

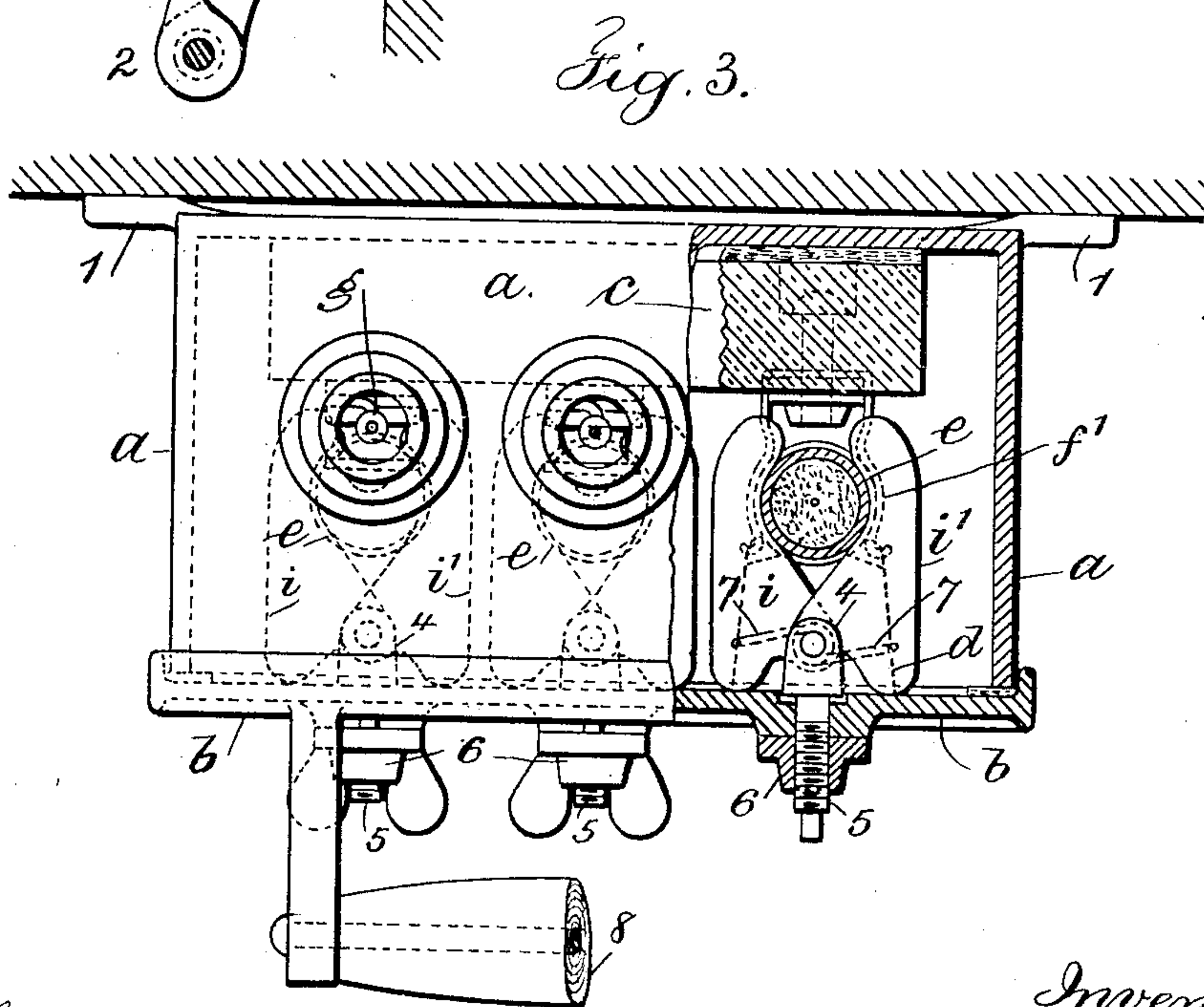
