

(No Model.)

H. C. STORRS.
AUTOMATIC ELECTRIC SIGNAL.

No. 533,183.

Patented Jan. 29, 1895.

Fig. 1.

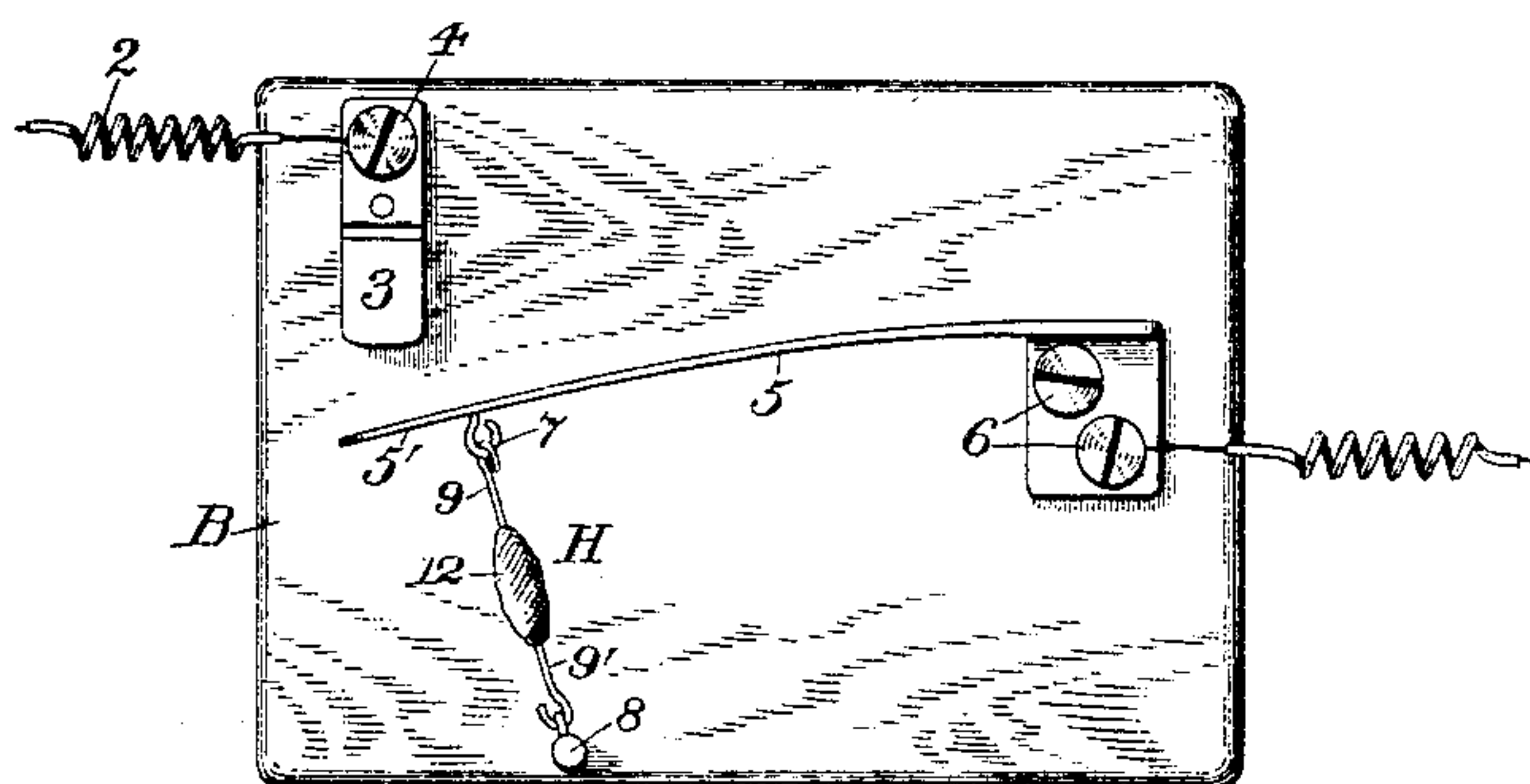


Fig. 2.

