

No. 735,324.

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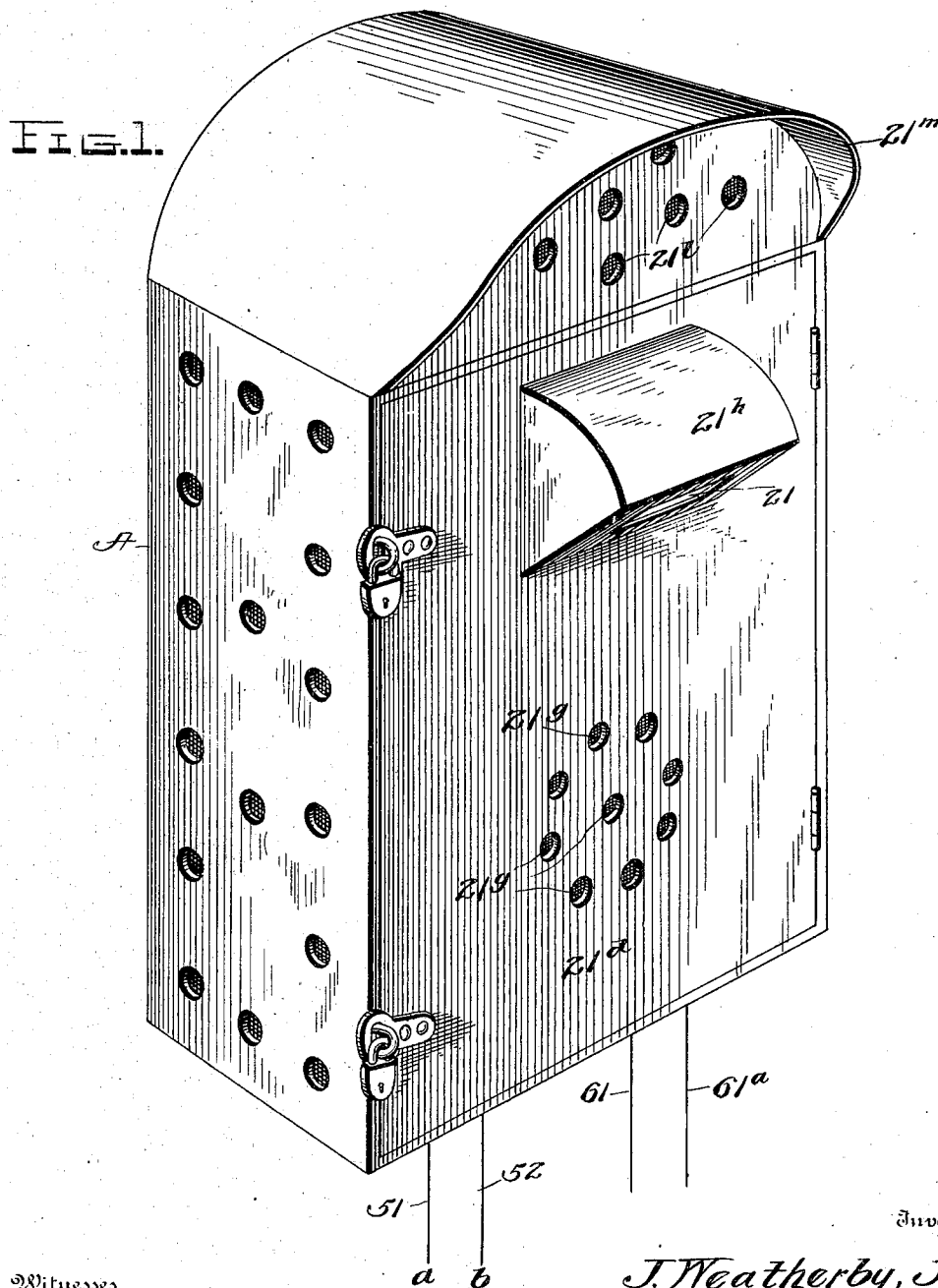
J. WEATHERBY, JR.

ELECTRIC PROTECTIVE SYSTEM.

APPLICATION FILED MAR. 24, 1903.

NO MODEL.

