

(No Model.)

H. A. REED.
CABLE FOR ELECTRIC FIRE ALARMS.

No. 565,217.

Patented Aug. 4, 1896.

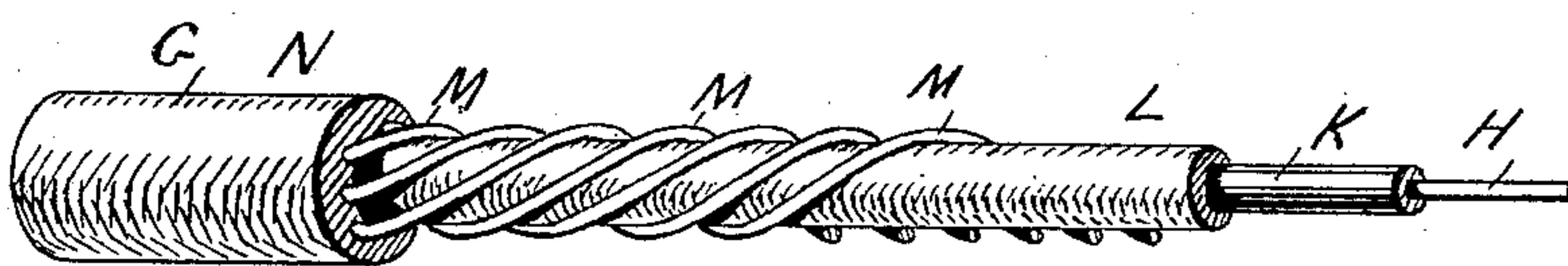
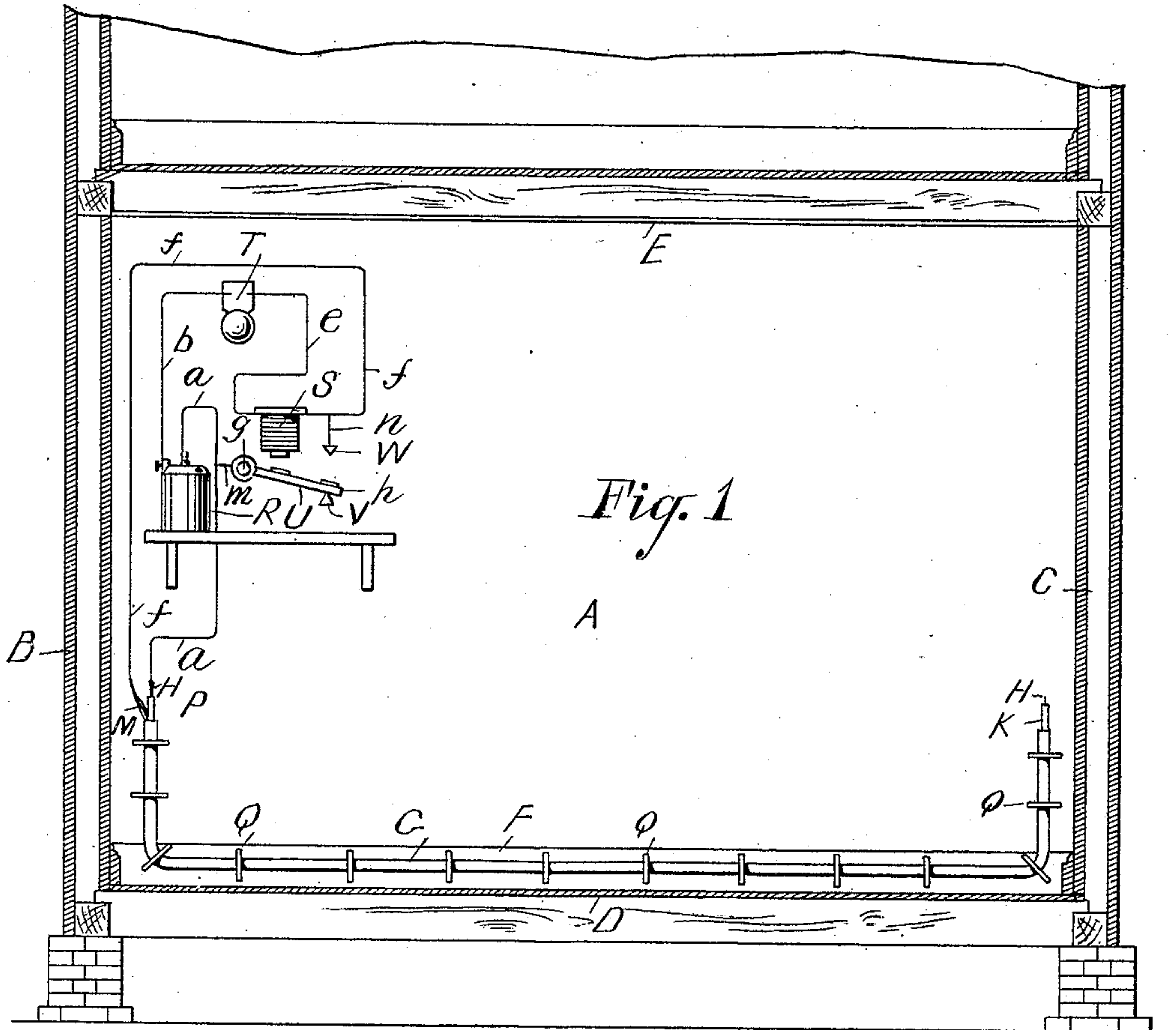


