therefore each fire-extinguishing apparatus, will have a separate signal for its identification in the fire-alarm station or wherever the signal-receiver may be located. Thus in

Fig. 2 of the drawings the transmitter numbered 4 has four contact-points arranged at equal distances apart; the transmitter numbered 5, five contact-points similarly arranged. The transmitter numbered 31 has three points arranged at equal distances apart and a fourth point isolated from them, so as to break the circuit three times in quick succession and then break it again after an interval. The signal sent in by these transmitters will therefore correspond to their numbers. The head E, before referred to, is connected at one end with a chain Y, passing over a pulley Z and carrying a weight A', which will constantly pull against the pin C to draw the upper end of the stop-lever L out from under the rotative arm M of the transmitter. A spiral spring B', located within the transmitter and connected with the stop-lever, is employed for restoring the same to its normal position and for holding it therein, the said spring being located on the opposite side of the lever from the connecting-rod F and its described attachments. The oscillating movement of the upper end of the stop-lever is limited in one direction by the casing J of the transmitter and in the other direction by a stop-pin C'. A knob D', mounted in the stop-lever, forms a manual device for operating the same to release the arm M of the transmitter independently of the fire-extinguishing apparatus, whereby, although the transmitter is coupled with such apparatus, it may be used independently thereof to transmit a signal. The elongation of the slot H in the head G provides for sufficient lost motion between the manual and the automatic actuating devices to permit the lever to be manually operated without disturbing the coupling of the stop with the valve. When the outer end of the arm M is resting upon the upper end of the stop-arm the coiled spring P is wound to sufficient tension to drive the train and actuate the make-and-break wheel in three full rotations, after which it will be stopped by an arm E' and a pin F', as shown by Fig. 3 of the drawings, or in any other convenient way. To test the transmitter, the arm M is lifted by its manual device N above the stop-lever for a sufficient distance to wind the coiled spring enough more to carry the make-and-break wheel around once. The arm is then let go. If everything is all right, the signal of the particular transmitter will be sent into the receiver once. This testing of the transmitter and the circuits is done without disturbing the stop-lever or its connections with the fire-extinguishing apparatus and leaves the coiled spring under sufficient tension to carry the make-and-break wheel around three times, the arm M coming back at the end of the testing operation and re-engaging with the upper end of the stop-lever. Normally the pin C of the valve is entered into the perforated head of the connecting-rod. Normally, also, the stop-lever stands

under the rotative arm of the transmitter wherein the spring-contact fingers are engaged with a contact-point of its make-and-break wheel through which a circuit is closed. The inlet-valve is also normally closed. Now, when any one sprinkler-head of the fire-extinguishing apparatus is opened or started, allowing air to enter into or escape from the pipes, the balance of the valve will be destroyed and the valve will be opened by the superior pressure of water against it. As the valve moves in opening it carries the pin C along with it and withdraws the outer end of the same from the perforation in the adjacent head of the connecting-rod, whereby such rod is left free to be moved by the weight A', which pulls it away from the transmitter and withdraws the stop-lever from its normal position under the arm M, which has held the transmitter-train against the power of its actuating-spring, which now drives the train in, imparting three complete rotations to the make-and-break wheel, which thus repeats the signal, which it represents three times at the fire-alarm station or at any other place where the signal-receiver may be located. It will thus be seen that no time is lost between the starting of the fire-extinguishing apparatus and the giving of an alarm identifying the apparatus started. The giving of the alarm being purely automatic and immediately responsive to the starting of the fire-extinguishing apparatus makes the improvement particularly valuable, especially as it is desirable in case of fire to save every minute of time.

I do not limit myself to any particular type of fire-extinguishing apparatus or valve or movable part or transmitter, or to operating the apparatus on a closed circuit. I would therefore have it understood that I hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

If desired, any other valve or special movable part located in a pipe of a dry-pipe apparatus may be employed in place of the inlet-valve for utilizing the flow of the water to secure the motion and power for releasing the apparatus. In a wet-pipe system a movable or special part taking the form of a clapper-valve might be used for the purpose.