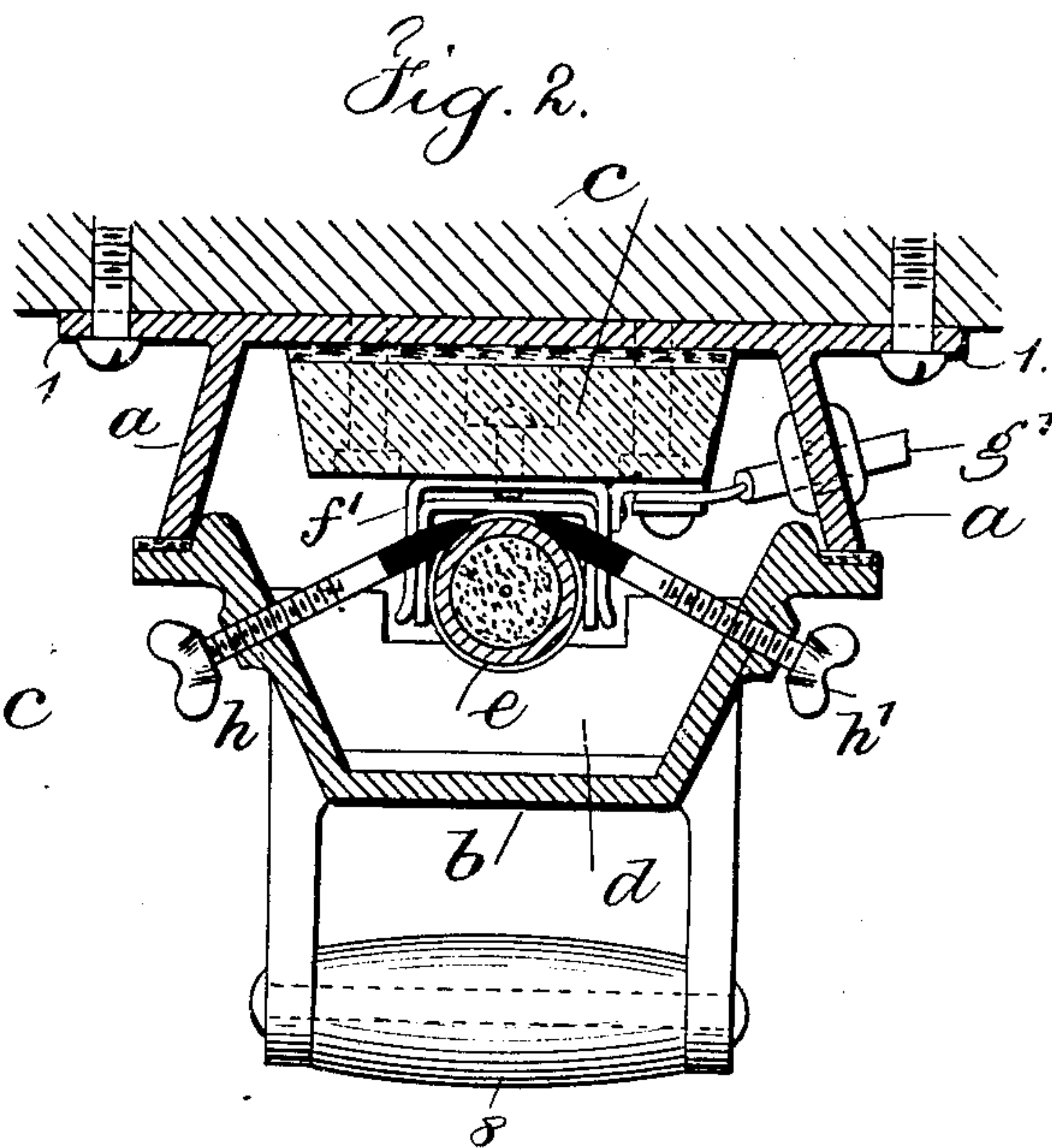
