

P. J. McDONALD.  
ELECTRICAL CUT-OUT.  
APPLICATION FILED MAR. 18, 1908.

954,537.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

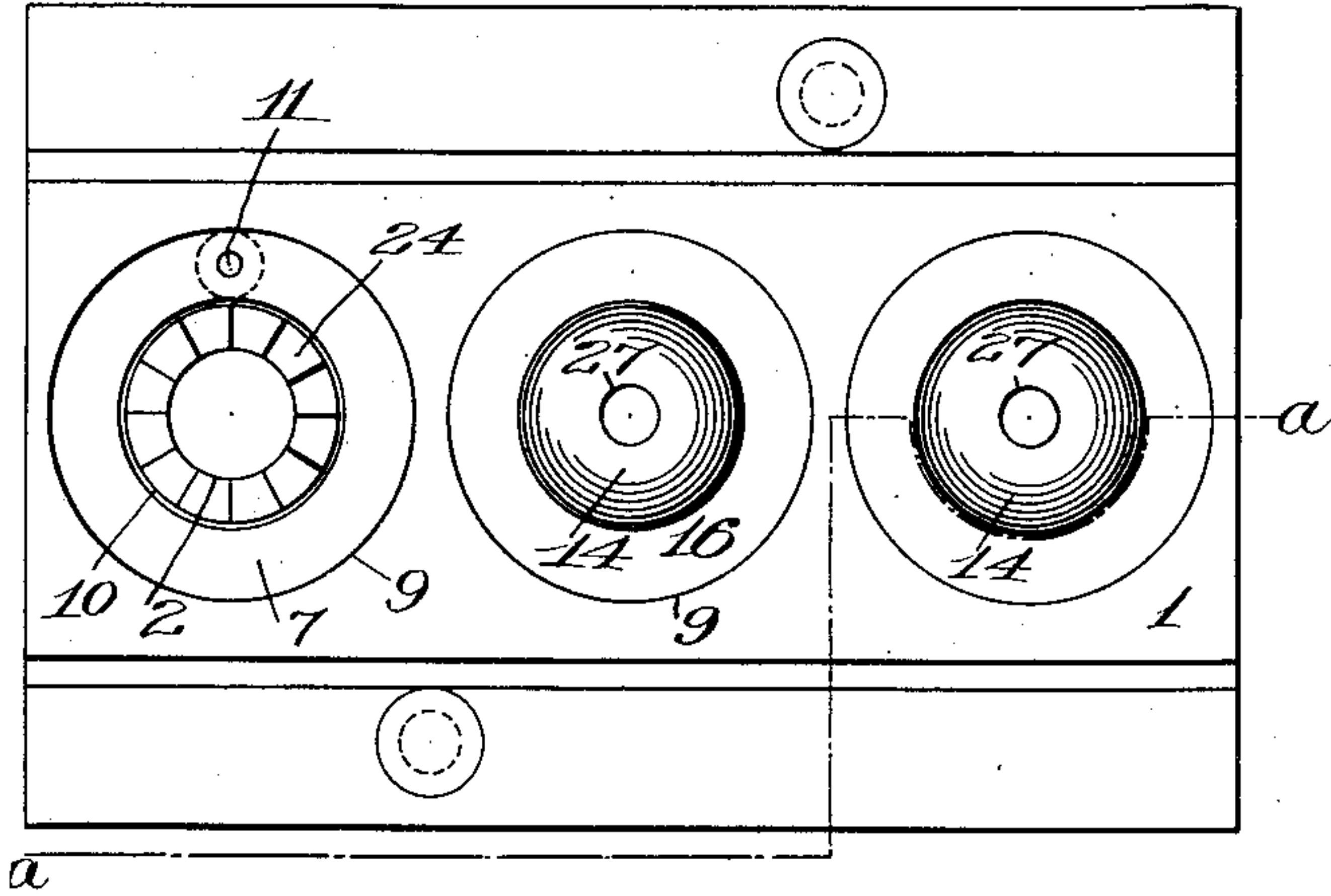


Fig. 4.

