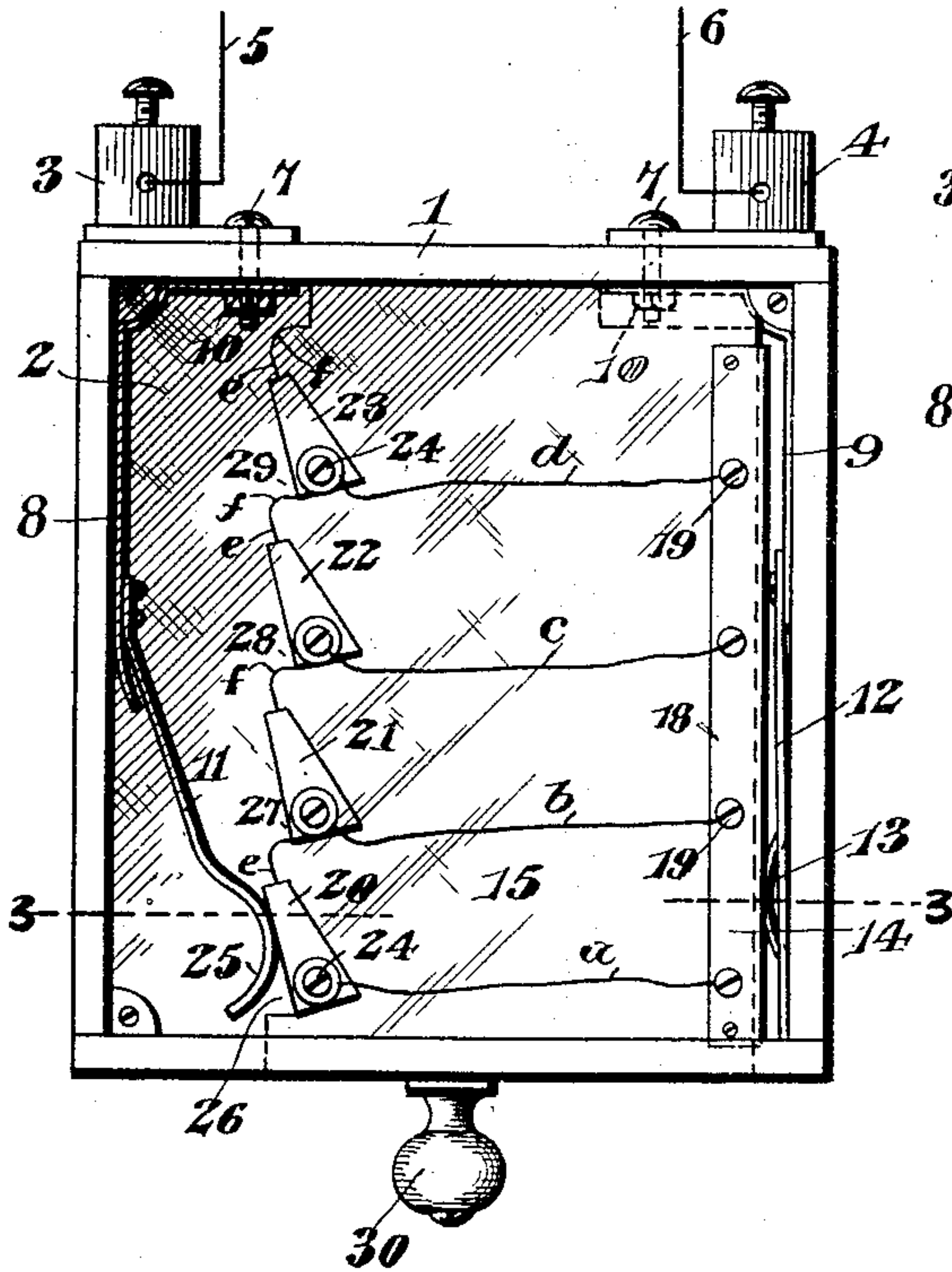