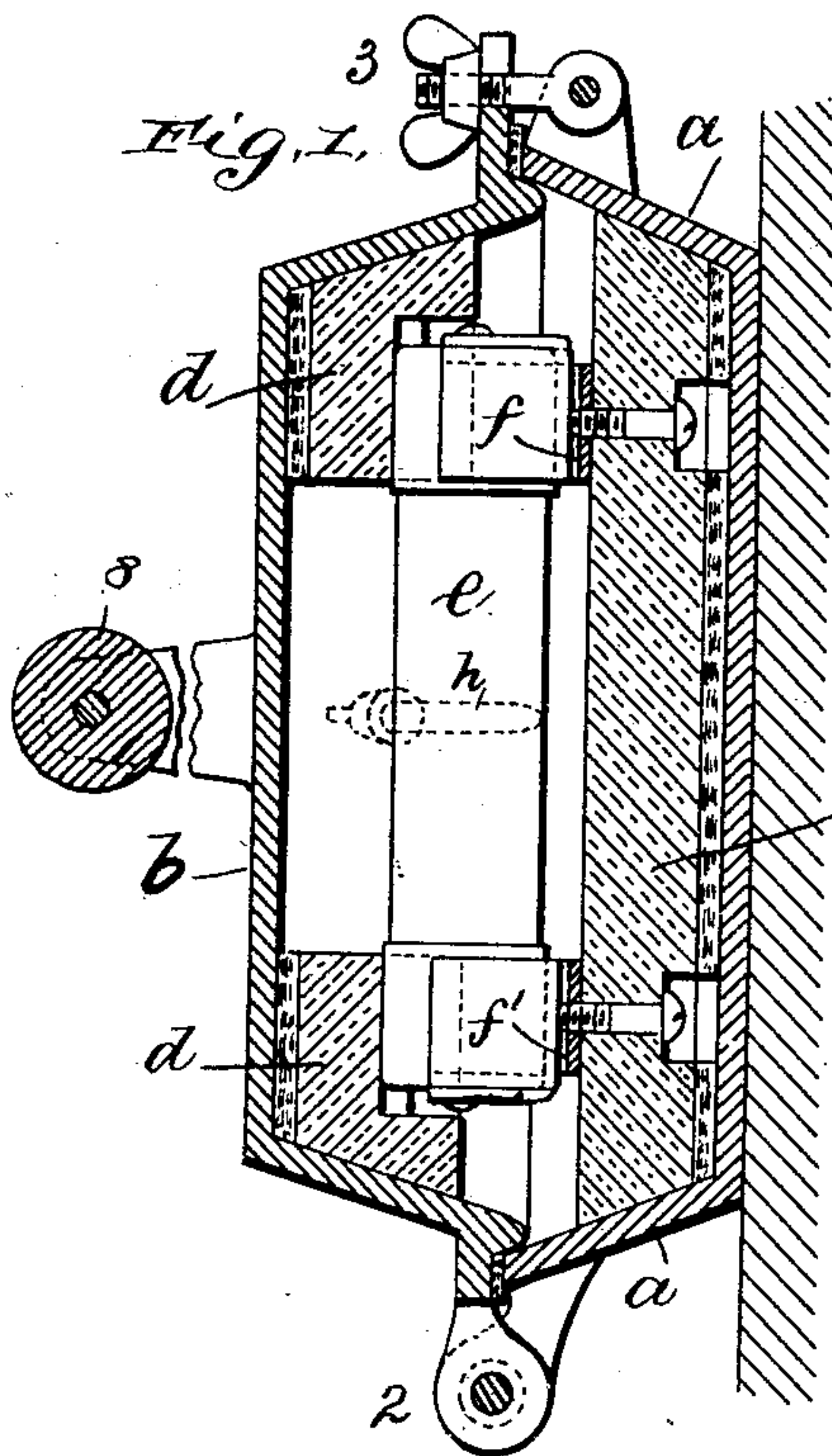
J. SACHS.