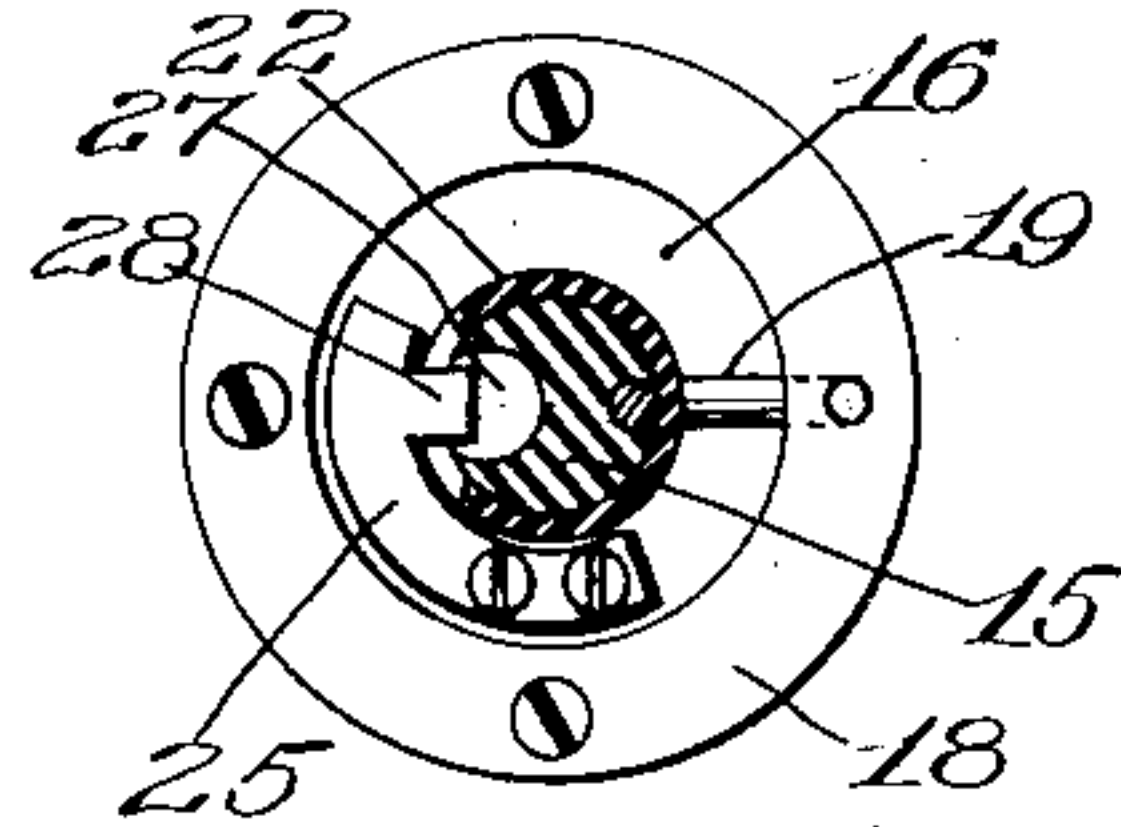


Fig. 2.