2 SHEETS--SHEET 1.



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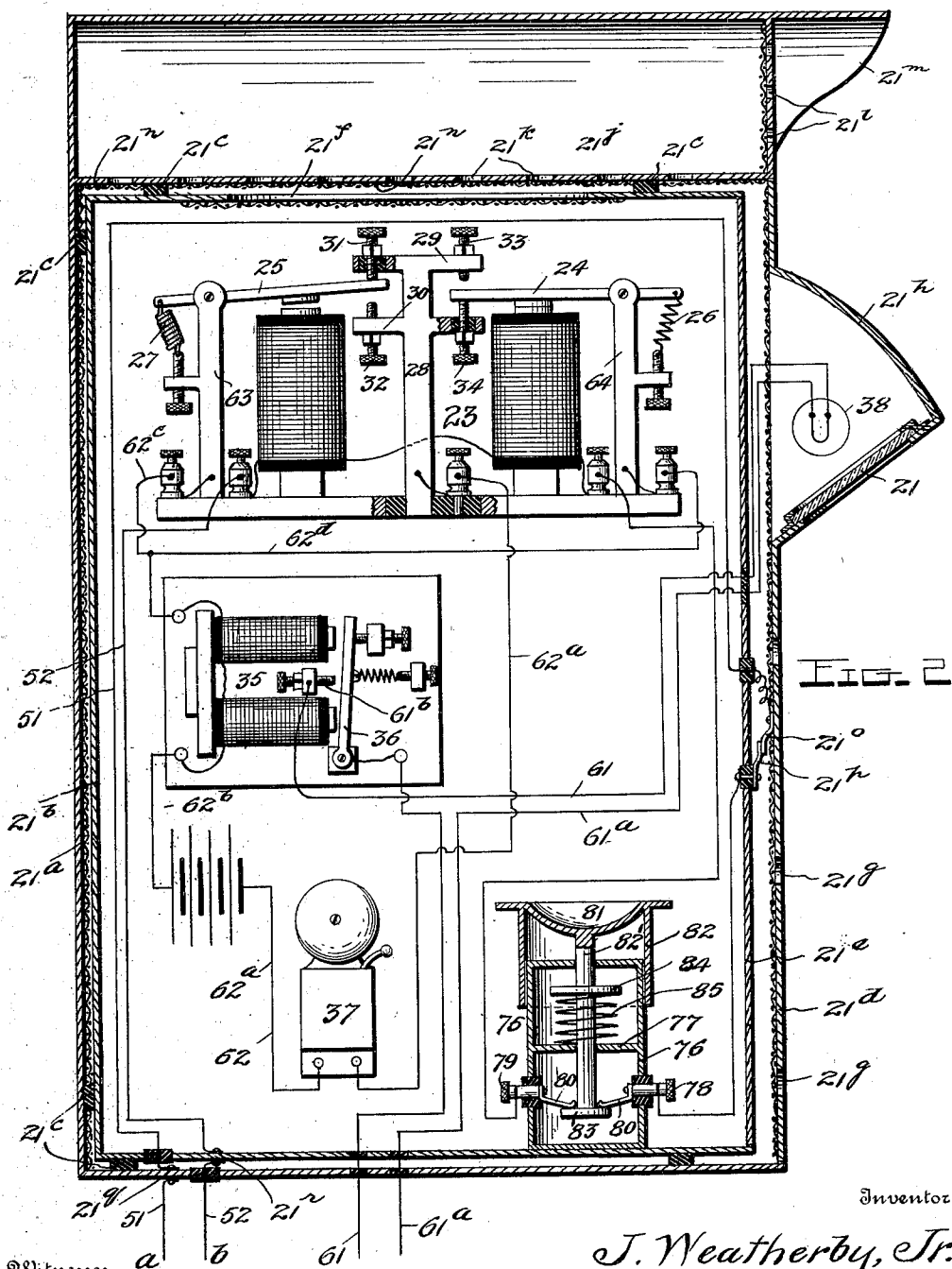


FIG. 2

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UNITED STATES PATENT OFFICE.

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ELECTRIC PROTECTIVE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 735,324, dated August 4, 1903.

Application filed March 24, 1903. Serial No. 149,364. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WEATHERBY, Jr., a citizen of the United States, residing at New Cumberland, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Electric Protective Systems; 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.

The invention relates to an electric protective system particularly designed for use in connection with safes, vaults, buildings, and other structures.