ELECTRIC FUSE SWITCH BOX.

APPLICATION FILED MAR. 19, 1901. RENEWED NOV. 15, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
Charles Smith
J. Staib

Inventor
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No. 742,499.

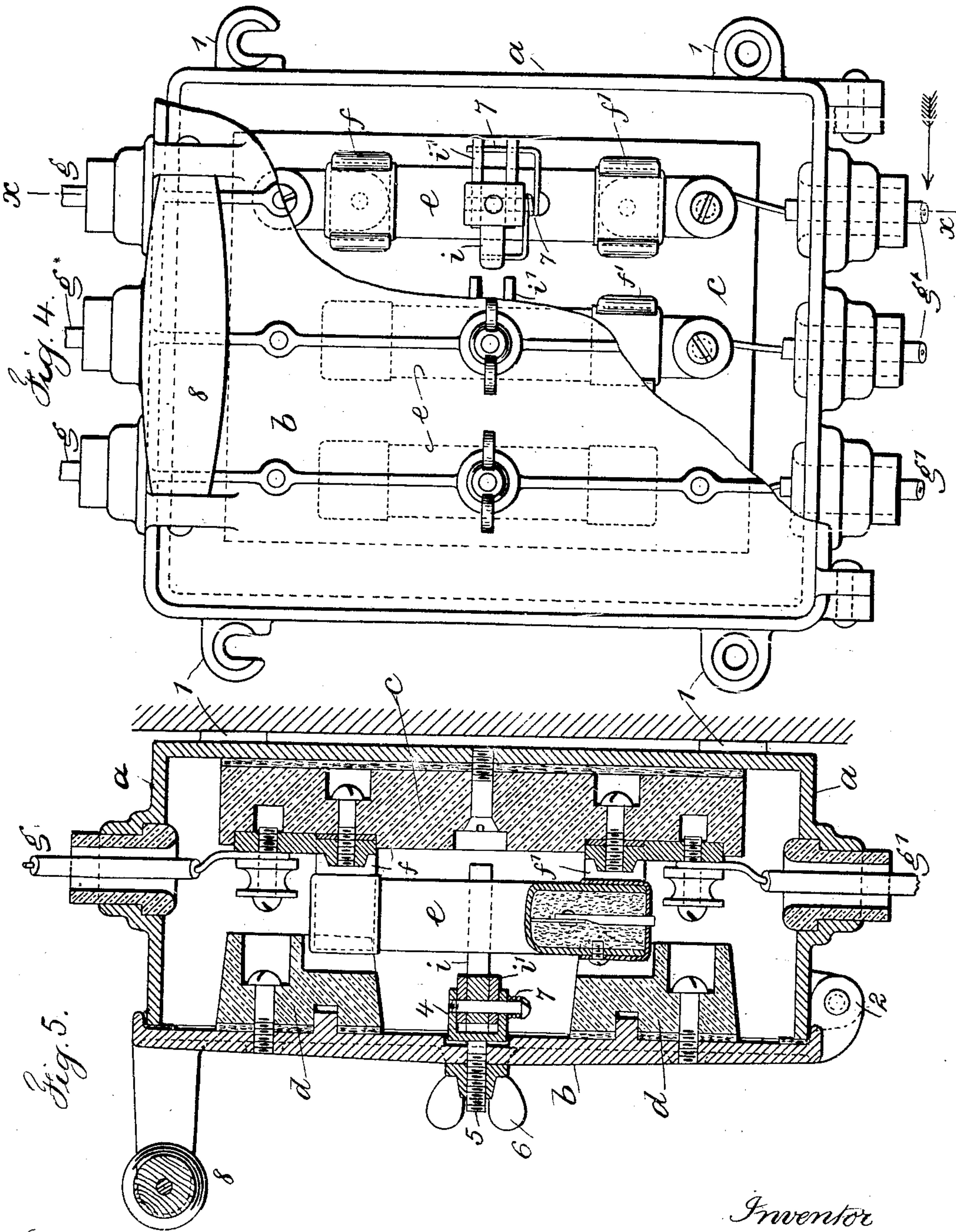
PATENTED OCT. 27, 1903.

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UNITED STATES PATENT OFFICE.

JOSEPH SACHS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE JOHNS-PRATT COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC FUSE SWITCH-BOX.

SPECIFICATION forming part of Letters Patent No. 742,499, dated October 27, 1903.

Application filed March 19, 1901. Renewed November 15, 1901. Serial No. 82,447. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SACHS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented an Improvement in Electric Fuse Switch-Boxes, of which the following is a specification.

My invention relates to an electric fuse switch-box for use on service-circuits within doors or in the open air, the same being placed in any desired locality, according to circumstances. In my improvement the removal or replacing of the fuse support or case is accomplished without any manipulation of live contacts, the clamping devices employed being removably connected to a movable part or switch-arm, which part preferably forms a cover and may be operated by hand, it being possible with this device to connect the fuse support or case to the movable part or switch-arm and then close the same in relation to the base and in so doing bring the fuse support or case into connection with the metallic contacts on the base and preferably upon an insulating base-block. When in place, the fuse support or case may be released within the switch-box by manipulation from the exterior, and the movable part or switch-arm may be operated independent of the fuse support or case for the purpose of examining the condition of the fuse support or case within the box, and if the same becomes blown or it is desirable to remove the fuse support or case the movable part can be again closed and the devices for clamping and holding the fuse support or case be brought into operation from the exterior and the fuse support or case be grasped and connected to the movable part. The movable part or switch-arm, which preferably forms a cover, will be hereinafter known as the "movable" part and the fuse support or case will be hereinafter known as the "fuse" device in an effort to simplify the terms. The after movement of the movable part removes the fuse device from the metal contacts upon the base, so that the hands of the operator are not brought near live contacts in the manipulation of the switch-box.