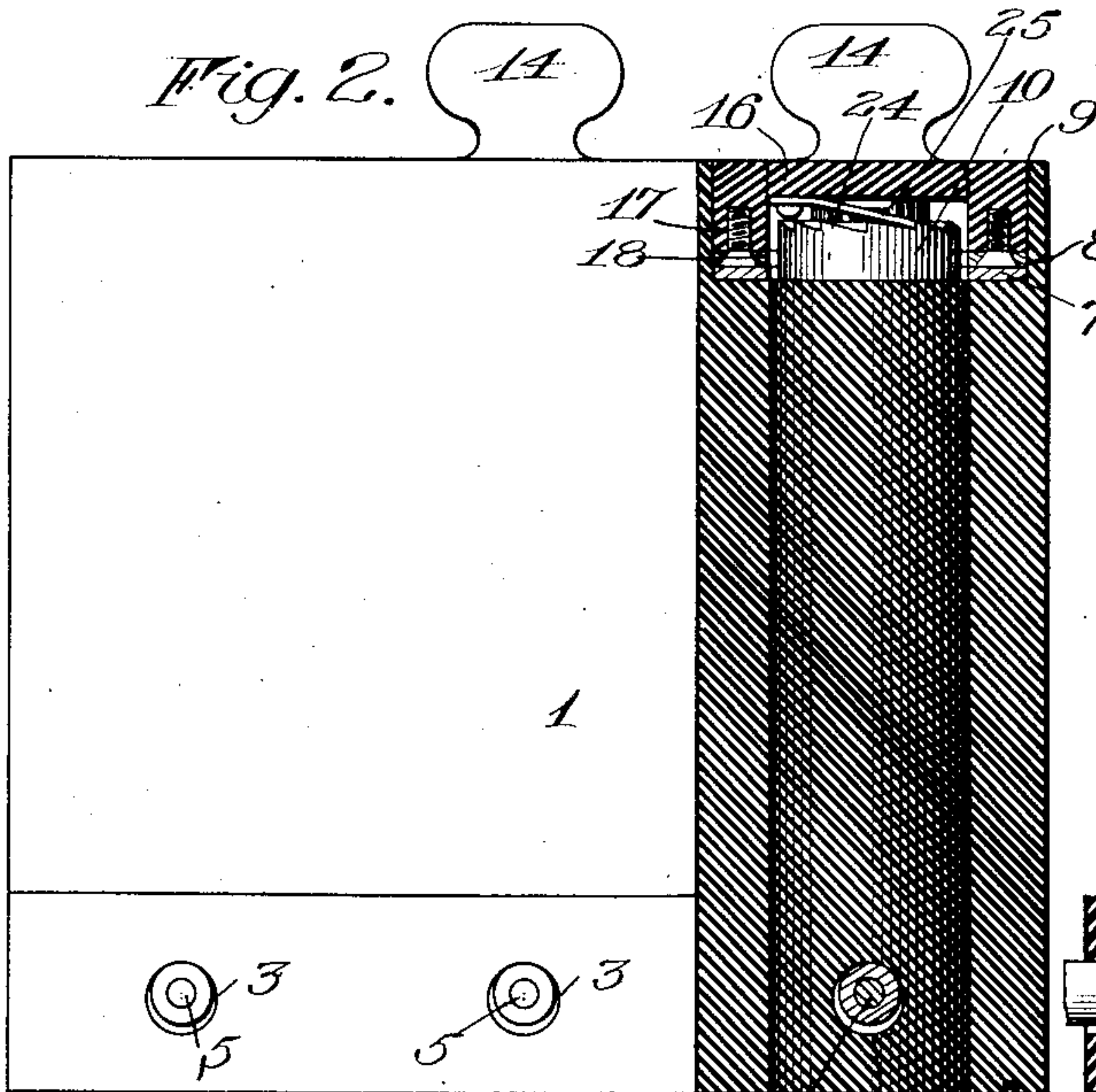


Fig. 3.