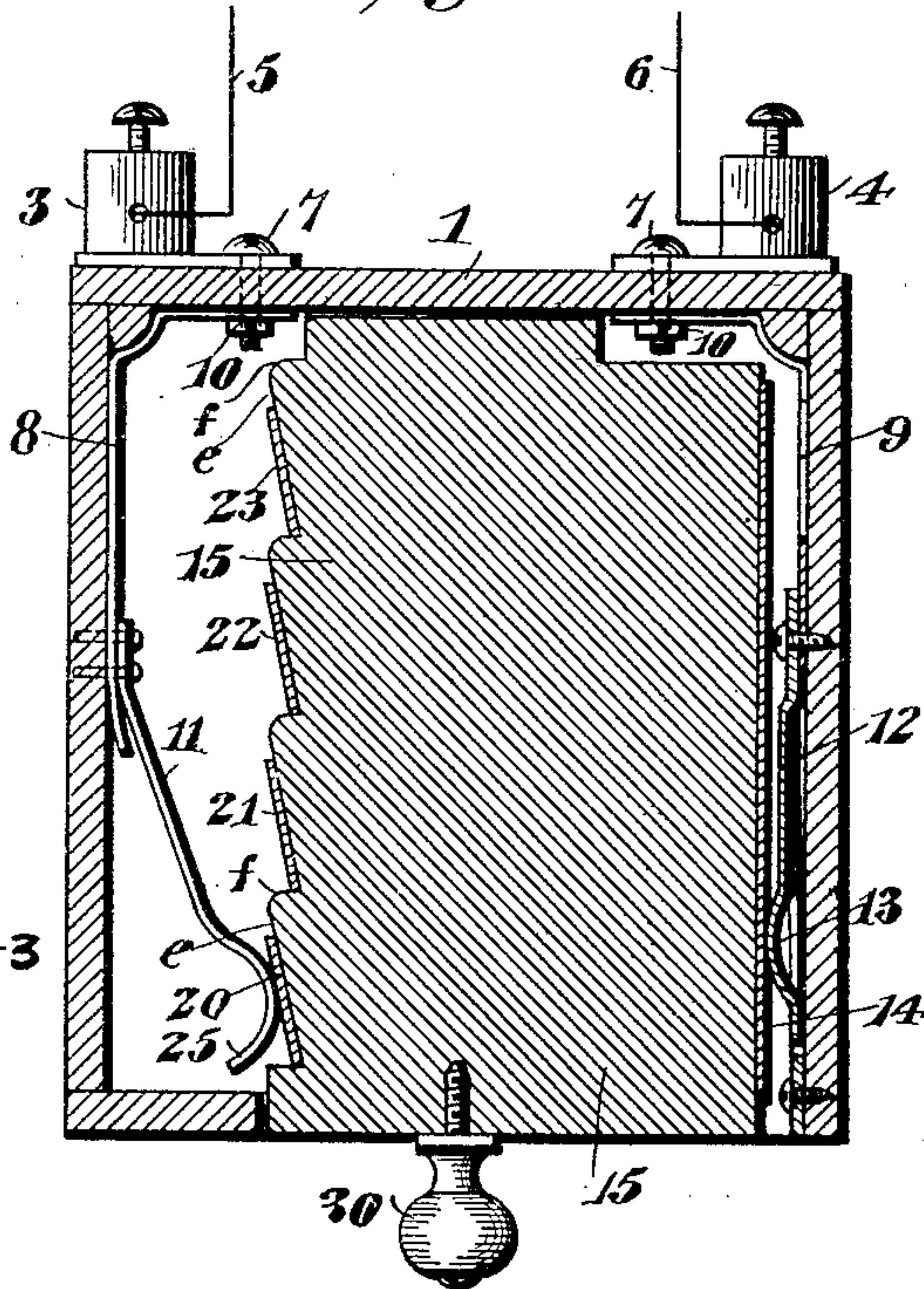
