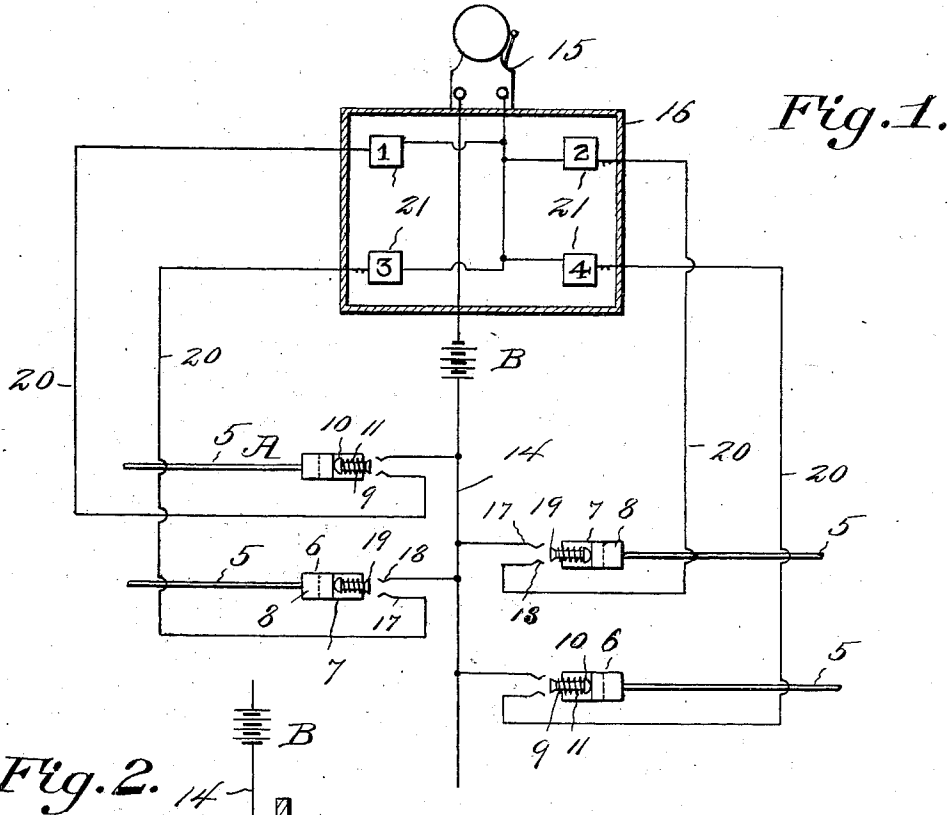
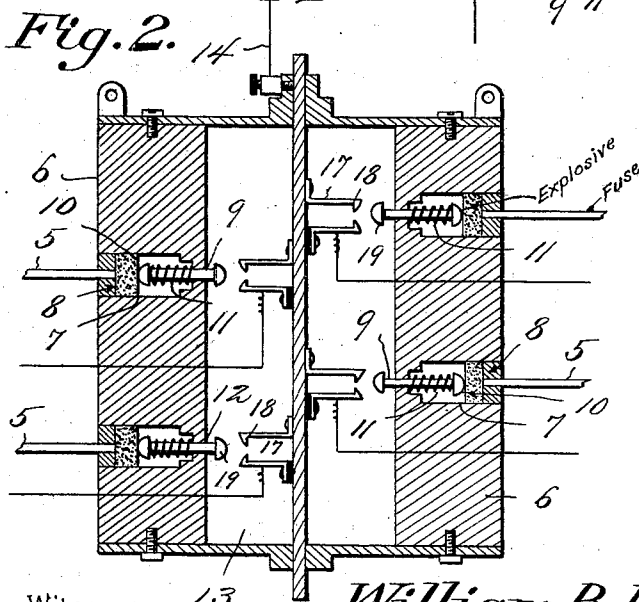
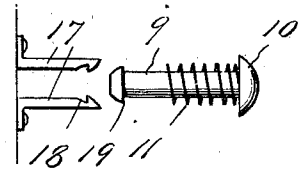


No. 769,824.

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W. B. HOPKINSON.
ELECTRIC FIRE ALARM.
APPLICATION FILED APR. 15, 1904.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM B. HOPKINSON, OF MUSCATINE, IOWA, ASSIGNOR OF ONE-HALF
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ELECTRIC FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 769,824, dated September 13, 1904.

Application filed April 15, 1904. Serial No. 203,367. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. HOPKINSON, a citizen of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented a new and useful Electric Fire-Alarm, of which the following is a specification.

This invention relates to an automatic fire-alarm system for factories, private dwellings, and other buildings, and has for its object the production of an inexpensive, efficient, and reliable system capable of automatically sounding an alarm in case of incipient conflagration in any portion of the building and at the same time indicate the exact location of the fire.

A further object of the invention is to provide an automatic alarm arranged to be set into operation on the burning of a fuse, said fuses extending from every portion of the building to a common casing having explosive-chambers formed therein, in which are mounted the circuit-closers, so that when a fire starts in any part of the building the circuit-closers will be moved to closing position under impulse of the explosive charge, and thereby sound the alarm.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, and illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming a part of this specification, Figure 1 is a diagrammatic view of the invention. Fig. 2 is a longitudinal sectional view of the explosion box or chamber. Fig. 3 is a detail view of one of the circuit-closers.