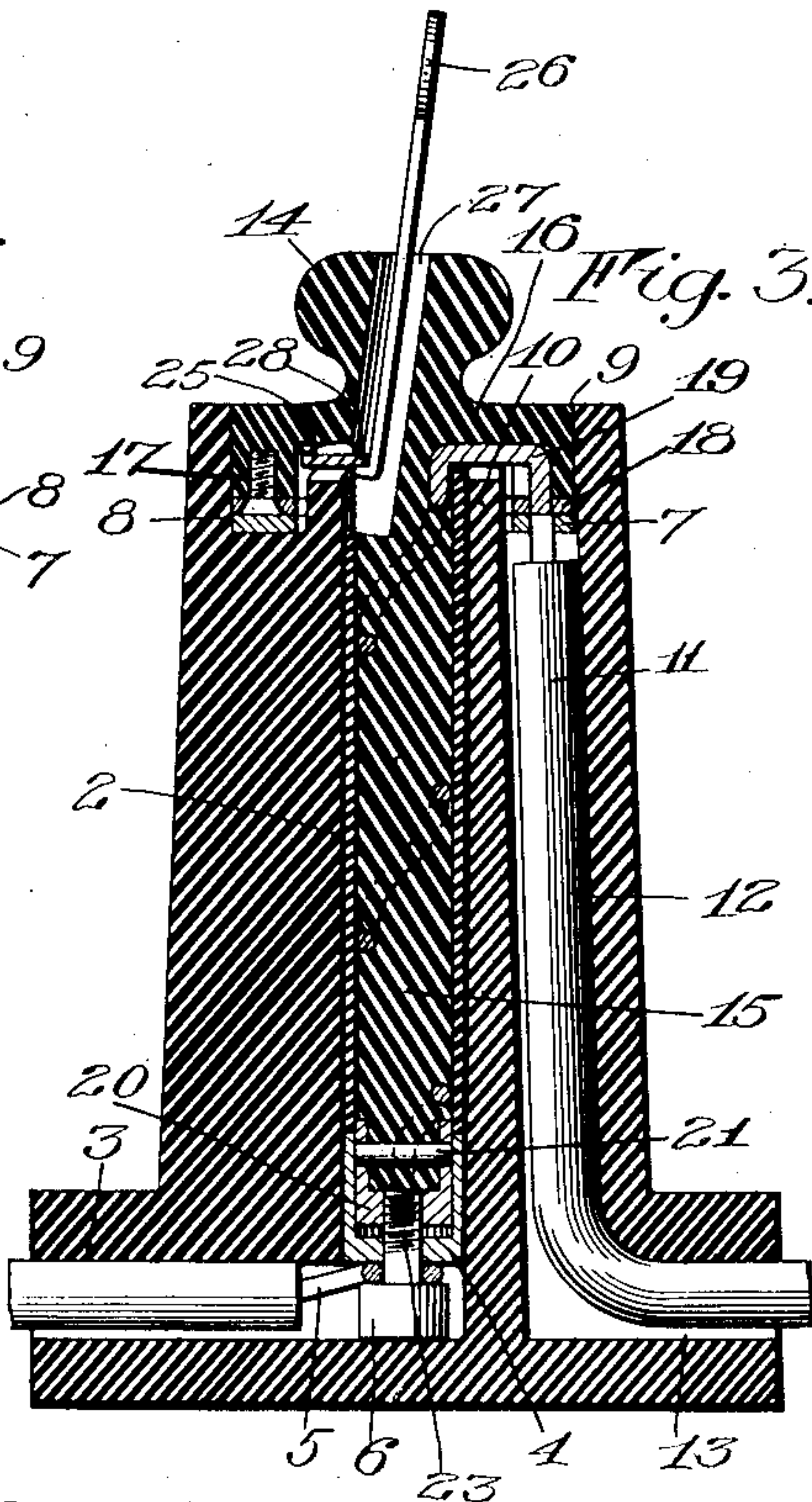
