

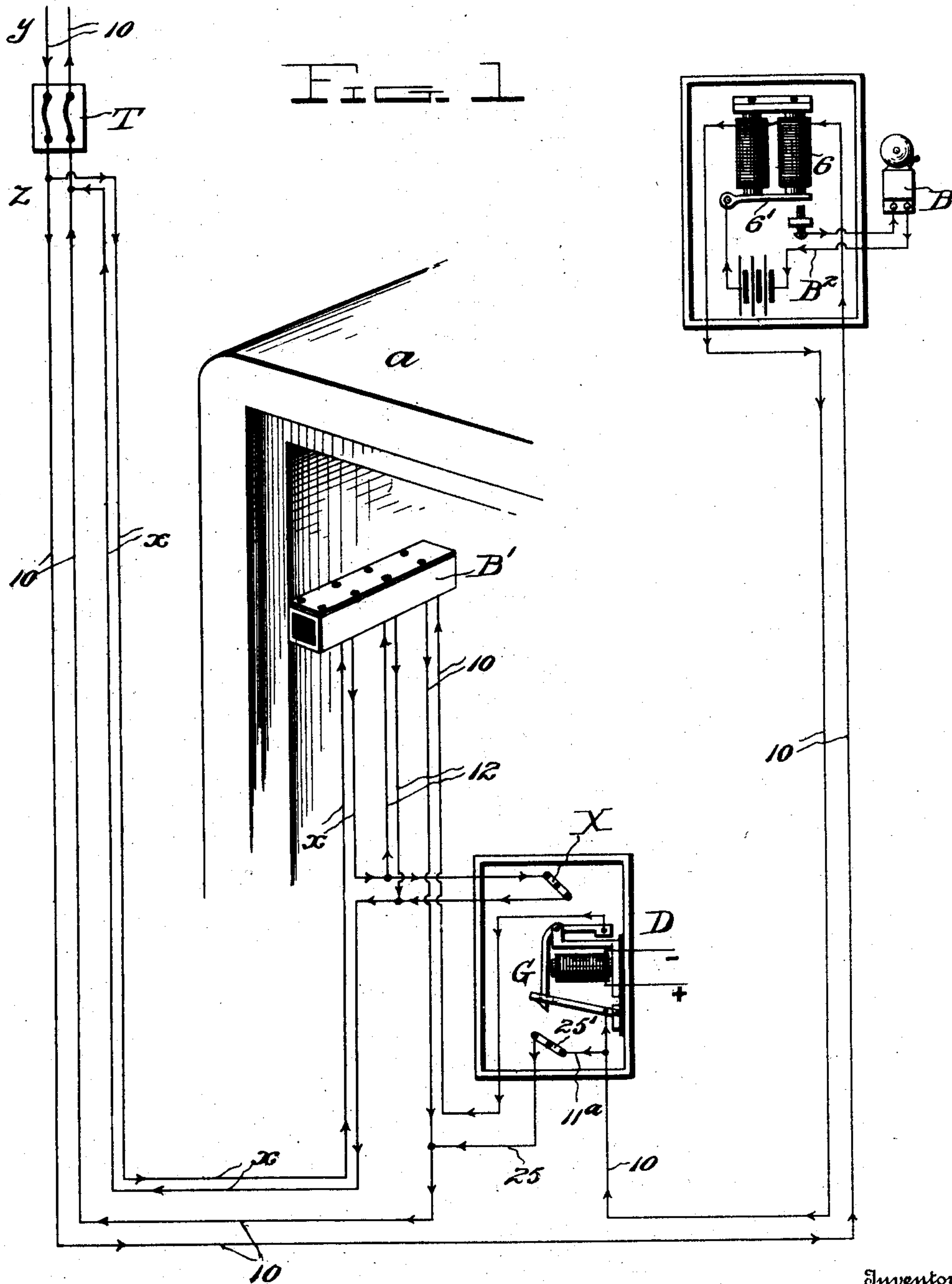
No. 667,125.

Patented Jan. 29, 1901.

