No. 645,588. Patented Mar. 20, 1900.

A. F. DODDRIDGE.

FIRE ALARM APPARATUS.

(Application filed Oct. 28, 1899.)

(No Model.)

Fig. 1.

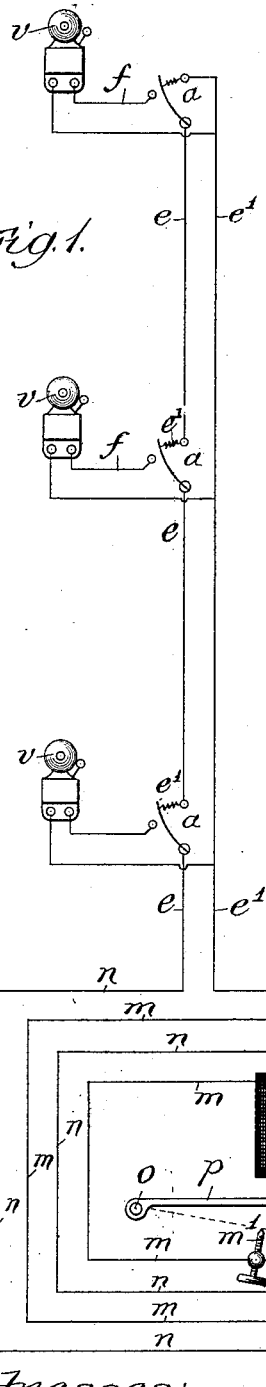


Fig. 2.

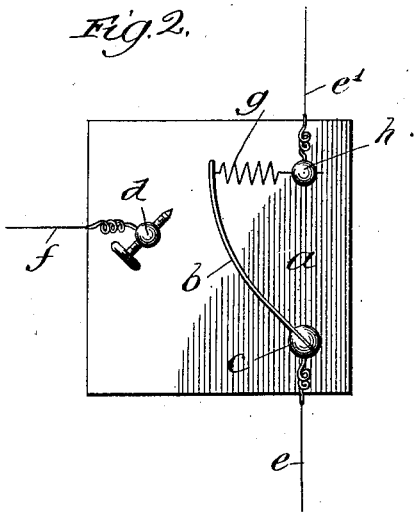
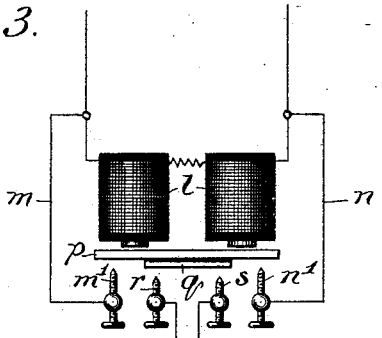


Fig. 3.



Witnesses:
Chas. E. Gaylord,
Robert K. S. Cathenwood

Inventor:
Albert F. Doddridge
By Dwight B. Cheever
Atty

UNITED STATES PATENT OFFICE.

ALBERT F. DODDRIDGE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO MORTON M. CURRY, OF SAME PLACE.

FIRE-ALARM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 645,588, dated March 20, 1900.

Application filed October 28, 1899. Serial No. 735,079. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. DODDRIDGE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Fire-Alarm Apparatus, of which the following is a specification in its best form now known to me, reference being had to the accompanying drawings.

My invention relates to means for automatically sounding an alarm of fire and for simultaneously indicating to the fireman the exact location of the flames.

Many forms of electrical apparatus have heretofore been used whereby the burning of a fusible cut-out or plug near the source of the fire will set off an alarm on the street or in the office and perhaps indicate on an annunciator, near the bell, the approximate location of the fire; but these forms of apparatus are objectionable, if not entirely worthless, from the fact that in the hurry and darkness it is not always possible to read the annunciator correctly, and also for the further and more important reason that the annunciator information affords no direct guide to the fireman after he gets into the smoke-filled building.

The particular object of my invention is to provide an apparatus which, in addition to sounding the main alarm, (and working the annunciator, if desired,) also continuously rings a bell or other alarm at or near the origin of the fire, or, in other words, near the burned-out plug, whose burning out turned in the alarm, thereby enabling the fireman to locate the exact origin of the fire even though the room may be filled with blinding smoke.

My invention also consists in the method of accomplishing the foregoing results and in the details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a diagram of my apparatus. Fig. 2 is a detailed view of a fusible plug or cut-out used in my apparatus. Fig. 3 is a simplified form of wiring for the relay apparatus.