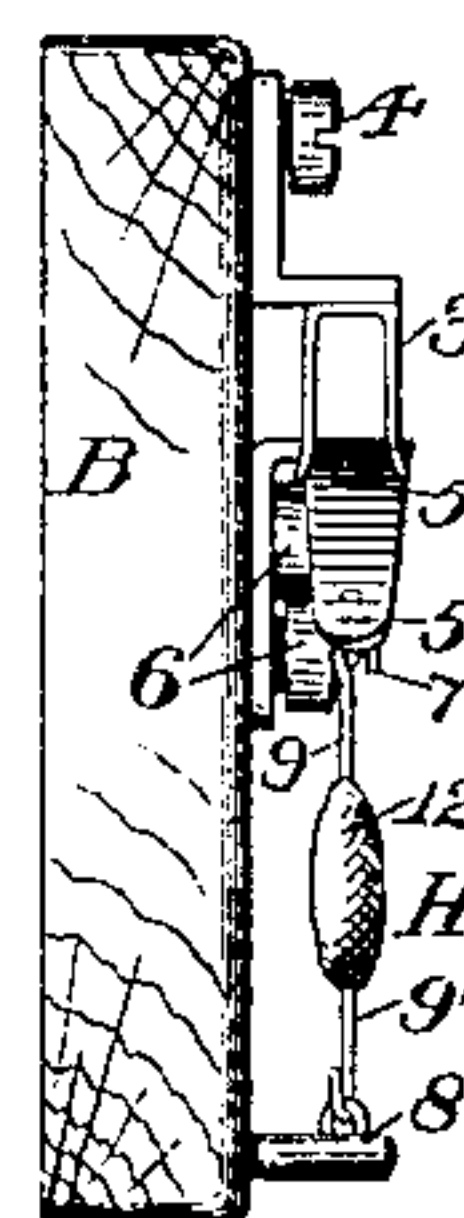


Fig. 3.

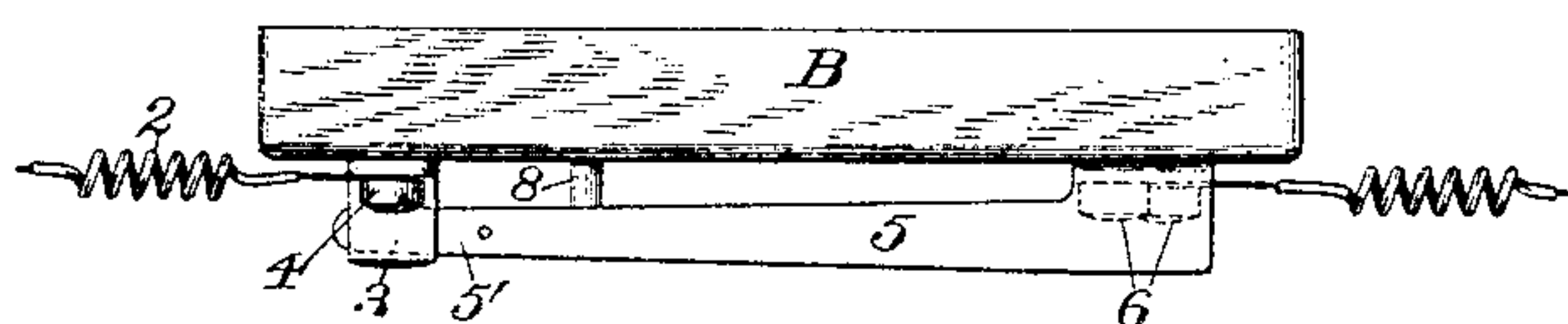


Fig. 4.