H. F. FREED.
ELECTRICAL CONNECTOR.
(Application filed Sept. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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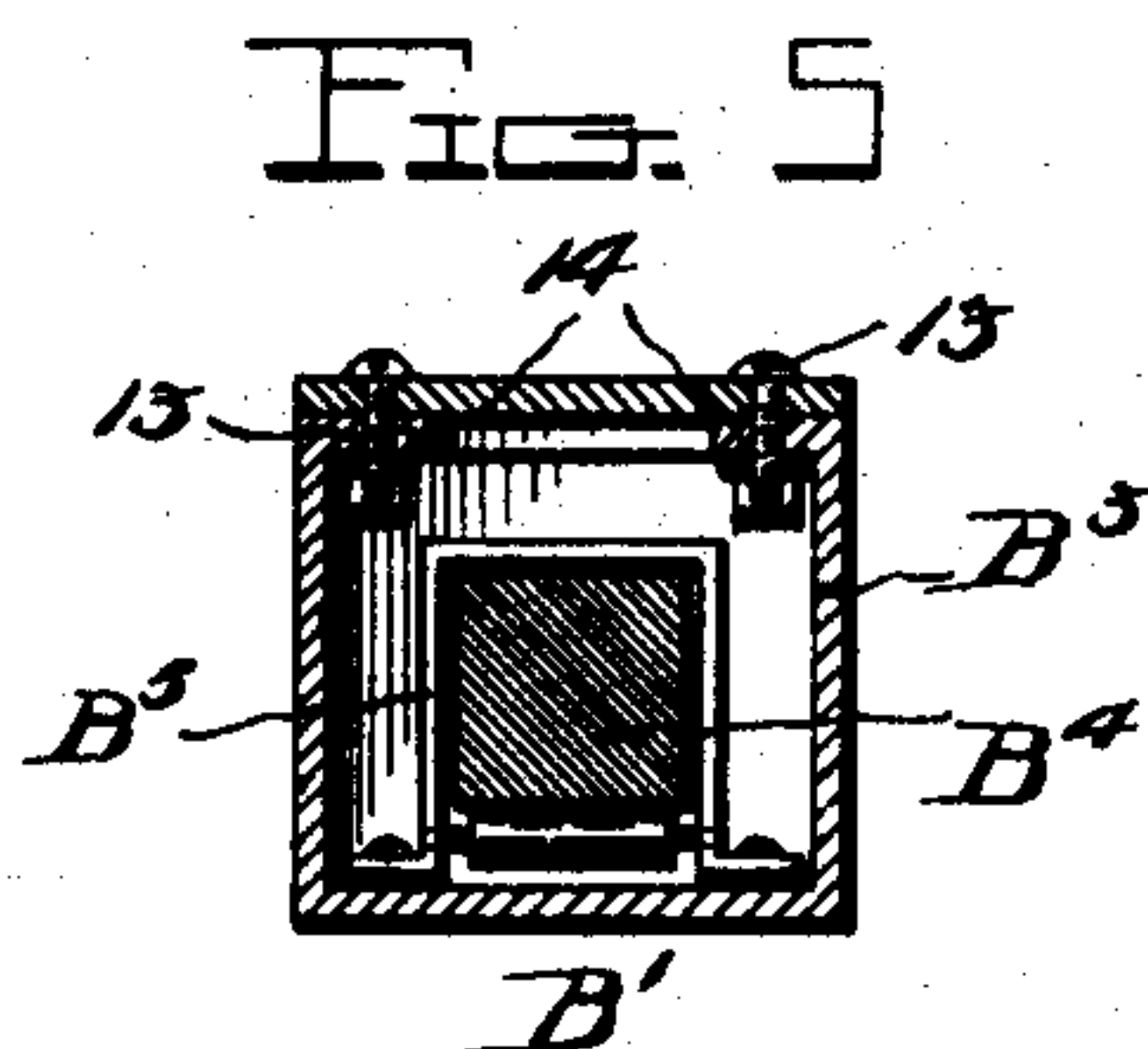
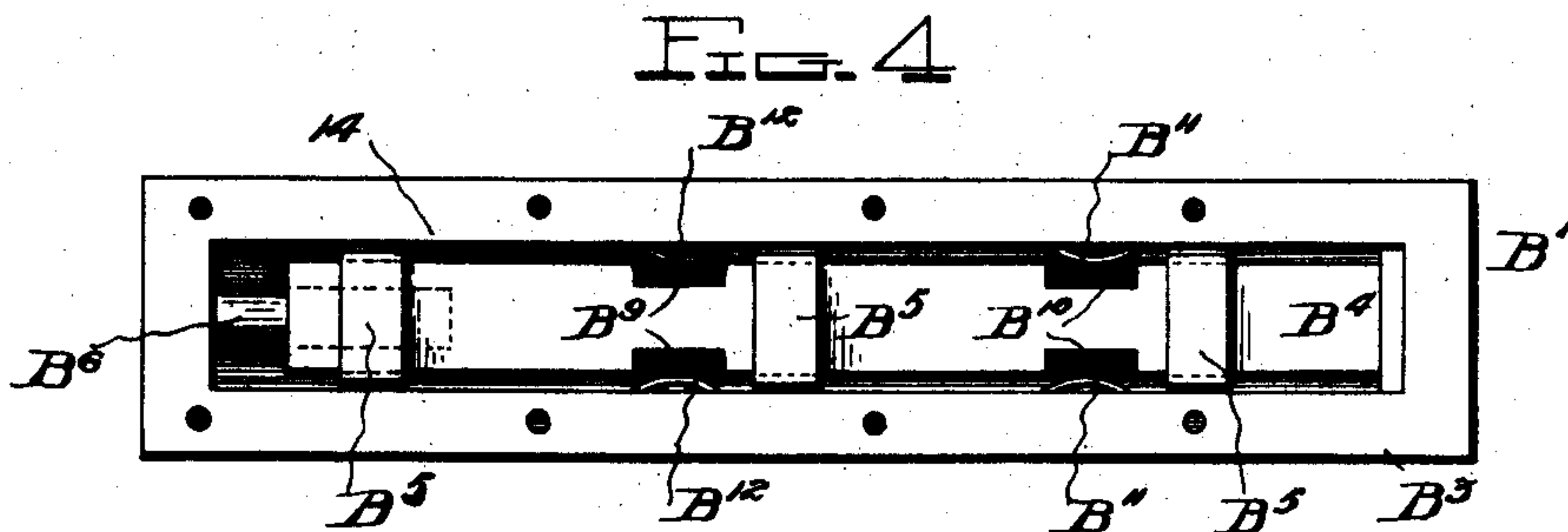