Similar characters of reference indicate corresponding parts in all the figures of the drawings.

In carrying out my invention I employ a series of fuses 5, capable of ignition and combustion at a low temperature, said fuses ex-

tending from every portion of the building or other structure to be protected to a common casing 6, located at any convenient place within the building. The casing 6, which may be of any desired form, is preferably rectangular in shape, as shown, and formed of metal or other suitable material, the side walls of said casing being provided with transversely-disposed openings forming explosion-chambers 7. Arranged within the chambers 7 are cartridges 8, containing a quantity of powder or other suitable explosive compound adapted to be ignited by the fuses 5, one of which is connected to the end of each chamber, as shown. Slidably mounted in the chambers 7 and arranged in advance of the cartridges 8 are contact-pins 9, the enlarged heads 10 of which are normally held in contact with said cartridges by means of coil-springs 11, while the ends of the pins extend through suitable openings 12, communicating with the chambers 7, and project a short distance within the central bore 13 of the casing.

Extending through the bore 13 of the casing is a main battery-wire 14, one terminal of which is connected to an alarm-bell 15, preferably mounted on an annunciator 16. Connected in multiple with the main battery-wire are a series of spring contact-plates 17, adapted to close the circuit and ring the bell 15 when the pins 9 are forced in contact therewith under the impulse of the explosive charge within the cartridges 8. The spring-plates 17 are preferably formed with notches 18, adapted to engage corresponding notches 19, formed in the ends of the pins 9, so as to lock said pins in contact with the plates 17, and thereby cause the continuous ringing of the bell whenever any of the fuses are ignited. Connected in series with the circuit-closers, through the medium of wires 20, are the annunciator-drops 21, one drop being preferably connected to each fuse or series of fuses leading to different sections of the building, so that by simply looking at the annunciator it can be seen at a glance in which particular portion of the building the fire is raging.

From the foregoing description the construction of the device will be readily under-

stood, and the operation thereof is as follows: Suppose a fire is started in any section of the building, causing the fuse A, we will say by way of illustration, to be ignited. The combustion of the fuse will transmit fire or ignition to the explosive in the cartridge 8, causing the latter to explode and force the pin 9, against the tension of the spring 11, in contact with the plates 17 and close the circuit. When the circuit is closed in the manner described, the current from the battery B will flow through the plates 17, pin 9, and wire 20 to the annunciator and thence through the bell and back to the battery, thereby causing the bell to continuously ring as long as the circuit is closed and the annunciator to indicate in which particular portion of the building the fire is raging.

By having the circuit-closing member movable to closing position by the impulse of an explosive charge a positive contact with the main battery-wire is absolutely assured whenever a fuse ignites. This is a very important feature of the invention, inasmuch as the use of springs, weighted levers, and similar devices generally employed for closing the circuit are unreliable in action and for various reasons often fail to operate under the most favorable conditions.

One or more of the explosion-boxes may be used, if desired, said boxes being located in different portions of the building and connected to a common main battery-wire, and any improved style of annunciator may be employed in connection with the system for indicating the exact location of the fire.

The system may be readily installed in buildings at very little expense either during the course of erection or after completion and being extremely simple in construction and operation may be readily repaired or replaced when injured by the action of the fire.

Having thus described the invention, what is claimed is—

1. In an electric alarm system, a circuit-closing member movable to closing position under the impulse of an explosive charge, and yieldable contact-plates adapted to receive and lock said member in closed position to thereby continuously sound the alarm.

2. In an electric alarm system, an alarm a

plurality of annunciators, a plurality of independent circuit-closers, fuses connected to the circuit-closers, series connections between the circuit-closers and the annunciators, an explosive compound adapted to be ignited by the fuses for operating the circuit-closers, and a source of electrical energy connected in multiple with the circuit-closers, the alarm and annunciators.

3. In an electric alarm system, an alarm including an electrical circuit, a casing provided with a plurality of explosion-chambers, movable circuit-closing members arranged within said chambers, fuses connected to the circuit-closers, an explosive compound adapted to be ignited by the fuses for operating the circuit-closing members to sound the alarm and means for locking said members in closed position.

4. In an electrical alarm system, an alarm including an electrical circuit, a casing provided with a plurality of explosion-chambers, movable circuit-closing members arranged within said chambers, springs for retaining said members within the chambers, fuses connected to the circuit-closers, and an explosive compound adapted to be ignited by the fuses for operating the circuit-closers to sound the alarm.

5. In an electrical alarm system, an alarm including an electrical circuit, a hollow casing having a plurality of explosion-chambers formed therein, and provided with reduced openings forming a source of communication between the interior of the casing and said chambers, contact-pins slidably mounted within said openings and provided with enlarged heads fitting within the explosion-chambers, springs engaging the heads of the pins, a fuse connected to each explosion-chamber, and an explosive compound interposed between the end of the fuse and the pins and adapted to be ignited by the fuse for operating the contact-pins to sound the alarm.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM B. HOPKINSON.

Witnesses:

C. R. STAFFORD,
JOHN BUTLER.