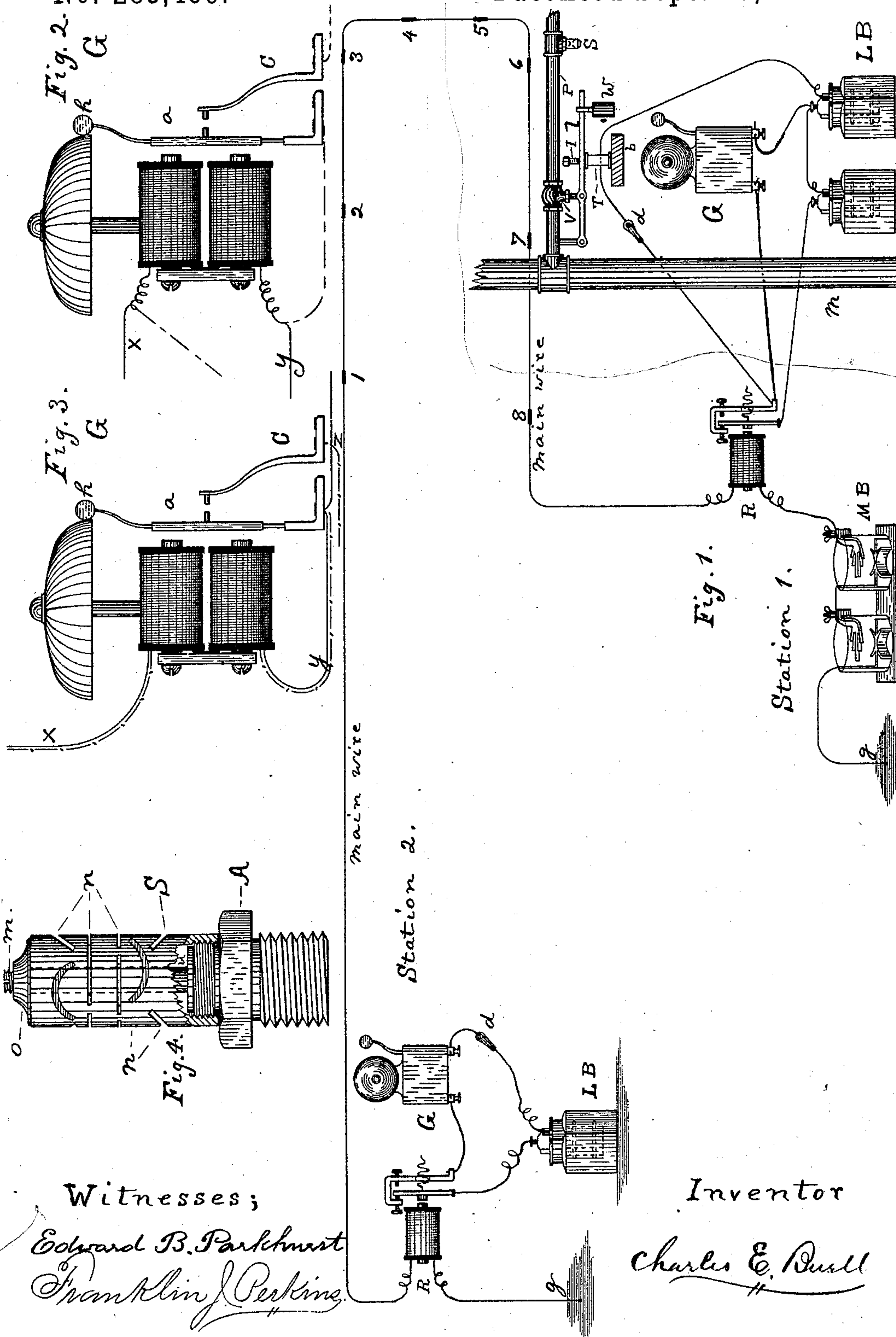


(No Model.)

C. E. BUELL.
FIRE EXTINGUISHING SYSTEM.

No. 285,459.

Patented Sept. 25, 1883.



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FIRE-EXTINGUISHING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 285,459, dated September 25, 1883.

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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 Fire-Alarm and Fire-Extinguishing Systems, of which the following is a specification.

My invention consists, primarily, in the combination, with a normally-closed electric circuit, of thermostatic devices adapted to be made operative by heat to rupture said circuit, two or more stations on said circuit, each provided with apparatus adapted to be made operative to give an alarm when said circuit is ruptured, substantially as hereinafter described.

My invention further consists in combinations and sub-combinations, which will be hereinafter described.

In the accompanying drawings, Figure 1 represents my invention arranged for operation. Figs. 2, 3, and 4 represent parts of my invention in detail.

The same letters and figures indicate corresponding parts in each.

Referring to Fig. 1, there is shown at station 1 the main battery M B, relay electromagnet R, and main wire extending through a building to be protected, and provided at convenient intervals in the building with joints 1 2 3 4 5 6 7 8 of an easily-fused alloy, and the said main wire, after passing through the building, extends to the remote station 2, and after passing through the relay R at station 2 connects at *g* with the earth or other return circuit. By thus duplicating the alarm-signal at a remote station greater security to property is obtained, as a failure of one apparatus to operate does not result in a failure to give an alarm, the giving of an alarm-signal at one or more stations being certain; or, if the alarm at one station is not heard, it will be heard at other stations.

Any preferred form of thermostat may be substituted for the joints, and a galvanometer with relay-connections may be used in place of the relays R R.