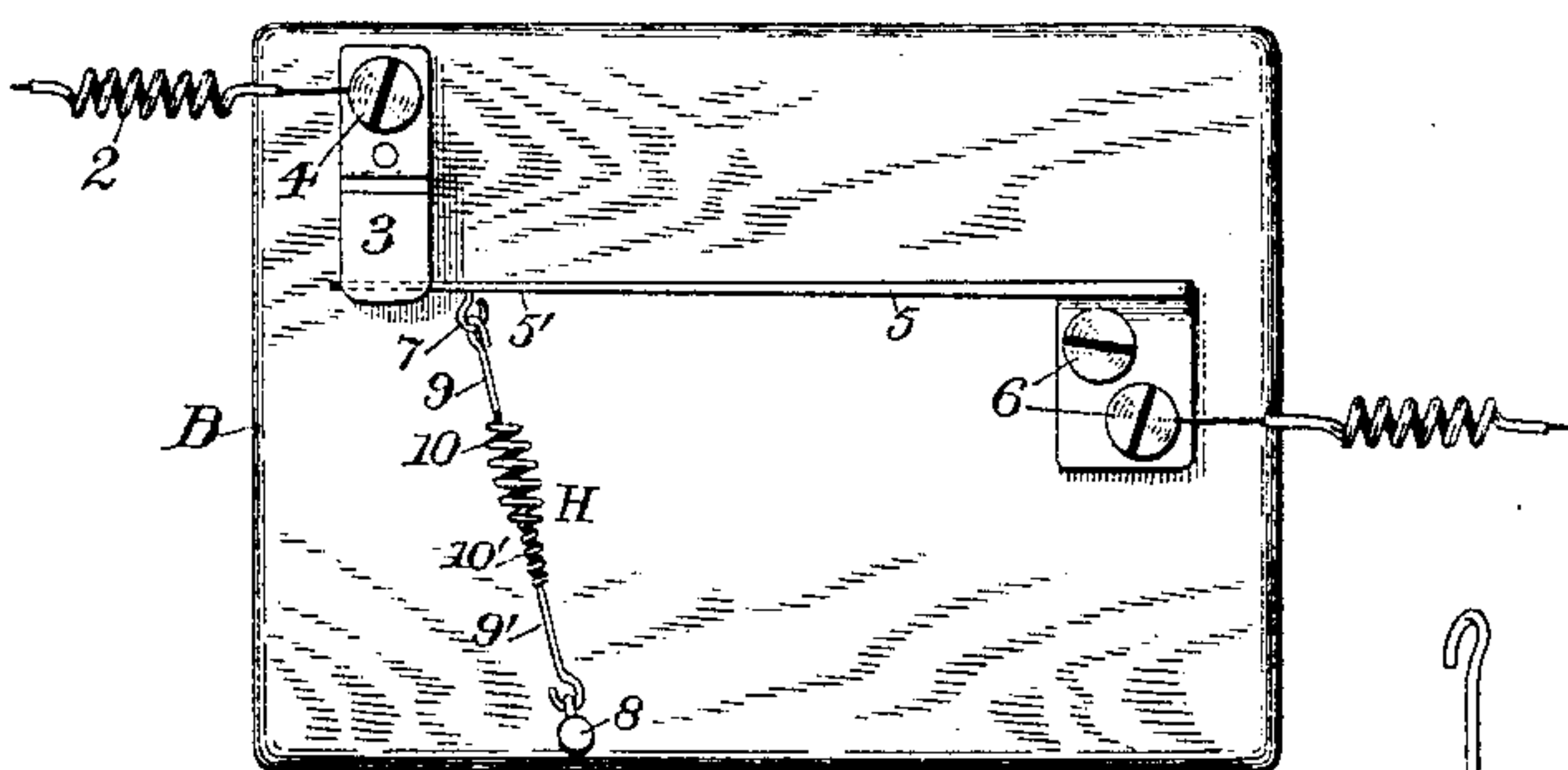


Fig.5.