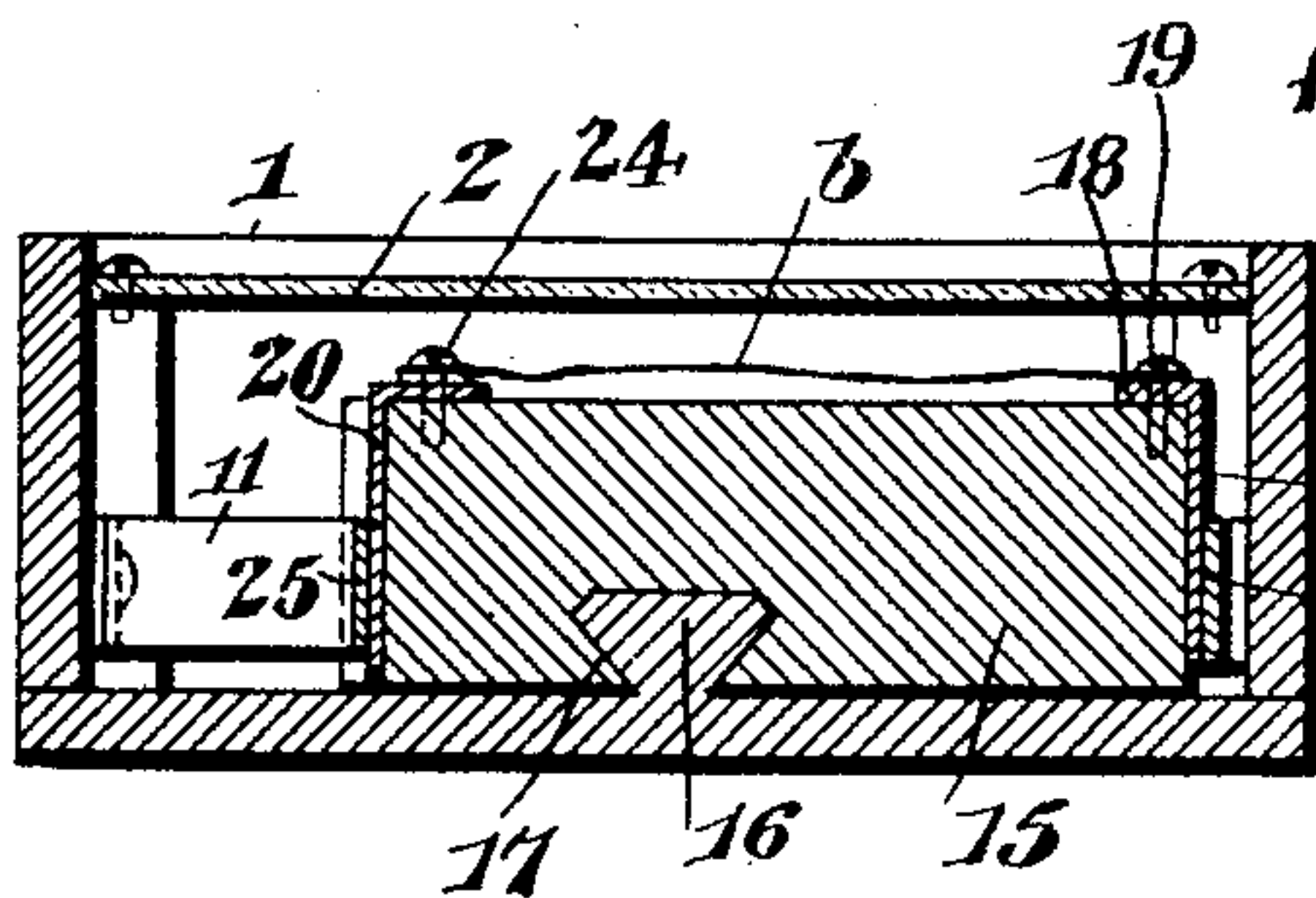