If desired, the fuse device can remain in connection with the movable part when the

same is closed and also be in engagement with the metal contacts of the base, and in cases of emergency where it becomes necessary to break the circuit the movable part can either be quickly operated, or it can be forcefully operated to instantly remove the fuse device from the metal contacts upon the base, and so break the circuit. This latter is sometimes desirable in case of fire, and it may also be desirable in other cases.

In the drawings, Figure 1 is a vertical section and partial elevation, and Fig. 2 a cross-section, representing the simpler form of my invention. Fig. 3 is a plan and partial section. Fig. 4 is an elevation with part of the cover broken open; and Fig. 5 a vertical section and partial elevation, representing the preferred form of my invention, Fig. 5 being taken at the line $x x$ of Fig. 4 in the direction of the arrow.

The metal base a of the electric fuse switch-box may be of any desired shape and is preferably provided with devices such as the lugs 1 for connecting the same to a suitable support or wall by screws, bolts, or other devices. The movable part, which, in fact, is the switch-arm or metal cover b , is connected to the metal base by hinges 2 at one end, and in the simpler form of the invention (shown in Figs. 1 and 2) the said base and movable part are connected at the end opposite to the hinges by a pivoted swinging nut 3.

Within the metal base a and connected thereto in any desired manner is an insulating base-block c , and within the movable part I prefer to provide insulating cover-blocks d , secured thereto in any desired manner.

e represents the fuse device, which is a support or case of usual or well-known character, preferably cylindrical, of insulating material and with metal ends.

$f f'$ represent metallic contacts on the base-block c , and $g g'$ electrical connections from outside the switch-box to the metallic contacts $f f'$.

In the simpler form of the invention (shown in Figs. 1 and 2) the metal contacts are shown of ordinary U shape or form, while in the preferred form of the invention (shown in Figs. 3 to 5, inclusive) the said metal con-

tacts have a spring character and are made with ends that are curved, so as to snap around the fuse device *e* and forcibly hold the same in place. In the simpler form of the invention (shown in Figs. 1 and 2) the means for removably clamping and holding the fuse device to the movable part and by which the said fuse device may be released to be retained in the metal contacts comprises the hand-operated screws *h h'*. These screws pass through opposite sides of the movable part or cover *b* diagonally or at an acute angle, the points of the screws passing partially over the cylindrical fuse device and partially thereon with sufficient force to hold the fuse device or case in contact with the insulating-blocks *d*, and it will be noticed from Fig. 1 that the fuse device rests at its respective ends against the insulating-blocks *d* and that the hand-operated screws *h h'* come about midway of the fuse device and intermediate to the respective end supports, so that by the end supports and the screws *h h'* when the same are applied against the fuse device the said fuse device is held firmly in contact with the blocks *d*. When the switch-box is closed, as shown in Figs. 1 and 2, the fuse device is in electrical connection with the metal contacts *f f'* upon the base-block *c*, as well as being held against the insulating-blocks *d* by the screws *h h'*, which while they touch the fuse device do not touch any metal parts thereof.

The pivoted swinging nut 3, Fig. 1, holds the movable part to the base, and when the same is released and swung out of the way the movable part *b* will swing on its hinges 2 down and out of the way of the base, carrying with it the fuse device and at the same time breaking the electrical connection of the fuse device with the metal contacts *f f'*. In the opened-out position the fuse device can be readily removed by loosening the hand-operated screws and another fuse device inserted in its place which will make metallic connection with the contacts *f f'* when the movable part is again closed up. As will be noticed, these hand-operated screws *h h'* clamp the fuse device inside, and they are manipulated from the exterior and may be unscrewed to release the fuse device and leave the same in the metal contacts *f f'*.