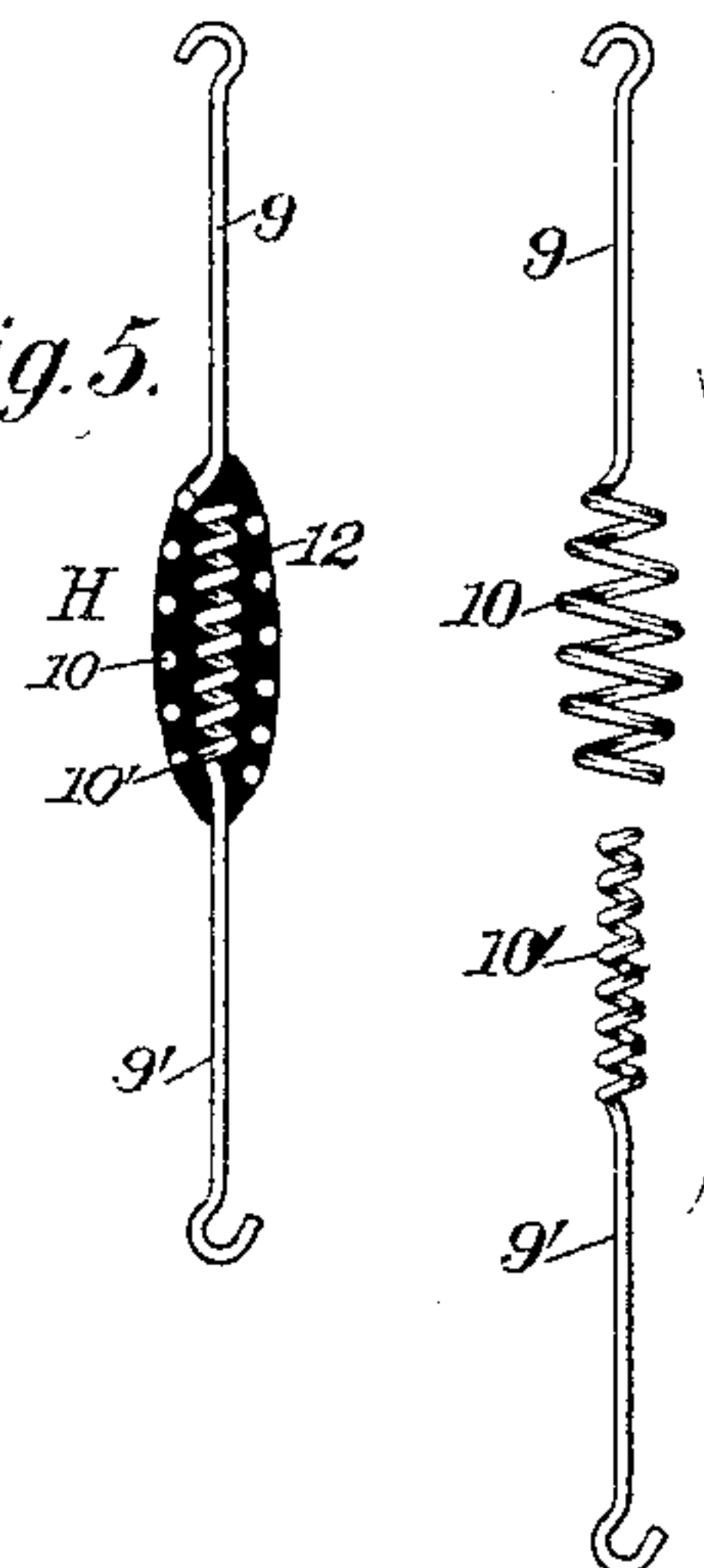

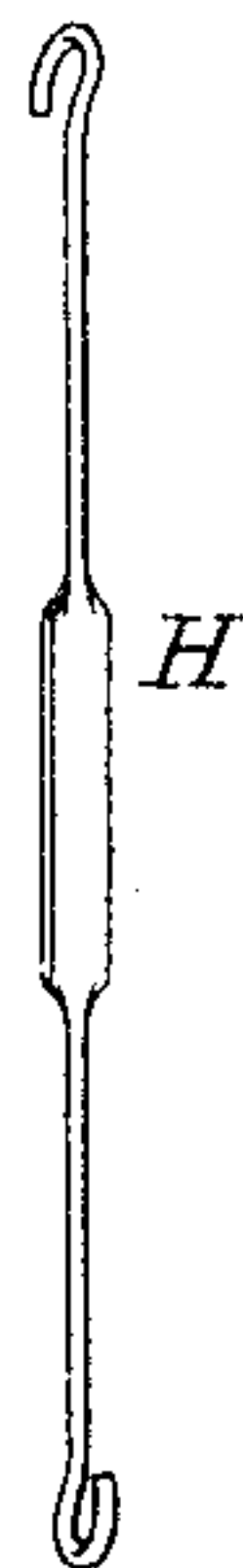


Fig. 6.

Fig. 7.  *H*



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UNITED STATES PATENT OFFICE.

HENRY C. STORRS, OF HARTFORD, CONNECTICUT, ASSIGNOR OF ONE-HALF
TO EDWARD R. FAXON, OF SAME PLACE.

AUTOMATIC ELECTRIC SIGNAL.

SPECIFICATION forming part of Letters Patent No. 533,183, dated January 29, 1895.

Application filed April 20, 1894. Serial No. 508,254. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. STORRS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Automatic Electric Signals, of which the following is a specification.

This invention relates to automatic electric signals or alarms, and has special reference to circuit-controllers therefor.

The object of my invention is to provide in connection with the adjacent terminals of an electrical-circuit, a simple and effective circuit-closer or circuit-maker embodying a severable-member or "hold-back" connection capable of being severed or of having its holding qualities reduced when subjected to the action of heat, or in some cases, when subjected to the action of fluids.