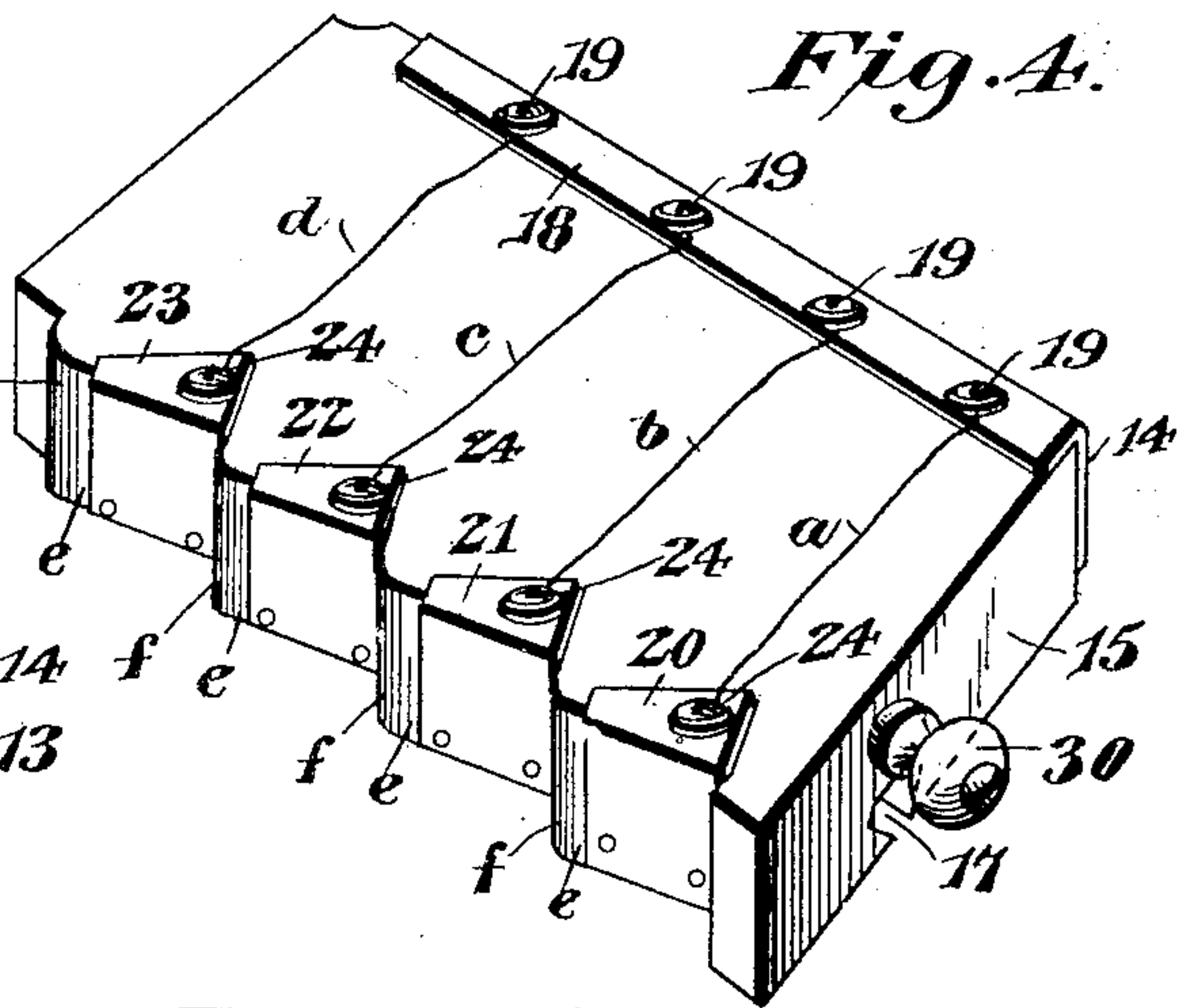