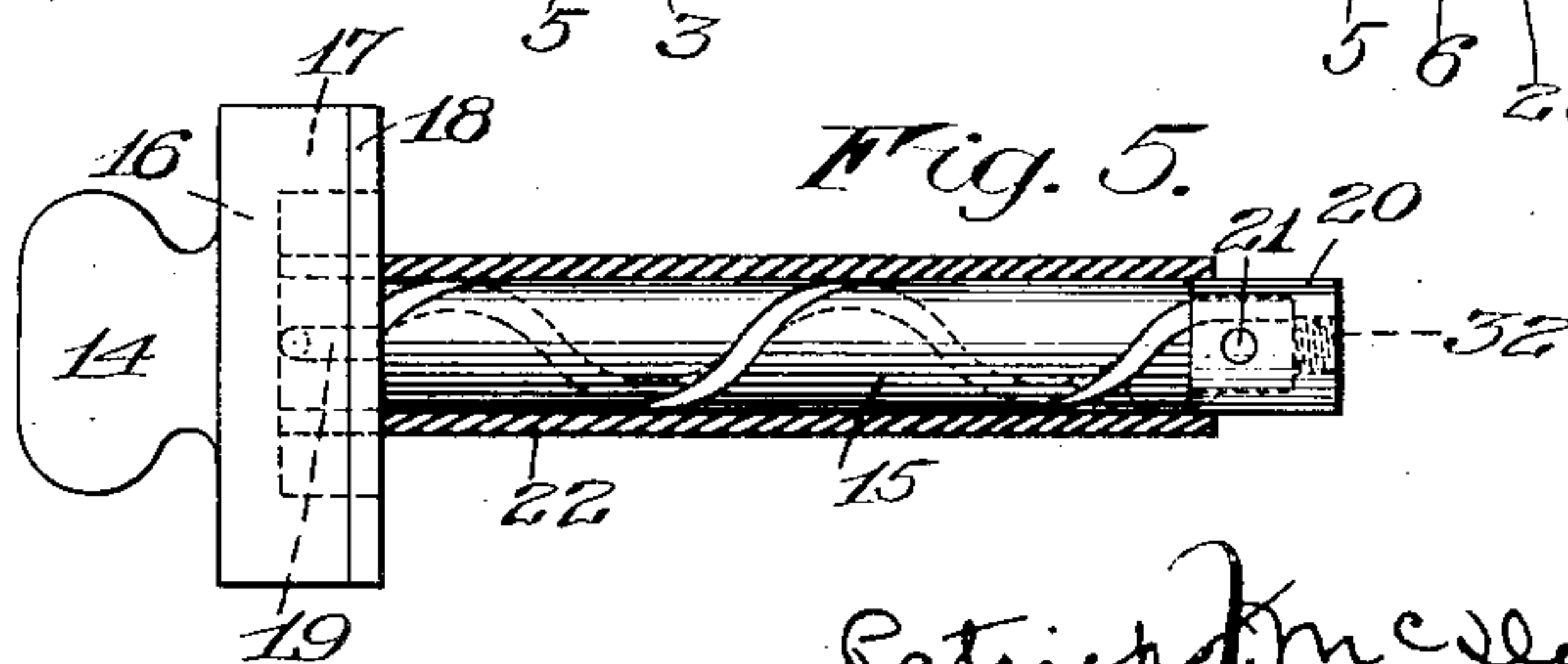