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

1. The combination, with a stationary fire-extinguishing apparatus having one or more thermostatic sprinkler-heads, of a signal-transmitter adapted to be operated automatically, a signal-receiver, electric connections between the transmitter and receiver, a valve or movable part located in a pipe of the apparatus and operated by the flow of water therein, a pin directly connected to the valve or movable part, and a connection with the transmitter normally locked by the said pin, whereby the pin normally prevents the auto-

matic operation of the transmitter, but releases the latter for such operation when the valve or movable part is moved by the flow of water in the pipe.

5 2. The combination, with a stationary fire-extinguishing apparatus having one or more thermostatic sprinkler-heads, of a valve or movable part located in a pipe of the apparatus and operated by the flow of water therein, a normally-locked signal-transmitter, a  
10 signal-receiver, electric connection between the said transmitter and receiver, and connection between the valve or movable part and the transmitter, including a longitudinally-  
15 movable rod and a stop-arm, the latter being movable independent of the rod, whereby the transmitter may be released for sending a signal without disturbing the valve or movable part, substantially as set forth.

20 3. The combination, with a stationary fire-extinguishing apparatus having one or more thermostatic sprinkler-heads, of a normally-locked automatic signal-transmitter having an arm adapted for manual operation connected with its actuating mechanism, a valve  
25 or movable part located in a pipe of the apparatus and moved by the flow of water therein, connection between the said valve or part and the transmitter, including a pivotal stop normally engaged by the said arm of the trans-  
30 mitter, means for actuating the said connection independently of the valve or movable part, a signal-receiver, and electric connection between the receiver and transmitter, the said  
35 arm of the transmitter being movable for testing the same without disturbing the stop, substantially as set forth.

4. The combination, with a stationary fire-extinguishing apparatus having one or more  
40 thermostatic sprinkler-heads, of a valve or movable part located in a pipe of the said apparatus, a pin connected with the said valve or part and projecting from the pipe in which the same is located, a longitudinally-movable  
45 connecting-rod engaged by the said pin, which normally holds it in place, a pivotal stop con-

nected with the said rod, which trips it, means independent of the valve or movable part tending to move the rod to trip the stop, an automatic signal-transmitter held in its operative  
50 position by the said stop, a signal-receiver, and electric connection between the transmitter and the receiver, substantially as set forth.

5. The combination, with a stationary fire-extinguishing apparatus having one or more  
55 thermostatic sprinkler-heads, of an automatic signal-transmitter having a rotary arm, a pivoted oscillating stop, which is normally engaged thereby, a longitudinally-moving connecting-rod for tripping said stop, a valve or  
60 movable part located in a pipe of the apparatus, a pin connected thereto, which normally engages the connecting-rod to hold the same against movement, and means for moving the rod to trip the stop when the pin is disengaged from the rod, substantially as set forth. 65

6. The combination, with a stationary fire-extinguishing apparatus having one or more thermostatic sprinkler-heads, of a valve or  
movable part located in a pipe of the apparatus and moved by the flow of water therein, a pin connected with the said valve or part,  
so as to move with it, a connecting-rod having a perforation at one end to receive the pin and an elongated slot at the other end, means for  
75 moving the rod when released by the pin, a pivotal stop coupled with the rod through the elongated slot therein, whereby the stop may be moved without disturbing the rod, an automatic signal-transmitter normally locked by  
80 the stop which is tripped to release it, a signal-receiver, and electric connection between the transmitter and receiver, substantially as set forth.

In testimony whereof I have signed this  
specification in the presence of two subscribing witnesses. 85

WILLIAM C. SMITH.

Witnesses:

CHAS. B. SHUMWAY,  
WM. Y. DE MAURIAC.