H. L. HUNT & W. E. MOON.

MAGAZINE FUSE BOX.

(Application filed Nov. 5, 1901.)

(No Model.)

Fig. 1.*Fig. 2.**Fig. 3.**Fig. 4.*

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UNITED STATES PATENT OFFICE.

HARRY L. HUNT AND WILLIAM E. MOON, OF TRAVERSE CITY, MICHIGAN.

MAGAZINE FUSE-BOX.

SPECIFICATION forming part of Letters Patent No. 706,062, dated August 5, 1902.

Application filed November 5, 1901. Serial No. 81,254. (No model.)

To all whom it may concern:

Be it known that we, HARRY L. HUNT and WILLIAM E. MOON, citizens of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented a new and useful Magazine Fuse-Box, of which the following is a specification.

This invention relates to that class of safety appliances for electrical systems which comprehend the employment of a plurality of fuses or metallic sections of low resistance designed to burn out, and thus open the electrical circuit when the current has reached the maximum strength beyond which the translating devices included in the system would be endangered.

The replacement of a burned-out fuse requires a high order of skill and some little time. It has therefore been proposed to equip a fuse-box with a magazine carrying a number of fuses, any of which may be brought into position by the movement of the magazine to take the place of the fuse destroyed. It is to this class of magazine fuse-boxes that our invention more particularly relates; and it has for its object to improve, simplify, and cheapen the construction, while rendering the device more effective and more surely operative than those devices of similar nature with which we are familiar.

To the accomplishment of these objects and others subordinate thereto, all as will hereinafter more fully appear, the invention in its preferred embodiment comprehends that combination and relation of parts to be hereinafter described, illustrated in the accompanying drawings, and embraced within the scope of the protection prayed.

In said drawings, Figure 1 is a plan view of our device complete. Fig. 2 is a horizontal sectional view thereof. Fig. 3 is a transverse section on the line 3 3 of Fig. 1, and Fig. 4 is a detail perspective view of the magazine or slide detached.

Like numerals and letters refer to corresponding parts throughout the views.

1 indicates the porcelain casing or fuse-box, having an open front protected by mica or other transparent material 2 and provided at one end with binding-posts 3 and 4, with which

the line-wires 5 and 6 are connected. The bolts 7, which connect the foot-plates of the binding-screws with the end of the casing 1, extend to the inside of the casing, where they pierce the ends of the conducting-plates 8 and 9, disposed along the opposite sides of the casing. These conducting-plates are in electrical connection with the bolts 7 and, while they may be retained in any suitable manner, are preferably held in position by the nuts 10, screwed upon the inner ends of the bolts. The conducting-plates 8 and 9 at their ends opposite the bolts 7 are connected to the ends of contact plates or terminals 11 and 12, the former of which is of spring form and the latter of which is provided with a spring-tongue 13, designed to maintain an electrical contact with a metallic contact-strip 14, extending along one side edge of the magazine or slide 15. The slide 15 is made of any suitable non-conductive material—as, for instance, porcelain—and is slidably mounted in the casing or box 1, being guided in its movement by a dovetailed guide-rib 16, extending along the bottom of the box and engaging a correspondingly-formed guide-groove 17 in the bottom of the slide. The contact-strip 14, which, as stated, extends continuously along one side face of the magazine 15, is bent over the upper edge of the latter to form a supporting-flange 18 for a series of contact-screws 19, designed to retain the adjacent ends of a series of fuses *a*, *b*, *c*, and *d* in electrical contact with the strip. These fuses are disposed in parallel relation and extend transversely across the slide 15 for electrical connection with a series of individual contact-plates 20, 21, 22, and 23, secured to the face of the slide at the side thereof opposite the strip 14 and bent over the front face of the slide to facilitate the attachment of the binding-screws 24, which connect the ends of the fuses opposite the screws 19 with the individual contact-plates. As the contact-spring 11 and the spring-tongue 13 are constantly urged into contact with the opposite sides of the slide, magazine, or fuse-carrier, it will be evident that the tongue will be in constant electrical contact with the strip 14 and that by the movement of the slide the spring 11 may be made to contact with either of the individual

contact-plates 20, 21, 22, or 23, and thereby establish the circuit through either of the several fuses *a*, *b*, *c*, or *d*.