The means shown in the preferred form of the invention, Figs. 3 to 5, inclusive, for clamping and holding the fuse device to the movable part is also actuated in the same manner—that is, the clamping is effected inside and the devices are manipulated from the exterior. These devices in these figures comprise the pivoted fingers *i i'*, with curved adjacent faces and shoulders bearing upon the inner surface of the movable part. These fingers are pivoted to a yoke 4, having a screw-threaded stem 5 passing through the movable part *b*, with a hand-operated nut 6, of metal, on the outside of the movable part or cover.

A spring 7, centrally wound about the pivot connecting the yoke and the fingers, extends in opposite directions, passing through the pivoted fingers, the tendency of the spring being to open the fingers and in so doing release their hold upon the fuse device *e*, while in contradistinction to this movement the tendency of the yoke and threaded stem 5 when acted upon by the nut 6 is to force the fingers toward one another and bring their curved adjacent faces into forcible holding contact with the fuse device *e*, and it will be apparent that these fingers while adapted to engage the fuse device within the switch-box are operated entirely from the exterior of the case and without the necessity of opening the switch-box, while they may be operated equally well when the movable part or cover is open to remove the fuse device and insert another in the place of the one removed. Like the devices in the simpler form of my invention these pivoted fingers may engage and hold the fuse device at the same time that the fuse device is grasped and held in electrical connection with the metal contacts *f f'* upon the base-block *c*. In the simpler form of the invention, Figs. 1 and 2, I have shown the pivoted swinging nut 3 for holding the movable part and base in a closed relation. This function is performed in the preferred form of the invention by the spring-metal contacts forcefully engaging the fuse device or devices. I have illustrated that the switch-box may be large enough to hold three fuse devices; but I do not limit myself in any respect to the number of fuse devices held in the switch-box, as while there must be one there may also be any number. I have also shown the preferred form of the invention provided with a handle. A handle may also be provided, if desirable, to the simpler form of the invention, as shown in Figs. 1 and 2, and the nut 3 of the device in Figs. 1 and 2 may be of metal, or it may be of an easily-frangible material—such, for instance, as hard wax—that possesses just sufficient strength to be fully operative, but not sufficient strength to resist an action of considerable force which is liable to be applied to a device of this kind in a case of emergency. With the preferred form, Figs. 3 to 5, inclusive, and in which the movable part is held to the box by the form of spring-metal contacts shown, a forceful pull upon the handle will readily separate the fuse device or devices from the metal contacts upon the base-block *c*. On the other hand, the device of the preferred form may be made with a pivoted swinging nut similar to the nut of the device 3 in Figs. 1 and 2, and in this case it will be preferable that the nut be made of frangible material which may be easily broken by a pull of force employed in the case of an emergency to break the circuit.

In both forms of my invention the insulating base-blocks *c* within and connected to the metal bases *a* become and are, in effect,

generically speaking, supports for the metallic contacts and the electric connections therefor.

I claim as my invention—

5 1. In a switch-box, the combination with a base and a movable part forming a switch-arm, of metal contacts upon the base and electrical connections therefrom, a fuse and support therefor, and a device adapted to
10 engage the fuse-support and connect the same to the movable part which device may be released to leave the fuse and support in connection with the metal contacts, substantially as set forth.

15 2. In a switch-box, the combination with a metal base and an insulating-block connected therewith and metal contacts connected to the said block, of a movable part forming a switch-arm, a fuse and holder therefor adapted
20 to be supported by said metal contacts, and a clamping device removably connected to the movable part or switch-arm actuated from the exterior and adapted upon the interior to engage the fuse-holder, for the time being
25 to hold the same in a fixed relation to the movable part or switch-arm, the said parts to be removed therewith and from the metal contacts when the position of the said movable part or switch-arm is altered, substantially as set forth.

30 3. In a switch-box, the combination with a base and pivoted movable part, metallic contacts, a support and electrical connections therefor connected to the base, of a clamping
35 device connected to and supported by the movable part and actuated exteriorly of the movable part and operative interiorly of the same, a fuse and support to be received and held by the metal contacts and to be en-
40 gaged by the said clamping device which is adapted to hold the fuse-support in a fixed relation to the movable part and to move the same with the movement of the said movable part, substantially as set forth.