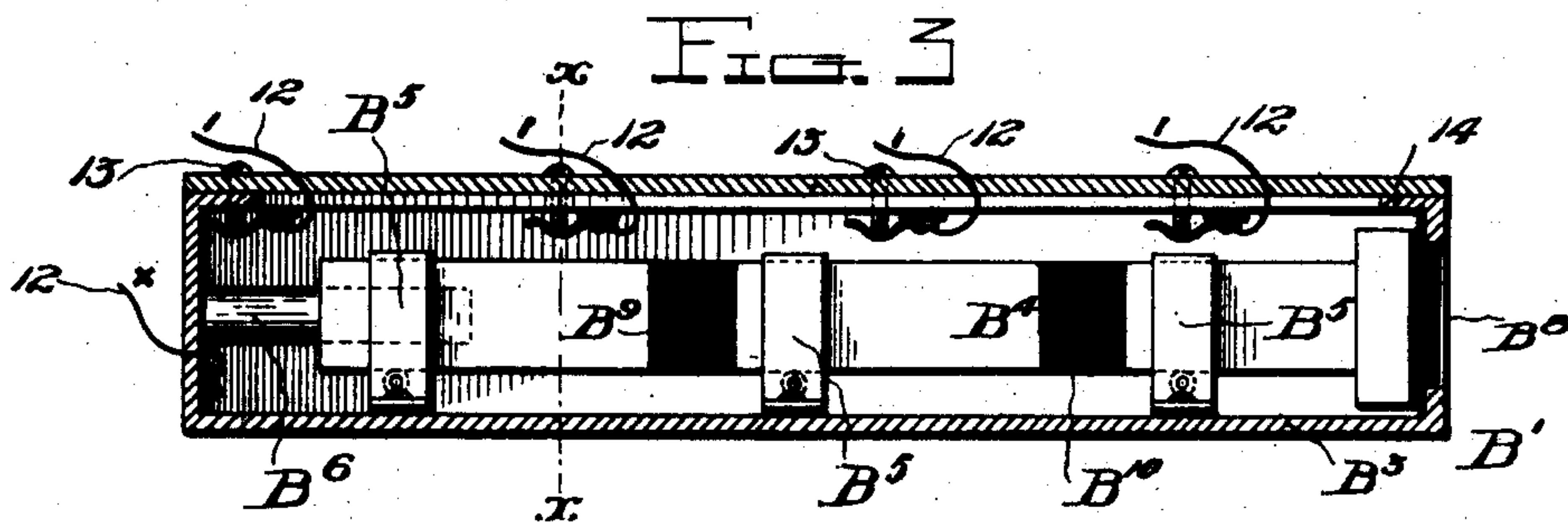
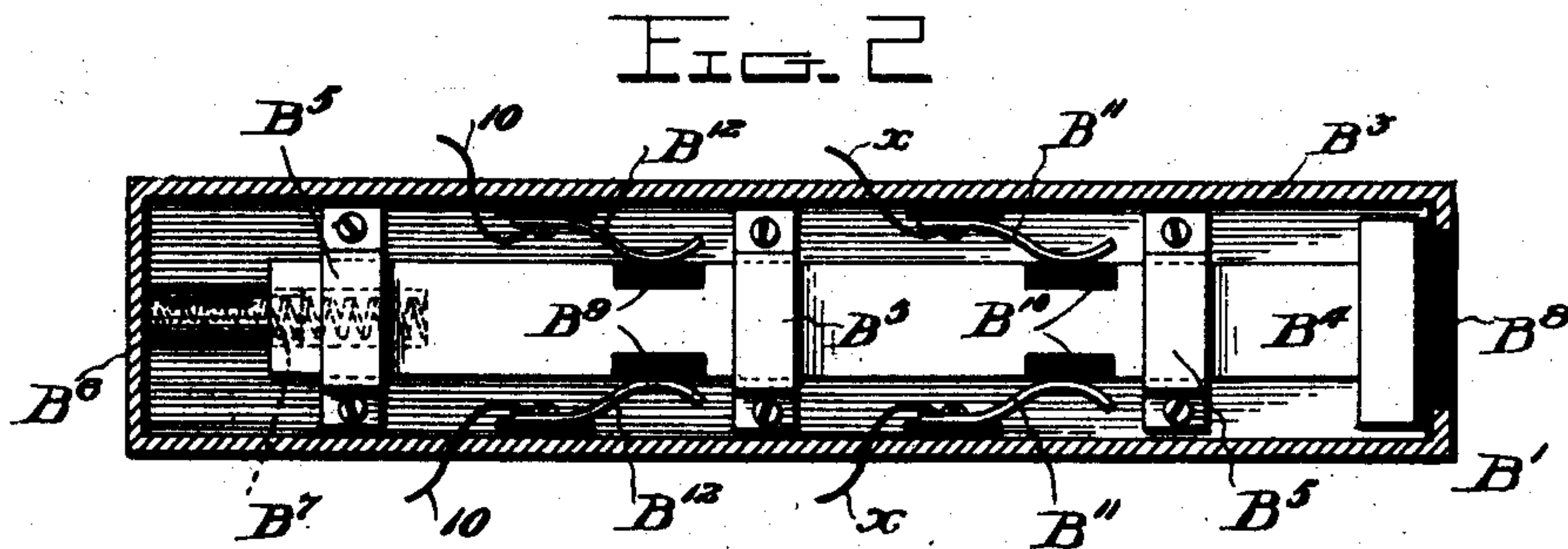
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