Throughout the several views similar letters indicate the same parts.

a represents one of many forms of cut-out which may be used in my apparatus. It consists of a spring-switch *b*, so mounted in the binding-post *c* that when released it will be in contact with contact-point *d* and make a circuit through wires *e* and *f*. A piece of fusible wire *g* is inserted to connect the end of spring *b* and binding-post *h*, whereby the spring *b* is normally held away from *d* and a circuit is formed through wires *e* and *e'*, the spring *b*, and fusible wire *g*. A large number of these plugs are arranged at convenient intervals about a building which is to be protected by my apparatus and are connected in series, as shown in Fig. 1. For convenience of the drawings I have only shown three, but any number may be used. In circuit with these fusible plugs are the batteries *k* and a relay-magnet *l*, the wire connecting the batteries to the magnet being indicated by letter *m*, and that connecting the magnets to the main wire of the cut-outs by the letter *n*. It will be seen from an inspection of the drawings that a continuous current flows from the batteries *k* through the wire *m*, magnet *l*, wire *n*, the cut-outs *a*, and the wires *e e'* back to the batteries. This will hereinafter be referred to as the "primary" circuit.

Pivoted to the frame of the magnet at *o* and normally held by the current of the primary circuit up against the magnet, as shown, is the compound armature having, first, a conducting part *p* adapted when the armature falls to the position shown in dotted lines to connect contact-points *m'* and *n'*, through which wires *m* and *n* respectively pass, and, second, another conducting part *q*, (insulated from *p*,) adapted when the armature falls to connect contact-points *r* and *s*. The contact-points *r* and *s* are connected by the wires *r'* and *s'* to the battery *t* and the large alarm-bell *u*, so that when the armature falls and *q* strikes *r* and *s* a circuit is established through battery *t* and large alarm-bell *u*, located in the office or on the outside of the building, whereby the bell is sounded. This circuit through the large bell *u* will hereinafter be referred to as the "secondary" circuit.

Near each cut-out, wherever located, is a small electric bell or buzzer *v*, having one ter-

minal connected to the wire *f* of the cut-out and the other terminal to one side of the primary circuit, as shown, so that when the fuse *g* is burned and the spring *b* strikes point *d* the bell will be thrown into the primary circuit; but as the magnet *l* in the primary circuit is of high resistance the bell *v* will not ring while the magnet remains in circuit, and it is to obviate this difficulty that I insert the contact-points *m' n'* in the wires *m* and *n*, so that when the armature *p* strikes them the magnet *l* will be short-circuited and thrown out of the primary circuit substantially simultaneously with the insertion of the bell *v* into the circuit, as hereinafter more accurately described.

The operation of my apparatus is as follows: It is installed and normally remains as shown in Fig. 1, with the primary circuit closed through the magnet and the secondary circuit open. If now a fire originates near one of the bells *v*, the fuse *g* burns, thereby momentarily breaking the primary circuit, while the spring-switch *b* moves over into contact with *d*. During this interval while the current in the primary circuit is broken the armature *p q* falls, cutting magnet *l* out of the primary circuit and closing the secondary circuit on large bell *u*. The spring *b* has by this time passed into contact with *d*, and the primary circuit is now reclosed, but the bell *v* is substituted for the magnet *l*. The two bells *u* and *v* both continue to ring until the burned-out fuse is replaced or one or both of the circuits are broken by external means. The bell *u* calls attention to the fact of there being a fire, and the bell *v* indicates its exact location.

The apparatus shown in Fig. 1 represents a single complete unit and may represent the fuse-plugs on one floor or one room of a large building. By properly duplicating these units and connecting them to an annunciator in circuit with bell *u* by any of the common forms of annunciator-wiring the annunciator-bell *u* may be made to indicate in which unit or section the fire occurs.

The forms and sizes of the cut-outs, the bells, and relays may be varied within wide limits without departing from my invention.

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

1. In apparatus of the class described, a normally-closed primary circuit consisting of a fusible plug or cut-out, a relay-magnet adapted, when the circuit is broken, to start an independent alarm mechanism and a source of electrical energy; an alarm-bell adjacent to and so connected with said cut-out that when said fuse is burned out said bell is inserted in said circuit, and means for substantially simultaneously cutting said magnet out of said circuit, substantially as described.

2. In apparatus of the class described, a normally-closed primary circuit consisting of a series of fusible cut-outs or plugs, a relay-magnet, and a source of electrical energy; a normally-open secondary circuit consisting of a source of electrical energy and a large bell or other alarm apparatus; a small bell or other alarm apparatus adjacent to each fusible plug or cut-out, and means whereby when a fusible plug is burned out the secondary circuit is closed on the large bell and the small bell is substituted for the relay-magnet in the primary circuit, substantially as described.

3. In apparatus of the class described, the combination of a normally-closed primary circuit containing a relay-magnet adapted, when the circuit is momentarily broken, to operate independent alarm mechanism and means whereby when the circuit is so broken said magnet is short-circuited so as to render it inoperative, substantially as described.

ALBERT F. DODDRIDGE.

Witnesses:
DWIGHT B. CHEEVER,
ROBERT K. S. CATHERWOOD.