In the drawings accompanying and forming a part of this specification, Figure 1 is a front view of a circuit-making device embodying my invention, said circuit-maker being shown in connection with the terminals of an open circuit, and in its normal open position. Fig. 2 is a side view of the same drawn in projection with Fig. 1. Fig. 3 is a plan view of the same drawn in projection with Fig. 1. Fig. 4 is a view similar to Fig. 1, showing the circuit-maker in its closed position. Fig. 5 is a longitudinal section of one form of hold-back or severable member of the circuit-maker, the two parts of said member being shown connected together by a fusible or soluble connection. Fig. 6 is a side elevation of the hold-back in its separated condition. Fig. 7 is a detail view in perspective of another form of severable member for the circuit-maker, said figure illustrating a one-piece hold-back constructed of a fusible or soluble material.

Similar characters designate like parts in all of the figures.

In the preferred form of my invention, herein shown and described, the circuit-controller comprises, in combination with two circuit terminals, a switch controlling said terminals, and a hold-back device for said switch, which hold-back embodies two members located one within the other and movable longitudinally relatively to each other, and a fusible, or soluble, sealing medium which fills

the space between the circumjacent or concentric surfaces of said two members and normally connects the same, but is adapted to be reduced or dissolved to throw the switch from one of its positions to the other, as will be hereinafter fully described.

In the drawings, B represents a convenient form of base, or support, for the several parts of the device. The electrical terminal, 2, which may extend to any suitable signaling-apparatus, or annunciator, is herein shown as terminating in a contact-point, 3, which is fixed to the base B at one side thereof by means of the screw 4. The opposite electrical terminal, which may lead to a suitable battery, is herein shown terminating in a spring-arm or switch, 5, secured at one end to the base B by means of suitable screws, 6.

The free-end 5' of the spring-arm 5 terminates at a point in close proximity to the contact-point 3 of the terminal 2, as shown in Fig. 1, it being normally held out of contact with the terminal 2 by means of a reducible or severable "hold-back" connection, designated in a general way by H, which is shown in said figure as connected at one end, at 7, with the free-end of the spring-arm 5, and at its opposite end to a fixed point, 8, upon the base. It is desired to state in this connection, that any suitable form of movable electrical-terminal might be employed other than that shown in the drawings, as, for instance, the movable terminal 5 might be in the nature of a hinged or weighted arm located above and be held normally out of contact with the terminal 2 by the severable hold-back H.

To insure a sliding contact between the spring-arm 5, which constitutes one of the electrical terminals, and the contact-point 3, which manner of making the contact is desirable in apparatus of this class, the contact-point 3 is herein shown in the nature of a bracket secured to the base B and having two remotely-disposed depending and preferably resilient arms adapted for engaging, with a yielding pressure, the side edges of the spring-arm 5, as this comes in contact with said arms; said spring-arm being of a width substantially equal to the distance between said bracket arms, and, when released through the severing of the hold-back H, having a sliding

movement between and in contact with said arms.

The reducible or severable connection or hold-back, in the form thereof shown in Figs. 5 and 6, consists of two parts, 9 and 9', one of which engages in some suitable manner, as by the hook and eye shown, the working-end of the movable electrical terminal, and the other of which engages the fixed point or support 8 upon the base B. As shown in Figs. 5 and 6, the two adjacent ends of the parts 9 and 9' of the severable connection are shown of spiral form and of different diameters whereby one spiral may be inserted within the other in the manner shown in Fig. 5. When this form of hold-back is employed, the two coacting ends, 10 and 10', of the parts 9 and 9' of said hold-back will be severably-connected together by being embedded in a mass or globule, 12, of sealing-wax or any sensitive substance adapted to be melted or reduced sufficiently to destroy the effective continuity thereof when subjected to a moderate degree of heat, or, in some cases, adapted to have its continuity destroyed by the action of moisture.

In Figs. 5 and 6 the connecting ends of both parts 9 and 9' of the severable hold-back or connection, are shown of spiral form which is preferable as the interlocking engagement of the sealing-material is greatly increased and the fastening of the two parts together made more secure except when subjected to heat or moisture as aforesaid. It will be obvious, however, that other forms of sealed severable connections may be used without departure from my invention. In the form of connection shown most clearly in Fig. 6, the spirals at the adjacent ends of the parts 9 and 9' will be wound in opposite directions which will obviate any accidental interlocking of one part with the other when the continuity of the sealing-material is destroyed, allowing the two parts to be drawn freely apart.

It will be understood that the adjacent ends of the parts 9 and 9' may be of other forms than that illustrated in Figs. 5 and 6 to produce laterally-disposed holding-faces adapted for engaging and holding the mass or globule 12 intact under ordinary conditions. Therefore I do not desire to limit myself to a hold-back consisting of two members having spiral holding-faces.

