

E. HOLMES & H. C. ROOME.
ENVELOPE OR LINING FOR SAFES, VAULTS, &c.
No. 110,362. Patented Dec. 20, 1870.

Fig. 1.

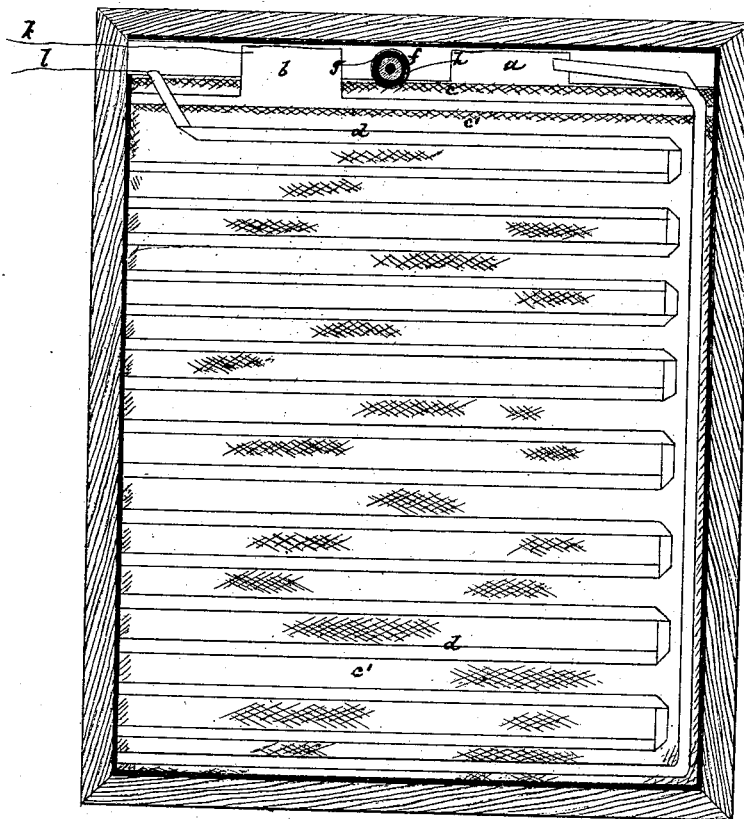
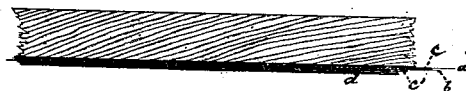


Fig. 2.



Witnesses:
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EDWIN HOLMES, OF NEW YORK, N. Y., AND HENRY C. ROOME, OF JERSEY CITY, NEW JERSEY.

Letters Patent, No. 110,362, dated December 20, 1870.

IMPROVEMENT IN ELECTRO-MAGNETIC ENVELOPES FOR SAFES, VAULTS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, EDWIN HOLMES, of the city, county, and State of New York, and HENRY C. ROOME, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Electro-Magnetic Envelope or Lining for Safes, Vaults, and other structures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents an interior face view of our improved envelope or lining, as applied to the one side of a safe or vault or wooden case inclosing the same; and

Figure 2, a transverse section thereof, in part.

Similar letters of reference indicate corresponding parts.

Our invention relates to electro-magnetic attachments to safes, vaults, and other structures or inclosures for operating a burglar-alarm, upon any attempt being made to break into or improperly interfere with the safe, vault, or structure; and

The invention consists in an electric envelope or lining applied to such structure or structures, so that any perforation by a metallic instrument or conductor of said envelope or lining, when the same is properly connected with a battery and bell, or any severing of its connection with the battery, shall sound an alarm.

The invention comprises a combination of an electric envelope or lining for safes, vaults, and other structures, with a galvanometer or instrument, the movements of which are produced by variations in a current of electricity from a battery or other electrical apparatus, in connection with the safe, vault, or structure.