Fig. 2

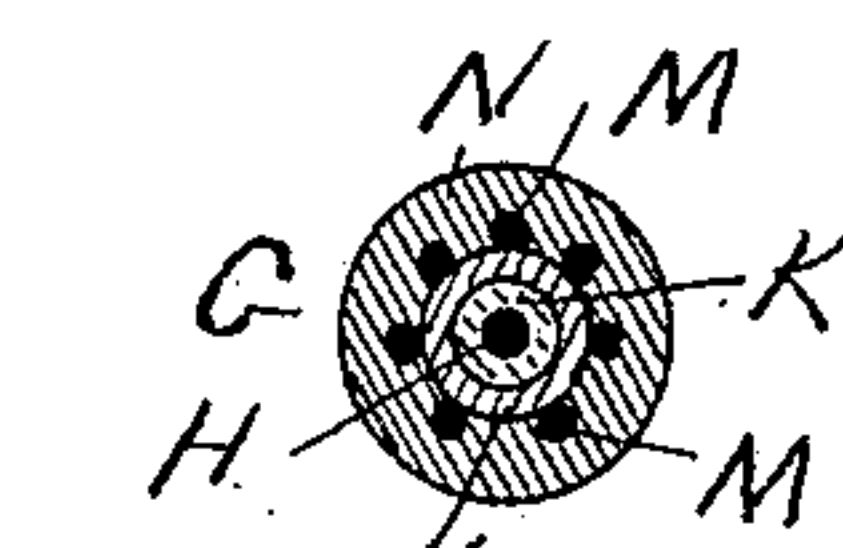


Fig. 3

Witnesses
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UNITED STATES PATENT OFFICE.

HENRY A. REED, OF NEWARK, NEW JERSEY, ASSIGNOR TO JOHN D. GOULD,
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CABLE FOR ELECTRIC FIRE-ALARMS.

SPECIFICATION forming part of Letters Patent No. 565,217, dated August 4, 1896.

Application filed April 20, 1896. Serial No. 588,344. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. REED, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful
5 Improvements in Electric Cables or Conductors for Electric Fire-Alarm Systems, of which the following is a full, clear, and exact description.

The object of this invention is to provide
10 a simple, strong, efficient, and practical electric conductor or electric cable for use more particularly in an electric fire-alarm system, such, for instance, as is described and shown in Letters Patent of the United States, dated
15 September 10, 1895, No. 546,262; and the invention consists of an electric conductor or electric cable for use in an electric fire-alarm system all constructed and arranged for operation substantially as hereinafter fully described, reference being had to the accompanying sheet of drawings, in which is illustrated an electric conductor or electric cable constructed in accordance with this invention and its manner of use in an electric
25 fire-alarm system.

Figure 1 represents the sides of a room or building, with the walls, ceiling, and flooring in vertical section, with this electric conductor or cable applied thereto in connection
30 with an alarm-sounding device for use in an electric fire-alarm system. Fig. 2 is a side view of the electric cable, showing its manner of construction. Fig. 3 is a cross-section of Fig. 2. Figs. 2 and 3 are enlarged to show
35 the construction of the cable clearer.

In the drawings, A, B, and C represent the side walls of a room or building, two, B C, of which are in vertical section; D and E, the floor and ceiling, respectively, in cross-section,
40 and F the mop-board, all of which is as usual in the construction of a room or building.

G is the electric cable or conductor, and it is constructed as follows: H is a core-wire made of copper or any suitable electric material, covered or coated with a metal K, such
45 as lead or compound of metal, and one that will fuse at a low degree of heat. This fusible metal can be applied in any suitable manner to the central wire. For instance, it can
50 be run through a die in a fusible state with the copper wire, which will lay it even and

smooth thereover and in a quick, satisfactory, and practical manner. Over this fusible metal is placed a coating or covering L of insulating material, preferably one that
55 will fuse or burn in a flame at a low degree of heat, and preferably at a lower degree of heat than the fusible-metal covering will melt, and over this insulating material is wound a series of fine copper wires M, as many
60 as desired, being wound, preferably, in long spiral form, and over these copper wires is another covering or coating N of insulating material, which can be like the inner insulating material, or preferably one that is
65 somewhat firmer and stronger, but yet that will melt or burn at the desired low temperature.