45 4. In a switch-box, the combination with a base and a movable part forming a switch-arm, of metal contacts upon the base and electrical connections therefrom, a fuse and support therefor and a device connected with the
50 movable part and adapted to engage the fuse-support for clamping the same in relation to the movable part, and which may be released to leave the fuse-support in connection with the metallic contacts, substantially as set
55 forth.

5. In a switch-box, the combination with a metal base and an insulating-block connected therewith, of a movable part forming a switch-
60 arm and insulating-blocks connected to the block of the base, a fuse device adapted to be held thereby and a clamping device connected to the movable part actuated from the exterior and adapted upon the interior to engage
65 the fuse device and hold the same in a fixed relation to the movable part to be removed therewith and from the metal contacts when

the position of the said movable part or switch-arm is altered, substantially as set forth.

70 6. In a switch-box, the combination with a base and movable part, metallic contacts, a support and electrical connections therefor, of a clamping device connected to and supported by the movable part actuated exteriorly thereof and operative interiorly of the
75 movable part, a fuse device to be received and held by the metal contacts and to be engaged by the said clamping device which is adapted to hold the fuse device in a fixed relation to the movable part and to move the
80 same with the movement thereof, substantially as set forth.

7. In a switch-box, the combination with a metal base, an insulating base-block held
85 within the same, metal contacts and means for supporting the same upon the insulating base-block and electrical connections therefrom, of a movable part forming a switch-arm and cover, means for connecting the same to
90 the base, insulating-blocks therein provided with recesses, a fuse support or case fitting the said recesses and adapted to be received in said metal contacts, and a device connect-
95 ed to and movable with the said movable device or switch-arm exteriorly actuated and interiorly operative and adapted to grasp the fuse support or case and hold the same in
a fixed relation to the insulating-blocks, so
100 that when the switch arm or cover is moved the fuse support or case moves therewith, the fuse-case being in connection with the contacts when the switch-box is closed, substantially as set forth.

8. In a switch-box, the combination with a
105 metal base, an insulating base-block held within the same, metal contacts and means for supporting the same upon the insulating base-block and electrical connections therefrom, of a movable part forming a switch arm
110 or cover, means for connecting the same to the base, insulating-blocks in the switch arm or cover provided with recesses, a fuse support or case fitting the said recesses and adapted to be received in the said metal con-
115 tacts and pivoted fingers located within the movable part and adapted to grasp the fuse-support upon opposite sides, and means exterior to the movable part for actuating the fingers in one direction and for causing the
120 fingers to forcibly engage the fuse-support, and a spring for releasing the same, substantially as set forth.

9. In a switch-box, the combination with a metal base, an insulating base-block held
125 within the same, metal contacts and means for supporting the same upon the insulating base-block and electrical connections therefrom, of a movable part forming a switch arm or cover, means for connecting the same to
130 the base, insulating-blocks within the same and provided with recesses, a fuse support or case fitting the said recesses and adapted to be received in the said metal contacts, and

oppositely - placed pivoted fingers having curved adjacent faces adapted to engage the fuse support or case upon opposite sides, a yoke to which said fingers are pivoted, a threaded stem connected with the yoke and passing through the movable part, a nut upon the said threaded stem exterior to the movable part, and a spring upon the pivot-pin with parts extending therefrom and at their ends connected with the respective fingers, the spring acting to release the grip of the fingers and the nut acting to forcibly engage the fingers with the fuse-case, substantially as set forth.

10. In a switch-box, the combination with a base, and a movable part pivoted to swing in connection with the base, of a clamping device pivoted to the base adapted to engage the movable part at a point opposite to its pivotal connection with the base, and a frangible nut adapted to normally hold the mov-

able part to the base but which is broken to release the movable part when the same is forcefully operated, substantially as set forth.

11. The combination with the metal plate-cover or movable part, of oppositely-placed pivoted fingers having curved adjacent engaging faces and shoulders bearing upon the inner surface of the plate, a yoke to which the said fingers are pivoted, a threaded stem connected with the yoke and passing through an opening in the plate or cover, and a nut upon the said threaded stem exterior to said plate and adapted to forcibly operate the said fingers to bring their curved adjacent faces toward one another, substantially as set forth.

Signed by me this 14th day of March, 1901.
JOSEPH SACHS.

Witnesses:

GEO. T. PINCKNEY,
S. G. HAVILAND.