The word "reducible" as applied to the "hold-back" has reference to the reduction of the holding material, by heat or liquids, of which said hold-back is composed either wholly or in part, from a normal state of continuity or rigidity to a state of non-continuity or flexibility whereby the terminal to which said hold-back is connected will be freed to effect a contact with the opposite terminal.

The composite structure of hold-back device illustrated in Figs. 5 and 6, consisting of the two metallic parts 9 and 9', and the non-metallic seal connection 12 in which the ends of said parts are embedded in the manner shown in Fig. 5, is the preferred embodiment of my

invention. In this form of hold-back it will be seen that the adjacent ends of the two members 9 and 9' are connected together by the sealing material in such manner that the ends of the two members while they are, substantially, parallel are held remote from each other, a mass of sealing material being interposed between the adjacent sides of the two members. This relative disposition of the two members is of material importance, in that each member has a greater heat-radiating surface contiguous to the sealing material than if one member was contiguous to and overlapped the other member. In the form shown in Fig. 5 it will be seen that the sealing material entirely surrounds one of the members of the hold-back and that said sealing material is contiguous to the entire inner surface of the other of said members, and these two members being metallic and consequently good conductors of heat, rapidly absorb the heat and convey it to the interior of the sealing mass, quickly softening and breaking the continuity of said mass. Owing to the remote disposition of the two members which secures the maximum effective heat-radiating surface, the reduction of the sealing mass intermediate to the two members is greatly accelerated as the heat from each heat-conducting member is distributed each side of said mass and directed toward the center thereof. In some cases it is preferable to make the outer coil of one of the parts of the hold-back device of barrel-shape, in which case the inner coil will be made small enough to readily pass through the end of the outer coil as illustrated in said Figs. 5 and 6. This construction provides for the application of a larger mass of sealing-wax, and also protects the wax, preventing it from being eaten out by mice or otherwise destroyed.

In practice, I find that by means of a sealed severable connection such as herein described, the sealing material may be tempered so as to operate with substantial uniformity at a temperature as low as 130° or may be made to operate with the same uniformity at a much higher degree of temperature. Instead of sealing-wax, metallic alloys having low-melting points may be substituted as a suitable material for the severable hold-back device.

In operation, the parts are normally held in the position illustrated in Fig. 1, the movable terminal 5 being held out of contact with the opposite terminal 2 by means of the severable hold-back H. In case of fire (when the apparatus is used as a fire-alarm) the continuity of the joint 12 will, when the temperature of the air reaches a certain degree, be destroyed, allowing the separation of the two parts 9 and 9' of said hold-back, which allows the spring-arm 5, which constitutes the movable electrical terminal, to come into contact with the opposite terminal, completing the electrical circuit and sounding the alarm.

My device is applicable for use in many places, as, for instance, it may be used to ad-

vantage in connection with an alarm in hotels, stores, dwelling-houses, and other places for sounding an alarm in case of fire, or it may be used to advantage in connection with an alarm upon boats or vessels for sounding an alarm in case of leakage.

Having thus described my invention, I claim—

1. The herein-described automatic circuit-controller for electric circuits, comprising two circuit-terminals; a switch controlling said terminals; and a hold-back device for said switch, embodying two members located one within and wholly surrounded by the other and movable longitudinally relatively to each other when held against lateral movement, and a fusible or soluble sealing medium filling the space between the circumjacent surfaces of said members and normally connecting said members, substantially as described.

2. The herein-described automatic circuit-maker for electrical signals, it consisting of two electrical terminals, one of which has a contact-point with remotely-disposed arms adapted for engaging the contact-making arm of the adjacent electrical terminal, and the other electrical terminal of which has a contact-making arm in position and adapted for

entering between the two arms of the afore-said contact-point, and a severable hold-back fixed at one end and connected at its opposite end to the free end of the contact-making arm and composed of two members having spiral ends joined together by a mass of fusible or soluble material, substantially as described.

3. The herein-described hold-back for circuit-closers, it consisting of two metallic holding and heat-conveying members having spirally-formed adjacent ends embedded in a mass of non-metallic sealing material of a fusible or soluble nature, substantially as described and for the purpose set forth.

4. The combination with two adjacent terminals of an electrical-circuit, of a severable hold-back connected with one of said terminals, it consisting of two members having two oppositely-spiraled connecting ends located one within the other and secured together by a mass of fusible or soluble material, substantially as described and for the purpose set forth.

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