The electric cable as thus constructed is finished and ready for use in the electric fire-
70 alarm system, and in such use, as illustrated in Fig. 1, it is secured to the sides or walls of the room, as follows: Starting from a point at P on the wall A it is run along the wall B down and along the mop-board F and up a
75 short distance on the wall A close to the wall C, being secured at intervals by staples Q or in any suitable manner. The wire H and fusible covering K, making practically electrically one wire, and the series of wires M
80 are connected to an electric battery R, magnet S, and electric bell in the following manner: A wire *a* is connected to the end of the wire H and its fusible-metal covering, which runs to and connects with one pole of the
85 electric battery R. From the other pole of the electric battery a wire *b* extends to and connects with the electric bell T, and from the bell a wire *c* runs to and connects with the magnet S, and a wire *f* connects the magnet
90 with all the wires M wound upon the insulated fusible wire.

U is an armature for the electromagnet, pivoted at *g* to swing up and down and to rest by its free end *h* upon a block V, secured
95 to a support, but which is of insulated material or insulated in any suitable manner. From the armature U runs a wire *m*, which connects with the wire *a*, connecting the battery and fusible wire H. A short distance
100 above the free end of the armature is a metal block W, secured to the wall or support, which

is connected by an electric wire n with the wire f , connecting the electromagnet and the wires M .

As shown, the device is in position for operation and action, and if a fire occurs in any part of the room or building where this electric cable or conductor is located both coatings or coverings of the insulating material at such place will melt or burn in a flame, and the fusible metal or covering or wire at such place quickly becomes heated at the temperature determined and melts and flows or runs down onto or connects or comes in contact with any one, or more, or all of the electric wires M , which instantly makes the circuit with the battery, magnet, and bell through the wires and connecting-wires, sounding the bell, also causing the magnet to attract the armature, which moves up to and its end rests and bears upon or against the block W , when another or shorter electric circuit is made independent of the fusible-wire circuit through the block W , wire n , wire f , magnet S , wire e , bell T , wire b , battery, wire a , and wire m , to armature, to block W , completing the circuit, the magnet holding the armature in such contact, which causes the bell to continue to sound as long as the battery lasts or some person comes who has been warned by the sounding of the bell.

The electrical apparatus can be placed in another room or in any part of the building, or the bell can be placed outside of the building, as desired; but the electric cable should be connected electrically with the magnet and bell, as described, at all times, the circuit, however, being constantly open, the electric circuit being made when the fire occurs, as described, and the alarm sounded.

The electric wires forming the electric cable can be of any convenient size; also, as all of the wires are arranged in a cable form, it can be laid easily and conveniently in all places about the room or building.

The electric circuit, after being made by the fusing of the fusible wire or covering K , is maintained by the short circuit through the armature, as described, insuring the continuous sounding of the alarm, even if the electric circuit between the conducting-wires should become broken from any cause. It is preferable to have the insulated material of such a nature that it will burst into a flame, thus adding heat to the fire, insuring the operation of the cable much quicker to sound the alarm. The central copper wire in the

cable gives the necessary tensile strength for the fusible wire and the best conductivity for the electric current.

By having a series of electric wires M the making of the electric circuit is insured from the fusing of the fusible wire, as in such fusing the fused metal will surely come in contact with some one wire of the series, and practically all that is necessary is that contact shall be made between the fusible wire and any one of the series of electric wires to make the electric circuit, when it is maintained through the magnet and armature.

The several wires can be of any suitable metal, although copper is preferable, owing to its great conductivity. Also in lieu of a series of wires wound upon the first covering of insulating material only one wire need be used, but it is well to have two or more, as the making of the electric circuit by the fusing of the fusible wire is greatly insured.

Although this cable is described more particularly in reference to a fire-alarm system, it is applicable as well to a burglar or other alarm system, as in such case if the cable is compressed sufficiently at any place the electric contact is made and the alarm sounded, or if it should be cut by a burglar, for instance, the electric contact will surely be made between the two wires or conductors and the alarm sounded.

Having thus described my invention, what I claim is—

1. An electric cable or conductor for electric fire or other alarm systems composed of a core-wire of copper or other electric wire, a fusible metal or compound of metal round and about the core-wire, an insulating material over said fusible metal, an electric wire wound upon the insulating material, and an insulating material covering the whole.

2. An electric cable or conductor for electric fire or other alarm systems composed of a core-wire of copper or other electric wire, a fusible metal or compound of metal round and about the core-wire, an insulating material over said fusible metal, a series of electric wires wound upon the insulating material, and an insulating material covering the whole.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY A. REED.

Witnesses:

THOMAS H. REED,
W. WOLCOTT MARKS.