The object of the invention is to provide a novel signal-box particularly designed for use in connection with my electric safe-protective system shown and described in my application for patent filed August 11, 1902, Serial No. 119,293, the parts of which shall be so delicately arranged and novelly constructed that an attempt to gain access to the box by an unauthorized person by subjecting the box to blows for the purpose of breaking the same, by surreptitiously opening the door of the box, or by boring with a drill through the box will be frustrated and the signal given.

A further object is to provide a box of this character with openings to readily admit of the emission of sound and with means whereby should a person attempt to render inoperative the signal mechanism by the introduction or blasting of sand or other powdered or granular material through said openings the signal mechanism will be set into action.

With these and other objects in view the invention consists in certain novel features of construction, combination, and arrangement of parts, which will be more fully described hereinafter and particularly defined in the appended claims.

In the accompanying drawings, Figure 1 is a perspective view of my improved signal-box, and Fig. 2 is a longitudinal vertical sectional view of the same.

Referring to the drawings, A denotes the

signal-box, which comprises two thin flexible metallic walls or casings 21^a 21^b, one within and insulated from the other by rubber blocks or strips 21^c, the outer wall or casing being provided with a hinged door 21^d and the inner wall or casing with a hinged door 21^e. The inner wall or casing, which incloses the alarm mechanism, has a sound-emitting opening 21^f, while the door of the outer wall or casing has a series of similar openings 21^g and also a lamp-chamber 21^h, provided with an arched top and an inclined base. The inclined base is formed with an aperture closed by a glass 21, preferably colored, through which the light from the lamp penetrates. The outer wall or casing is provided with a sound-dome 21ⁱ and has in its top openings 21^k for the admission of the sound from the inner wall or casing to the dome. The dome is provided with sound-emitting openings 21^l, guarded from rain, sleet, and snow by a hood 21^m. A fine metallic screen 21ⁿ lines the outer wall or casing and covers the openings therein, and a similar screen covers the opening 21^l in the top of the inner wall or casing. The screens are electrically connected to their respective walls or casings. A circuit-breaker for the outer door of the wall or casing is provided and consists of a spring contact-point 21^o, electrically connected to the door 21^d, and a spring contact-point 21^p, connected to and insulated from the door 21^e.

Inclosed within the signal-box is a double-balanced electromagnet 23, each side of which has a uniform high resistance.

24 and 25 denote the armatures of the electromagnet, and 26 and 27 denote their springs, the latter of which are set to exert a greater pull upon its armature than the former.

28 denotes a post rising from the base of the electromagnet and provided with cross-arms 29 30, which are electrically connected to said post.

31 32 denote contact-points carried by the arms 29 30, respectively, which contact-points are engaged by the armature 25. 33 34 denote a similar set of contact-points, the former

being electrically connected to the cross-arm 29 and the latter being connected to but insulated from the cross-arm 30. These contact-points 33 34 are adapted to be engaged by the armature 24.

35 denotes an electromagnet of comparatively low resistance, also arranged within the signal-box; 36, its armature; 37, its audible electric signaling device in the form of a bell, and 38 a visual signaling device in the form of a lamp which is arranged to flash rays of light by the vibration of the bell clapper or hammer.

75 denotes a circuit-breaker suitably arranged within the inner wall or casing in position to receive sand or any other granular or powdered material blasted or introduced through the screen-covered sound-emitting opening 21^f and is so delicately balanced or adjusted as to be extremely sensitive, whereby upon the falling of small particles upon it the circuit, which it normally holds closed, will be opened and the signal mechanism set into action. This circuit-breaker may be of any well-known or approved construction; but the one shown in the accompanying drawings is preferred and consists of a casing 76, having a partition 77, binding-screws 78 79, insulated from said casing and connected to contact-points 80, arranged within said casing. A receiver or pan 81 is provided with a sleeve 82, which surrounds the upper end of the casing and has a free vertically-sliding movement. Projecting downward from the receiver or pan and through the partition 77 is a stem 82', provided at its lower end with a head 83 to coact with the contact-points 80 and open and close the circuit through same. This stem is also provided with a collar 84, between which and the partition 77 is confined delicate spring 85, the energy of which is exerted to hold the pan or receiver in an elevated position and the head 83 in electrical contact with the contact-points 80.

