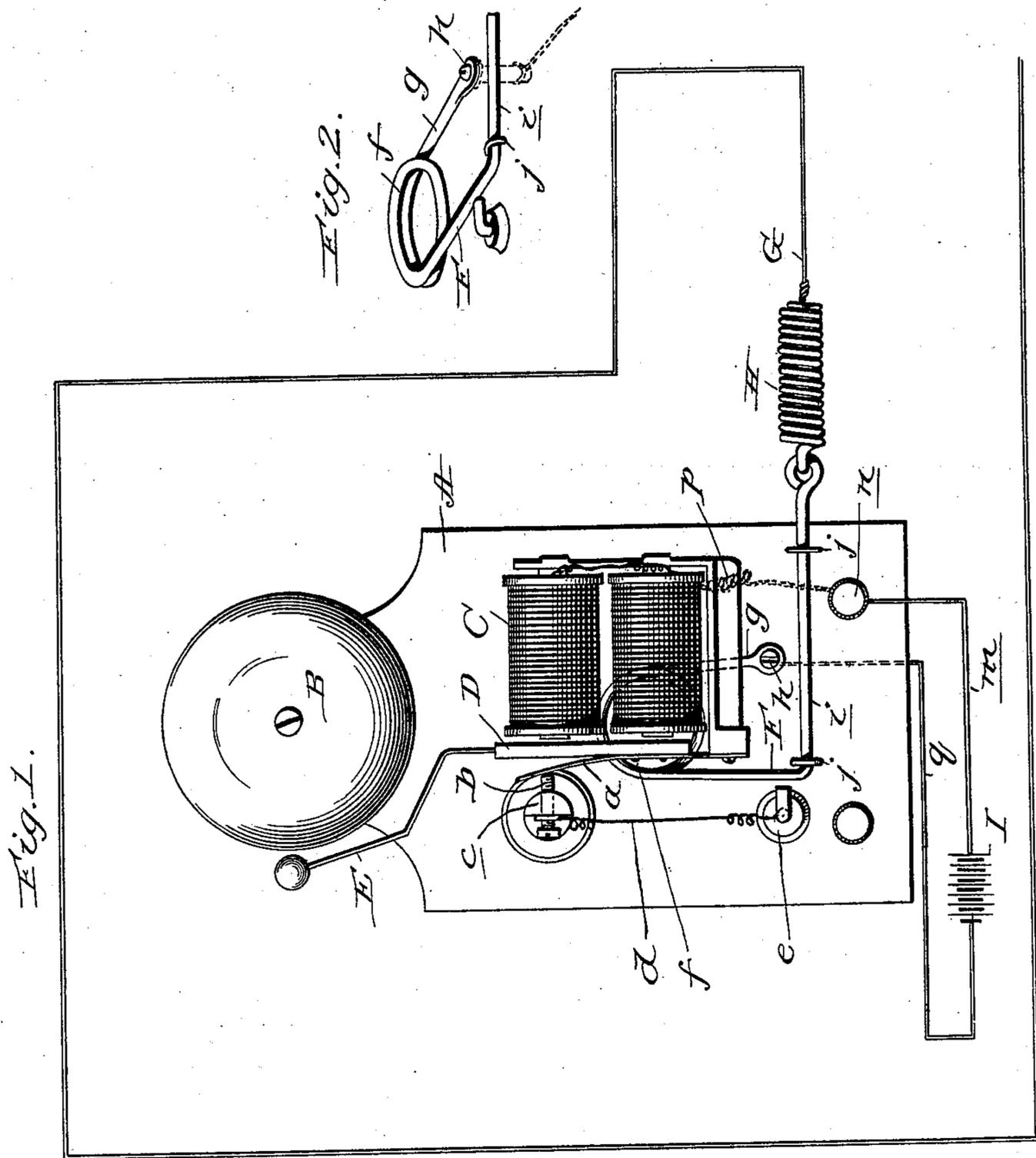


(No Model.)

M. C. CANTRELL.  
ELECTRIC FIRE ALARM.

No. 510,115.

Patented Dec. 5, 1893.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

MILTON CARL CANTRELL, OF SPRINGFIELD, MISSOURI.