Fig. 5.



Witnesses

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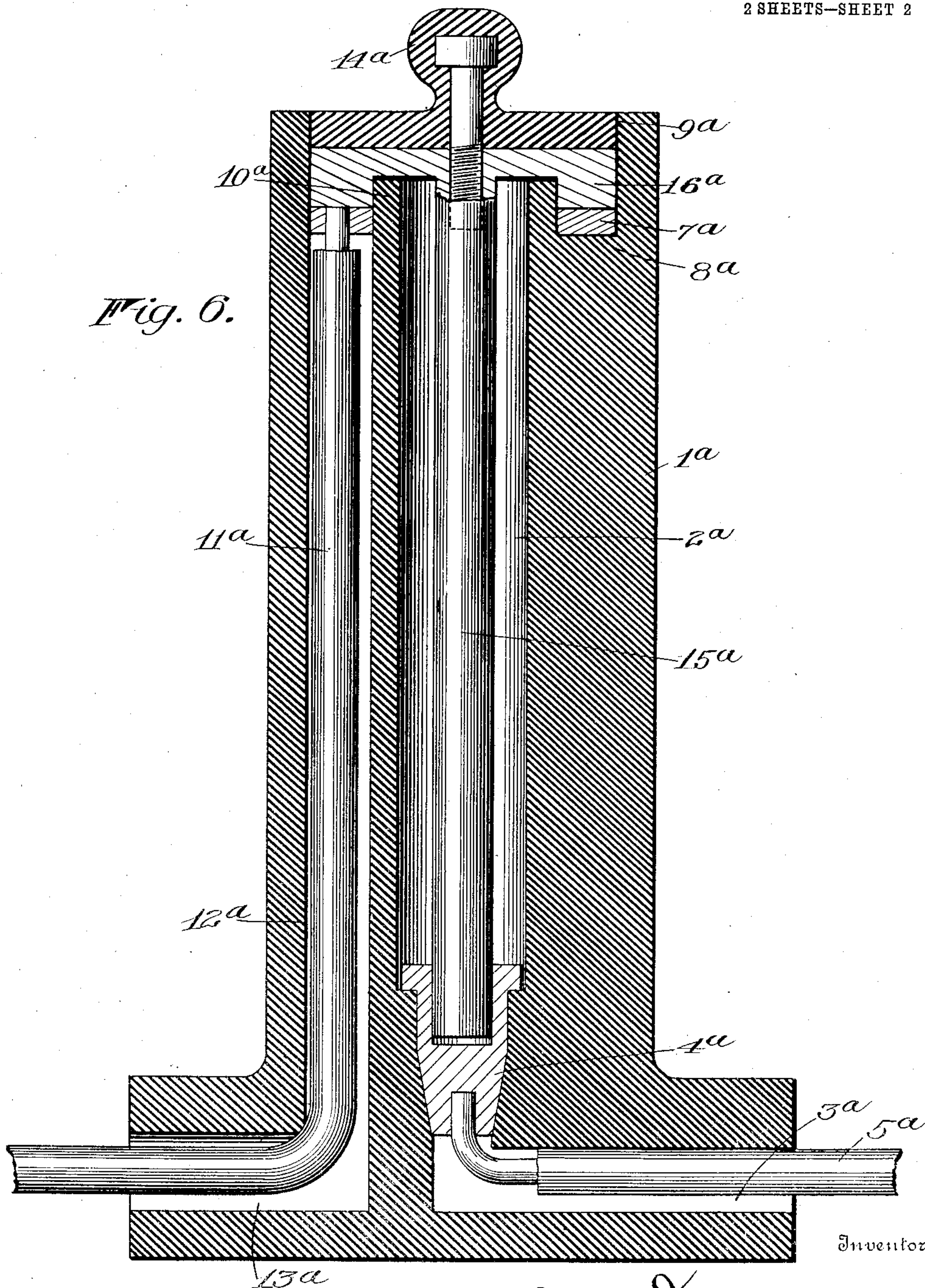


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2 SHEETS—SHEET 2



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ELECTRICAL CUT-OUT.

954,537.

Specification of Letters Patent.

Patented Apr. 12, 1910.

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*To all whom it may concern:*

Be it known that I, PATRICK J. McDONALD, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Electrical Cut-Outs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

This invention relates to cut-outs for electrical circuits, one object being to arrange the terminal contacts in such a relation to each other that it will be impossible for a spark to jump from one to the other; and another object being to provide a construction in which the bridging of the contacts by other means than a connector especially provided for this purpose, will be rendered so difficult that it will not be attempted.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a plan view of a fuse cut-out constructed in accordance with this invention with one of the fuse holders removed; Fig. 2 is a section on line *a-a* Fig. 1; Fig. 3 is a transverse vertical section; Fig. 4 is a detail cross-sectional view of the fuse holder showing the under surface of its flange; Fig. 5 is a detail view of the fuse holder showing the refractory covering in section; and Fig. 6 is a transverse vertical section of a plug cut-out embodying this invention.