51 52 denote the opposite sides of a feed-circuit which it is desired to protect and which when broken, grounded, or short-circuited will cause the alarm to be sounded and a light to be flashed. The sides of this circuit correspond to and are represented by the same reference-numerals as the sides of the feed-circuit 50 shown and described in my application for patent above referred to. I will now proceed to trace both sides of the feed-circuit. Beginning at the point *a*, the side 51 of the feed-circuit electrically connects with the outer wall or casing 21^a at a point 21^a, is insulated from the inner wall or casing 21^b, leads through the contact-points 21^a and 21^b, through binding-screw 78, through one contact-point 80, through the head 83, through the other contact-point 80, through the binding-post 79, and through the double-balanced electromagnet 23. From this magnet the other side 52 of the circuit leads to and is electrically connected with the inner

wall or casing of the box at the point 21^r, extends through and is insulated from the outer wall or casing of said box, and thence leads to the point *b*, thus completing the circuit.

61 denotes the electric-light circuit for the lamp 38, one side 61^a of the circuit extending from the source of electric energy or supply through the lamp to the contact-point 61^b, while the other side extends from the source of electric supply to the armature 36 of the magnet 35.

62 denotes the alarm-circuit. The side 62^a after leaving the bell is connected to the post 28, and the side 62^b after leaving the battery passes through the electromagnet 35 and is provided with branches 62^c and 62^d, the former of which is connected to the armature-post 63 and the latter of which is connected to the armature-post 64.

Assuming the parts to be in the position shown in Fig. 2, should the wires 51 52 be cut, short-circuited, or grounded the double-balanced magnet becomes deenergized and the armature 24 released, thus allowing said armature to contact with the point 33, which completes the bell-circuit 62 and allows the alarm to be given. Upon deenergizing said magnet the circuit is completed between the post 64 and the electromagnet 35 of the bell-circuit, thus causing the armature 36 of said magnet 35 to repeatedly pulsate or vibrate and complete the electric-light circuit 61, and thus cause the rapid flash of the lamp 38 and so furnish evidence that the line-wires have been tampered with. Should it be attempted to gain access to the signal-box by breaking through the walls thereof by blows, the flexibility of the metal of which the walls are composed would cause one wall to contact with the other and short-circuit the feed-circuit and sound the alarm and flash the light precisely the same as when the wires 51 52 are cut or short-circuited. On the other hand, if the door 21^d be surreptitiously opened the circuit will be broken and the alarm will be sounded and the light flashed, and, again, if it be attempted to gain access to the signal-box by boring a short circuit will be made with the same results, for the reason that the drill after penetrating the outer wall or casing will complete the circuit through itself the instant it contacts with the inner wall or casing. Should it be attempted to insert a drill through the sound-emitting openings of the outer wall or casing for the purpose of boring through the inner wall or casing to obtain access to the alarm mechanism, the tool must first pass through the fine metallic screen before it touches the inner wall or casing, and the instant the tool passes through the screen and touches the inner wall or casing a short circuit is made and the entire system placed in the same condition as when the wires 51 52 are cut or short-circuited. Should it be attempted to render the signal mechanism inoperative by the introduction

or blasting of sand or other granular or powdered material through the sound-emitting opening, and thus clog the mechanism, the sand or material will fall upon the pan or receiver 81, depress the same, and break the circuit through the contact-points 80 and head 83. It will thus be seen that it is absolutely impossible for an unauthorized person to obtain access to the controlling mechanism arranged within the box without giving an alarm.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of my invention will be readily apparent, it is thought, without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a signal-box of the character described, the combination of the inner and outer metallic walls or casings insulated one from the other, the outer wall or casing being provided with sound-emitting openings, and a fine metallic screen electrically connected to the outer wall or casing over said

openings, substantially as and for the purpose set forth.

2. In a signal-box of the character described, the combination of the inner and outer metallic walls or casings insulated from each other, the outer wall or casing being provided with a dome on its top and formed with openings in its front and top, said dome also being provided with openings, and a metallic screen covering said openings, substantially as described.

3. The combination with a signal-box having a sound-emitting opening, and an electric signal mechanism arranged within the box, of a balanced circuit-closer in circuit with said mechanism and adapted to break the circuit by weight applied thereto, substantially as described.

4. The combination with a signal-box having a sound-emitting opening, and an electric signal mechanism arranged within the box, of a spring-actuated circuit-closer in circuit with the signal mechanism and provided with a receiver or pan, substantially as and for the purpose set forth.

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

JOSEPH WEATHERBY, JR.

Witnesses:

JAMES F. NAYLOR,

J. C. DELANEY.