## ELECTRIC FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 510,115, dated December 5, 1893.

Application filed March 2, 1893. Serial No. 464,305. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON CARL CANTRELL, a citizen of the United States, residing at Springfield, in the county of Greene and State of Missouri, have invented certain new and useful Improvements in Electric Fire-Alarms; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in that class of automatic, electric fire alarms, which are operated by the parting of a wire or cord; and it has for its primary object to provide a reliable circuit closing device, designed to be connected with the wire or cord, and adapted when the same is severed by fire to quickly close the electric circuit and set an armature in motion so as to ring a bell.

A further object of the invention is to provide means for holding the wire or cord taut so that it will readily part when subjected to the action of fire.

A still further object of the invention is to provide means for taking up slack in the wire or cord so as to prevent casual movement of the circuit closing device.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of my improved alarm, the same being illustrated as arranged in an electric circuit, and, Fig. 2, is a perspective view of the circuit closing device, removed.

Referring by letter to said drawings:—A, indicates the base of my improved alarm; B, indicates a bell or gong; C, indicates electromagnets; D, indicates a vibratory armature; and E, indicates a clapper or hammer, all of which may be of the ordinary or any approved form and construction.

The armature D, is provided with a spring *a*, as shown, which rests in contact with a screw *b*, carried by the post *c*; and this post *c*, is connected by a wire *d*, with a post or button *e*, which is designed to be engaged by the circuit closing device F, when the same is released as will be presently described. This circuit closing device F, which is pref-

erably formed from spring wire, comprises a coil *f*, a leg *g*, which is connected to a post *h*, and a leg *i*, which is designed to be connected with the wire G.

In the present embodiment of my invention, the leg *i*, of the device F, is of an angular form, and its outer branch is arranged in eyes or staples *j*, whereby it will be seen that when the wire G, is severed, the inner branch of the said leg *i*, will be carried against the post or button *e*, and the electric circuit (presently described) will be closed and the alarm sounded. The wire G, which is designed to be arranged in an exposed position in a room or several rooms of a building, is preferably formed from half-tempered steel, as I have found from experience that while such a wire is able, when cold, to withstand the strain, it will readily part when heated, which is highly desirable.

Interposed between, and connected to the contiguous ends of the wire G, and the circuit closing device F, is a coiled spring H, which is designed to hold the wire taut so that it will quickly part when subjected to the action of fire. This spring H, is also designed to permit expansion and contraction of the wire, incidental to heat and cold; and being much stronger than the spring of the circuit closing device, it will meet the fluctuations of the wire and will prevent the same from affecting the circuit closing device, which is an important advantage as is obvious.

The battery I, of the electric circuit is arranged at some remote point, where it is not liable to be affected by fire; and by the connections shown, it will be seen that when the wire G, is parted and the device F, contacts with the post or button *e*, the current will flow from one pole of the battery through the wire *m*, the post *n*, the helix *p*, the electromagnets C, the armature D, the spring *a*, the screw *b*, the post *c*, the wire *d*, the post or button *e*, the circuit closing device F, the post *g*, and the wire *q*, to the other pole of the battery. Thus it will be seen that the armature D, will be kept in motion and the bell will be caused to ring until the circuit is broken.

It is obvious that in the practice of my invention, the circuit closing device F, and the post or button *e*, might be arranged at a point

remote from the other elements of the alarm; for instance the device F, and post *e*, might be arranged in the room with the wire G, while the electro magnets, bell, armature, &c., might be placed in the office of the building, in a police station, or other place to notify the attendants of the fire. It is also obvious that if desired two or more alarms might be arranged in circuit with a single battery; the wiring being arranged in any approved manner.

From the foregoing description, it will be seen that a very slight flame will part the wire G, and that the circuit will be immediately closed and the alarm sounded before the fire can gain much headway. It will also be seen that the bell will be caused to ring continuously until the circuit is broken, which is highly advantageous.

Having described my invention, what I claim is—

1. In an electric fire alarm, the combination of a post or contact piece *e*, arranged in an electric circuit, a circuit closer formed from spring

metal, also arranged in the electric circuit and having one of its ends secured; said circuit closer comprising a coil, and a free leg adapted to contact with the post or contact piece, and a suitable means for normally holding the leg of the circuit closer away from the post *e*, substantially as specified.

2. In an electric fire alarm, the combination of an electro-magnet, an armature, a post or contact piece *e*, and a circuit closer arranged in an electric circuit; the said circuit closer being formed of spring metal and comprising a coil and an angular leg, a bell adapted to be sounded by a hammer on the armature, a wire adapted to hold the circuit closer away from the post *e*, and a coiled spring connecting the wire and the circuit closer, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

MILTON CARL CANTRELL.

Witnesses:

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