In the present invention, spark jumping is prevented by arranging the contacts or terminals so that the path between them will not be a straight line and preferably by interposing a barrier. The contacts or terminals are so formed that they cannot be bridged except by the connector provided therefor, it being a common practice among electricians, especially when repairing fuse cut-outs to bridge the contacts by an ordinary wire, and this is the cause of a great many fires.

Referring to Figs. 1 to 5, wherein there is illustrated a fuse cut-out for low voltage currents, embodying my invention, 1 indi-

cates an insulating base preferably made entirely of insulating material such as porcelain. The base is provided with one or more bores or chambers 2, which may be vertically arranged and each have a laterally extending bore 3 at its lower end. Arranged in one of these bores, in this instance, the vertically extending one, is a contact 4 which may be of cup shaped formation and have means for securing a conductor terminal such as 5 thereto, said means consisting if desirable of a binding screw 6 around which the conductor is wrapped. In securing the conductor 5 to the contact 4 the former is inserted into the lateral bore 3 and then carried through the upper end of the vertical bore, where the contact is secured and soldered thereto. The contact is now pulled to the lower part of the bore in the position shown in Fig. 3.

Located exteriorly of each bore 2 is a contact 7 which preferably is of ring shape and surrounds the bore at the upper end of the latter, being arranged in an annular depression 8 formed in a pocket 9 in the base at the upper end of bore 2, thus providing a ring shaped barrier 10 between the contact 7 and the contact 4 in bore 2. Of course, this barrier 10 may be formed in any other suitable manner. The other conductor terminal 11 is secured to and leads downwardly from the ring shaped contact; and the base is provided with a vertical bore 12 and a lateral bore 13 to receive the said conductor.

A suitable movable connector is employed for establishing connection between the two contacts, and this in this instance in the form of a fuse holder that closes the chamber or bore 2 and embodies a knob 14 carrying a stem 15 and an annular flange 16 at the upper end of the stem, all said parts being made of insulating material if desired. The flange 16 has a depending insulating ring 17 carrying a ring contact 18 to cooperate with the ring contact 7. Ring contact 18 is connected by a fuse 19 with a contact 20 on the lower end of the connector or fuse holder, the fuse being preferably arranged within a helical fuse holding groove in the stem and the contact 20 being preferably in the form of a cap secured over the end of the stem by a pin 21 and fitting in the cup shaped contact 4. A refractory covering such as asbestos 22, sur-



rounds the stem and keeps the heat from the base when the fuse "blows out."

In order to prevent sparking taking place between the fuse holder contacts and the terminal contacts, I may draw the contacts together and hold them positively interlocked. This is effected by rotating the fuse holder so that the screw threaded wall of the opening 32 in contact 20 will engage the upper end 23 of the screw 6. Of course, any other screw threaded connection or rotary interlocking connection between the fuse holder and one of the terminal contacts may be provided.

The fuse holder is preferably locked in engagement with the terminal contacts to prevent surreptitious removal and for this purpose I may employ a pawl and ratchet connection between it and the base. The ratchet is provided by forming teeth 24 on the barrier 10, and the pawl 25 is carried by the under surface of the flange 16 and rides over the ratchet when the fuse holder is being screwed to the end 23. In order to remove the fuse holder a key 26 is introduced into an opening or passageway 27 in the knob 14, and is engaged beneath a lug 28 that projects into the passageway from the pawl.

In operation after the conductor terminals have been secured to the contacts 4 and 7, the fuse holder is inserted in bore 2 and the pocket 9 and rotated so that the lower contact of the fuse holder interlocks with the contact 4. The locking device prevents the removal of the fuse holder except by the use of the key.

It is possible with a fuse cut-out constructed in accordance with this invention, for an inspector merely from glancing at it to ascertain if it is properly set up, because only when the fuse holder is flush with the top of the base can an electrical connection be established therethrough, and if it is removed or slightly elevated an examination should be made by the inspector. This is a great advantage over those fuse cut-outs with covers, as it is not necessary to remove a part to ascertain whether the contacts are improperly connected by a piece of ordinary wire. The workman, even should he desire to connect the terminal contacts by a piece of wire, would experience great difficulty in accomplishing it, because the contacts are formed and located in such a manner as to render this action practically impossible.

