ELECTRIC FIRE-ALARM.

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

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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 combustion 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, located at any convenient place within the building. The casing, 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. Arranged within the chambers are cartridges, containing a quantity of powder or other suitable explosive compound adapted to be ignited by the fuses, one of which is connected to the end of each chamber, as shown. Slidably mounted in the chambers and arranged in advance of the cartridges are contact-pins, the enlarged heads of which are normally held in contact with said cartridges by means of coil springs, while the ends of the pins extend through suitable openings, communicating with the chambers, and project a short distance within the central bore of the casing.

Extending through the bore of the casing is a main battery-wire, one terminal of which is connected to an alarm-bell, preferably mounted on an annunciator. Connected in multiple with the main battery-wire are a series of contact-plates, adapted to close the circuit and ring the bell when the pins are forced in contact with the plates, thereby causing the bell to ring. Connected in series with the circuit-closers, through the medium of wires, are the annunciator-drops, one drop being 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 understood.
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 com-
bustion of the fuse will transmit fire or igni-
tion to the explosive in the cartridge 8, caus-
ing the latter to explode and force the pin 9,
against the tension of the spring 11, in con-
tact with the plates 17 and close the circuit.

When the circuit is closed in the manner de-
scribed, 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 indi-
cate in which particular portion of the build-
ing the fire is raging.

By having the circuit-closing member mov-
able to closing position by the impulse of an
explosive charge a positive contact with the
main battery-wire is absolutely assured when-
ever a fuse ignites. This is a very important
feature of the invention, inasmuch as the use
of springs, weighted levers, and similar de-
vices generally employed for closing the cir-
cuit 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 connect-
ed to a common main battery-wire, and any im-
proved 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 build-
ings 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 inde-
pendent circuit-closers, fuses connected to the
circuit-closers, series connections between the
circuit-closers and the annunciators, an ex-
plosive compound adapted to be ignited by the
fuses for operating the circuit-closers, and a
source of electrical energy connected in multi-
ple with the circuit-closers, the alarm and
annunciators.

3. In an electric alarm system, an alarm in-
cluding an electrical circuit, a casing pro-
vided with a plurality of explosion-chambers, mov-
able 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 in-
cluding an electrical circuit, a casing pro-
vided with a plurality of explosion-chambers,
movable circuit-closing members arranged
within said chambers, springs for retaining
said members within the chambers, fuses con-
ected 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 in-
cluding 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 with
in 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 con-
tact-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.