Said invention also includes a peculiar construction of the envelope or lining, by making it of separate parts or plates, which connect with the opposite poles of the battery, and which are imperfectly insulated from each other, or are connected with each other by a resistance-coil or medium.

The invention also embraces an envelope or lining of the character specified, made of thin, pliable sheets of metal, and insulated from each other by a pliable non-conductor, so that when glued or cemented together they form a single sheet. The insulating substance we prefer to use is composed of a coating of gum-shellac and paper or cloth.

Referring to the accompanying drawing—

a and *b* represent two thin and pliable plates of sheet metal, so insulated from each other that they will allow of a slight current of electricity to pass from one to the other when the plates are connected with the opposite poles of a battery.

This insulation is effected either by introducing a partial conductor between the plates, or by making the insulating substance so thin in one or more places that it will allow of the passage of a slight current through it, or a like effect may be produced by perfectly insulating the plates *a* and *b*, as by an insulator, *c*, and connecting them together by a resisting coil or medium, *f*, which last, for the purpose of more clearly explaining the action of the envelope or lining, is the arrangement shown in the drawing.

The two plates *a* and *b* being insulated, as described, upon the surface of one of them is glued or cemented another plate or sheet of insulating material, *c'*, and upon this insulator is glued or cemented a thin continuous ribbon, *d*, of metal, arranged to lie in convolutions or in a zigzag manner over the entire surface of said insulator *c'*.

The insulators *c c'* we prefer to make of cloth or paper, properly coated with gum-shellac, and so that they, like the metallic conductors which they insulate, are pliable, whereby the whole may be applied in the form of a single sheet as an envelope or lining to a safe, vault, or other structure, or to the inside of a wooden covering surrounding the same.

One end of the ribbon *d* is connected, as by a wire, *l*, with the one pole of a battery, and the other end thereof with the plate *a*.

The resistance-coil *f* is connected with the plates *a* and *b* at points *g* and *h*, and the plate *b* connected as by a wire, *k*, with the opposite pole of the battery to that with which the ribbon *d* is connected.

When the wires *k* and *l* are connected as described, a slight current of electricity passing to the ribbon *d*, flows around the entire safe or vault to the plate *a*, through the resistance-coil *f* to the plate *b*, and from thence through the wire *k* to the battery.

Any attempt to perforate the envelope or lining by a metallic instrument, would establish a perfect electrical connection between the plates *a* and *b*, and the current not being obliged to pass through the resistance-coil *f*, the flow would be greatly increased.

Should an entrance be attempted by using a non-conducting instrument, the metal ribbon *d* would be severed and the circuit broken, or the cutting of either wire *k* or *l* would have the same effect.

To obtain an alarm from the fluctuation or stoppage of the current, as thus produced, it only requires to connect the wires *k* and *l* with a galvanometer, or instrument the measurements of which are produced by variations in a current of electricity from a battery or other electrical apparatus, in connection with the safe, vault, or structure. A bell in connection with the apparatus, may be used to give the alarm.

What is here claimed, and desired to be secured by Letters Patent, is—

1. An envelope or lining for safes, vaults, and other structures, composed of two parts or conductors imperfectly insulated from each other or connected with each other through a resistance-coil or medium, and in connection with the opposite poles of a battery or other electrical apparatus, for action as specified.

2. The combination of an electric envelope or lining for safes, vaults, and other structures, with a galvanometer or instrument, the movements of which are produced by variation in a current of electricity from a battery or other electrical apparatus, in connection with a safe, vault, or structure, substantially as herein described.

3. An electro-magnetic envelope or lining, composed of thin and pliable sheets of metal, insulated from each other by pliable non-conductors, so that when glued or cemented together, the whole form a single sheet, substantially as specified.

4. The combination of the metallic sheets or plates *a b*, the insulating sheets *c c'*, the metallic ribbon *d*, the resistance-coil or medium *f*, and the battery-wires or connections *h i*, essentially as described.

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Witnesses:

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