In Fig. 6 where the cut-out is employed merely for breaking and making a circuit, the base 1<sup>a</sup> has a vertical bore 2<sup>a</sup> provided with a lateral bore 3<sup>a</sup>, and a cup shaped contact 4<sup>a</sup> is seated in the lower end of the bore 1<sup>a</sup> and has the conduct or terminal 5<sup>a</sup> secured thereto. The ring contact 7<sup>a</sup> is arranged in a depression 8<sup>a</sup> formed in a pocket 9<sup>a</sup>, and is

separated from the bore 2<sup>a</sup> by a barrier 10<sup>a</sup> and has the terminal 11<sup>a</sup> secured thereto and arranged in bores 12<sup>a</sup> and 13<sup>a</sup>.

The connector between the terminals is in this instance in the form of a copper stem 15<sup>a</sup> seating at its lower end in the contact 4<sup>a</sup> and having a flange 16<sup>a</sup> at its upper end to abut the ring contact 7<sup>a</sup>, a knob 14<sup>a</sup> being insulated from the flange and serving as a means by which the connector is manipulated. The flange seats in the pocket and closes the bore 2<sup>a</sup>.

With this cut-out, as with the fuse cut-out, the two terminals are separated by a barrier and are arranged in such a manner that spark jumping is impossible.

What I claim is:

1. The combination of an insulating base having two substantially parallel bores therein, opening at adjacent ends on opposite sides of the base, with a contact arranged at the other adjacent ends of the bores, a contact within one of said bores, and a connector for establishing connection between the contacts.

2. The combination of an insulating base having two substantially parallel bores therein, and lateral bores extending in opposite directions from adjacent ends of the first named bores, with a contact mounted at the other adjacent ends of the bores, a contact mounted within one of the bores, and a connector for establishing electrical connection between the contacts.

3. The combination with an insulating base having a bore therein, of a contact arranged within the bore, a ring contact surrounding the bore near one end, a wall also surrounding the bore between the latter and the ring, and a movable connector for establishing electrical connection between the contacts.

4. The combination with an insulating base having a bore therein, and a depression at one end of the bore, of a contact arranged within the bore, a contact arranged within the depression and separated from the bore by the wall of the depression, and a movable connector for establishing electrical connection between the contacts.

5. The combination with an insulating base having a bore therein and an annular depression at one end of the bore, of a contact arranged within the bore, a ring contact arranged in the annular depression and separated from the bore by the wall of the annular depression, and a movable connector for establishing electrical connection between the contacts.

6. The combination with a base having a chamber therein opening at one end, of a contact arranged within the chamber, a flat annular contact surrounding the chamber and arranged in spaced relation to the inner wall of the chamber so that a spark cannot



jump from one contact to the other, and a connector for coöperation with both contacts to establish electrical connection between them.

5 7. The combination with an insulating base, of a contact arranged thereon, having a conductor binding screw passing there-  
through, a second contact and a connector  
10 for the contacts having screw threaded en-  
gagement with the inner end of the binding  
screw.

8. The combination with a base having a  
bore therein, of a contact arranged within  
the bore, a contact arranged exteriorly of the  
15 bore, a connector between the contacts com-  
prising a stem having rotary interlocking  
connection with the contact in the bore and  
a flange on the stem, a ratchet arranged on

the base about the bore and a pawl carried  
by the flange.

9. The combination with an insulator 20  
having two substantially parallel bores, a  
pair of bores, one extending laterally from  
each of the first named bores to opposite  
sides of the insulator, and a pocket into 25  
which adjacent ends of the vertical bores  
lead, of a contact arranged in the pocket, a  
contact arranged in one of the first named  
bores, and a movable connector for estab-  
lishing electrical connection between the con- 30  
tacts.

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