HENRY F. FREED, OF HARRISBURG, PENNSYLVANIA.

ELECTRICAL CONNECTOR.

SPECIFICATION forming part of Letters Patent No. 667,125, dated January 29, 1901.

Application filed September 27, 1900. Serial No. 31,279. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. FREED, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Connectors; 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 electrical connectors, and is especially designed for use in my improved electric protective system for which I have made application for Letters Patent, filed August 31, 1900, and bearing Serial No. 28,677.

The object of the invention is to provide a connector adapted for use in connection with some movable part of a structure—such, for instance, as a safe or vault door—and which shall be of such construction that by the opening of the door by a burglar or other unauthorized person the main circuit will be broken and cause an alarm or signal to be made, or should the main current be thrown off or shunted by an authorized person and the safe-door be opened by such person and left open the construction of the connector is such that any attempt on the part of any person to set the indicator so as to prevent an alarm being sounded after the door has been closed and the current is through the connector, by the breaking or short-circuiting of the main line, an alarm or signal will be made and the officials of the building will be thus notified that the system is being tampered with.

With this and other objects in view the invention consists in certain features of construction and combination of parts, which will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a diagrammatic view illustrating the connector arranged within a vault. Fig. 2 is a horizontal sectional view. Fig. 3 is a vertical sectional view. Fig. 4 is a top plan view with the cover-plate of the indicator removed; and Fig. 5 is a cross-sectional view on line *u u*, Fig. 3.

In the drawings, *a* denotes a safe or other structure desired to be protected, which is provided with the usual door. (Not shown.)

B' denotes the connector, and 10 denotes the wires of the main circuit, in which are installed electromagnets 6 and an automatic circuit-breaker *G*, as is shown in my application for patent above referred to.

T denotes the fuse cut-outs for the main circuit.

B denotes the alarm or electric bell, and *B*² denotes the bell open circuit, in which is included, when the magnets 6 are demagnetized, the armature 6' of said magnets.

25 denotes a shunt-wire controlled by a switch 25', designed to shunt the main current from the connector *B'* and permit of the opening of the door of the vault or safe without sounding an alarm.

x denotes the wires of an open circuit which join the wires 10. This circuit includes a switch *X* and the connector *B'*. The switches *X* and 25' and the automatic circuit-breaker *G* are all inclosed within a box *D*, which can only be opened by duly-authorized persons.

Referring to Figs. 2, 3, 4, and 5, in which I have shown the connector in detail, *B*³ designates a casing which is adapted to be secured within a safe or vault and have one of its ends which is open arranged within the path of movement of the fixed bolt or stud of the door of the vault or safe. Mounted within the casing is a metal plunger *B*⁴, which has a sliding movement in said casing and is guided in such movement by the bearing-straps *B*⁵. The rear end of the plunger is formed with a bore or seat which is coincident with a tube *B*⁶, projecting from the inner end of the casing and located within the bore of the plunger, and within the tube is a coil-spring *B*⁷, the energy of which is exerted to force the plunger forward. The forward end of the plunger is provided with insulations *B*⁸, and the sides of the plunger at two diametrically opposite points *B*⁹ *B*¹⁰ are provided with insulations.

*B*¹¹ denotes one set of spring contact-points secured to the inner side of the casing and adapted to make contact with the plunger *B*⁴ and with the insulations *B*¹⁰. The spring contact-points *B*¹² are secured to the inner side of the casing and adapted to make contact with the plunger *B*⁴ and with the insulations *B*⁹. The wires *x* connect with the spring contact-

points B¹¹ B¹¹, and the wires 10 connect with the spring contact-points B¹² B¹².