At each station there is shown a continuous vibrating gong, G, in the circuit of local battery L B, the relays R R being adapted to close their local circuits when their armatures

are retracted to their back contact-stops, as they will be when the main wire is ruptured by heat or broken by accident or otherwise, or when the main battery becomes exhausted, and the gongs G will be vigorously sounded, so that the system will be known to be in order if an alarm has not been given.

At station 1, I have shown the main pipe M of a water-supply, having one or more branch pipes P extending through the building to be protected, and provided with valves or sprinklers that open by heat, one such being shown at S and also in Fig. 4. The water is normally excluded from the pipes P by an ordinary gate-valve, V. The valve V is shown closed, and a weight, *w*, attached to the valve-lever *l*, that will open the valve when the lever *l* is released. The lever *l* is shown held up by the tube T, which rests upon the beam or support *b*, thus holding the valve V closed. The tube T is a glass tube filled with an explosive and properly stoppered. A fine wire of platinum passes through the tube, and is adapted to become heated and fire the explosive when the local battery L B is closed, thus bursting and destroying the tube T, and releasing the valve V to turn on a water-supply to pipe P at the same time an alarm is sounded on the gongs G G.

The gong G at station 1 is shown in a derived circuit from the battery L B, but may have a separate battery, or be directly in the circuit with the valve-releasing device. A switch, *d*, is provided for opening the local circuit.

The gongs G, relays R, switches *d*, and batteries are well-known elements that require no description. To avoid the multiplying of instruments, the gong G may be made to serve as both relay and gong.

Fig. 2 shows the gong G, having the main wires *x y* connected to its coils. The wire being normally charged, the armature *a* is held attracted from the contact-spring *c*. When the main wire becomes broken or the current charging the main wire falls below normal, the armature *a* is retracted and alternately closes and breaks the local circuit. (Shown by dotted lines through the coils.)

A separate and coarser wire may be wound

upon the cores of the magnet of the gong G, to be included in a local circuit when it is desired to use fine wire for the main-wire coils.

Fig. 3 represents a magnet with wires *x y* of the main wire connected to its coils, and the hammer *h* held normally against the bell *b* and away from the contact *c*. When the main wire becomes broken or the charging-current falls below normal, the armature *a* retracts against contact *c*, which closes a local circuit over the wires shown in broken lines at *x, y*, and *z*, and causes a continuous ringing of the gong.

Fig. 4 represents an improved form of sprinkler or distributor. *S* is a shell of metal adapted to be screwed or otherwise attached to the base or nozzle *A*, which screws into the pipe *P*. The spindle *m* is screw-threaded and passes through the nut *o*, which is soldered onto the shell-support *S* with an easily-fused solder. The spindle *m* can thus be screwed down to hold the plate *n'* over the nozzle. The shell *S* is then slitted with slits *u* and openings that open in different directions to effectually distribute the water when the nozzle becomes open by the unsoldering of the nut *o* and consequent releasing of the rod *m* and plate *n'*. To exclude dust from the shell *S* it is incased in an easily-removed paper tube or wrapper, or the slits *u* stoppered with paraffine or wax, that will melt out to open the slits.

I reserve the right to claim in another application an invention shown in Fig. 4 and not now claimed.

What I claim is—

1. A closed main circuit, a battery or batteries for charging said circuit, devices in said circuit adapted to act by heat to open said circuit, and a series of stations, each provided with an alarm apparatus adapted to be made operative when said main circuit is open or the current charging said main circuit falls below normal, substantially as described.

2. The combination, with a normally-closed main circuit adapted to be ruptured by heat, having two or more stations provided with alarm apparatus adapted to be made operative when said main circuit is ruptured, of a valve mechanism for controlling a water-supply, and devices for making operative said valve mechanism when said main circuit is opened or the current charging said main circuit falls below normal, substantially as described.

3. A charged main circuit and devices adapted to interrupt said circuit by the action of heat, a series of stations along said main circuit, each provided with a relay electro-magnet in the main circuit, a call-bell electro-magnet in a local circuit, and connections between said relay and local circuit adapted to make operative said local circuit when the armature of said relay is retracted, substantially as described.

4. The combination, with the closed main line, including devices adapted to act by heat to open said line, of the relay *R*, battery *M B*, gong *G*, battery *L B*, valve *V*, and devices controlled by said local battery *L B* for opening said valve, and a remote station provided with alarm apparatus, adapted to be made operative to sound an alarm when said main line is open or the current charging said line is below normal, the whole arranged and operating substantially as described.

5. The combination, with a charged main line, including the relay *R*, of the battery *L B*, valve *V*, and tube *T*, containing an explosive substance adapted to be exploded by the closing of the circuit of battery *L B*, and make operative said valve mechanism, and an alarm mechanism at a remote station adapted to be made operative when main line becomes broken or the charging-current falls below normal, substantially as described.

6. The combination, with a normally-closed main circuit composed of lengths of wire not easily fused held in electrical continuity by easily-fused alloy, of two or more stations, each provided with an electro-magnet in the main circuit, and an alarm apparatus at each adapted to be made operative through the intermediate action of said electro-magnet when said main circuit is opened or the current charging said main circuit falls below normal.

7. The main line, the relays *R R*, the soldered joints 1 2 3, the battery *M B*, the gongs *G G*, with batteries, and connections, as described, for sounding an alarm at the point where a fire originates and at one or more remote points.

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Witnesses:

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