The device constructed as thus far described would be entirely effective for the successive replacement of injured fuses without necessity for detaching the burned-out fuse; but it is essential that provision be made for limiting the movement of the slide, so that when the same is shifted it will stop in just the proper position to effect the contact of the spring 11 with the next succeeding individual contact-plate. Inasmuch as economy of manufacture is a desideratum, we accomplish this important result by so constructing the device that the spring-terminal 11 performs the dual function of a stop member and circuit-closer. The spring 11 at its free end is curved to form a cam-surface, as indicated at 25, which surface is received within one of a series of notches 26, 27, 28, and 29, formed in the side face of the slide 15 and defined by inclined walls *e*, against which the individual contact-plates are imposed, and somewhat abruptly-curved walls *f*, extending from the end of a wall *e* to the adjacent end of the contiguous wall *e*, as shown. Normally, as shown in Fig. 1, the cam end of the contact-spring 11 will rest within a notch—as, for instance, the notch 26—and will contact with one of the individual contact-plates, in this instance the plate 20, so that the current passing through the wire 6 will be communicated by way of the binding-post 4 and its bolt 7 to the conducting-plate 9, thence to the plate 12, through the tongue 13 to the continuous strip 14, and thence through the fuse 15, contact-plate 20, contact-spring 11, contact-plate 8, bolt 7, and binding-post 3 to the wire 5. If now the translating devices in the circuit should be endangered by a sudden increase in the current, the fuse *a* will be “blown out,” and the circuit will thus be opened. It may be immediately closed, however, by sliding the magazine 15 to present the next contact-plate 21 and its complementary fuse *b* in a position opposite the contact-spring 11. This movement of the slide will be resisted by reason of the inclination of the face *e*, against which the cam 25 of the spring 11 bears, and it will appear, therefore, that while the magazine may be readily shifted by the operator it will be impossible for it to shift its position through ordinary accident. It is even more important, however, that the backward shifting of the magazine should be prevented, because in such an event a burned-out fuse would again be brought opposite the spring. It is for this reason that the faces *f* of the notches are made comparatively abrupt, as it is intended that the backward movement of the magazine shall only be accomplished by positive exertion of force greater than would be brought to bear thereon by a person inclined to be meddlesome. These faces, however, while much more abrupt than the faces *e* are rounded, so that the slide may be drawn

out and burned-out or “blown” fuses replaced without removing the slide entirely from the casing or box. The slide may then be shoved back to its original position by the operator. This enables a person to refill the magazine or slide without opening the electrical circuit but momentarily. The manipulation of the slide is facilitated by a knob 30; but obviously any desired means may be substituted in lieu thereof to enable the magazine to be quickly shifted for the purpose of replacing a fuse in the event of the automatic opening of the circuit.

It is thought that from the foregoing the construction and operation of our invention will be clearly apparent to those skilled in the art; but while the illustrated embodiment of said invention is thought at this time to be preferable we do not wish to limit ourselves to the structural details defined, as, on the contrary, we reserve the right to effect such changes, modifications, and variations thereof as may be suggested by experience and experiment and embraced within the scope of the appended claims. For instance, any number of fuses may be mounted on each slide or any number of slides may be disposed in each box, a plurality of slides being particularly desirable in metallic circuit-wiring.

What we claim is—

1. In a device of the character described, the combination with a fuse-box, of a pair of circuit-terminals, one of which has the form of a spring, a magazine-slide mounted in the fuse-box and provided with a series of notches at one side disposed for engagement with the end of the spring-terminal, individual contact-plates located within said notches, fuses extended from said individual contact-plates to the opposite side of the magazine-slide, and means for effecting electrical connection between the other circuit-terminal and the ends of the fuses at the side of the slide opposite the individual contact-plates.

2. In a device of the character described, the combination with a fuse-box, and circuit-terminals therein in the form of springs, of a magazine formed in one side face thereof with a series of notches each defined by an inclined wall and an abruptly-curved wall, individual contact-plates imposed upon the several inclined walls, fuses extending from said plates to the opposite side of the magazine, and a continuous contact-plate connected to the several fuses and disposed in sliding contact with the circuit-terminal located at the side of the magazine opposite the individual contact-plates.

3. In a device of the character described, the combination with a fuse-box, and a pair of circuit-terminals in the form of springs, one of which has its free extremity curved, of a magazine-slide mounted in the fuse-box and provided with a series of notches at one side disposed for engagement with the curved end of the adjacent circuit-terminal, individual contact-plates located within said notches,

fuses extending from said individual contact-plates to the opposite side of the magazine, and a continuous contact-plate connected to the ends of the fuses opposite the individual
5 contact-plates and disposed in constant sliding engagement with the other circuit-terminal.

In testimony that we claim the foregoing as

our own we have hereto affixed our signatures in the presence of two witnesses.

HARRY L. HUNT.
WILLIAM E. MOON.

Witnesses:

WINFIELD S. MOON,
GEORGE H. CROSS.