In operation, assuming the door of the safe or vault to be open to afford access to the safe or vault, the switches 25' and X are moved to complete their respective circuits, and the plunger B⁴ is released, so as to move their insulations B⁹ B¹⁰ in contact with the spring contact-points B¹¹ B¹². The current of the main-circuit wires 10 flows in the direction indicated by the arrow, starting at the point γ , through one of the fuse cut-outs, thence through the electromagnets 6, thence through a branch wire 11^a, thence through the switch 25', thence through the shunt-wire 25, which is joined to the opposite circuit-wire 10, and thence through said circuit-wire 10 to the other fuse cut-out. There is no current flowing through the wires $x x$, for the reason that the spring contact-points B¹¹ are resting upon the insulations B¹⁰ of the plunger. Now should a person force the plunger B⁴ inward with a view of holding it in that position by wedging or by applying some adhesive substance, so that when the safe-door is closed and the circuit through the shunt-wire 25 is broken and the circuit through the spring contact-points B¹² and the plunger is completed with a view of preventing the plunger from being forced outward by its spring in the event of the door being opened by an unauthorized person, and thus sounding an alarm, the instant the plunger is forced inward for this purpose the insulations B¹⁰ are moved from engagement with the spring contact-points B¹¹, which would then bear upon the bar and complete the circuit through the wires x , spring-contacts B¹¹, and plunger, thus short-circuiting the main circuit and blowing out the fuse cut-outs. Upon the blowing out of the fuse cut-outs the electromagnets 6 are demagnetized and the armature 6' of said magnets falls and completes the alarm-circuit. When the safe or vault door is closed, the stud thereon engages the plunger and forces it inward, the switch X having first been turned to break the circuit of wires $x x$. The switch 25' is now open, so as to permit the current of the main line to pass through the automatic cut-out and through the spring-contacts B¹² and the plunger. Now should an unauthorized person attempt to open the door the main circuit will be broken, thus demagnetizing the magnets 6 and completing the alarm-circuit.

To provide against the resetting of the connector by moving the cover thereof, I connect branch wires 12 with the wires $x x$ —one with the casing of the connector and the other with the spring-tongue secured to and insulated from the casing. Fastening-screws 13, used for securing the cover to the ledge 14 of the casing, after passing through said cover and ledge engage the spring-tongues and hold them from contact with said ledge. While the door of the safe or vault is open,

should a person attempt to remove the cover for the purpose of setting the connector so that it will not operate, the instant one of the screws is worked sufficiently far out to let the free end of the spring-tongue contact with the ledge the circuit is completed through the wires 12 12 and $x x$, thus short-circuiting the main circuit and causing an alarm to be sounded in the manner hereinbefore set forth.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily understood without requiring an extended explanation. The device is exceedingly useful for the purpose for which it is designed and may be placed upon the market at a comparatively small cost.

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 this invention.

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

1. The combination with a closed circuit, an electromagnet included in said circuit, an open signal-circuit closed by the armature of said electromagnet when the same is demagnetized, an automatic circuit-breaker included in the closed circuit, an automatic circuit-connector included in the closed circuit, branch wires connecting the closed circuit and the circuit-connector, and a switch for connecting said branch wires, as set forth.

2. The combination with a closed circuit, an electromagnet included in said circuit, and an open signal-circuit closed by the armature of said electromagnet when the same is demagnetized, of an automatic circuit-breaker included in the closed circuit, an automatic circuit-connector included in the closed circuit, branch wires connecting the closed circuit and the circuit-connector, a switch for said branch wires, a shunt-wire electrically connected to one side of the closed circuit, and a switch for said shunt-wire, as set forth.

3. The combination with a closed circuit, an electromagnet included in said circuit, and an open signal-circuit closed by the armature of said electromagnet when the same is demagnetized, of an automatic circuit-breaker included in the closed circuit, an automatic circuit-connector included in the closed circuit, branch wires connecting the closed circuit and the circuit-connector, a switch for said branch wires, a shunt-wire electrically connected to one side of the closed circuit, a switch for said shunt-wire, and branch wires electrically connected to the circuit-connector and to the first-named branch wires, as set forth.

4. The combination with an open circuit, of a metal case and a spring-tongue included within said circuit, and means for holding the cover of the case in position, said means

forcing the spring-tongue from electrical contact with said case and so arranged that by the removal or withdrawal of said means the spring-tongue will contact with said case and
5 complete the circuit, substantially as set forth.

In testimony whereof I have hereunto set

my hand in presence of two subscribing witnesses.

HENRY F. FREED.

Witnesses:

JOHN A. NELSON,
H. H. FREEBURN.