

No. 854,751.

PATENTED MAY 28, 1907.

J. T. MARSHALL.

CUT-OUT.

APPLICATION FILED JUNE 26, 1905.

Fig. 1

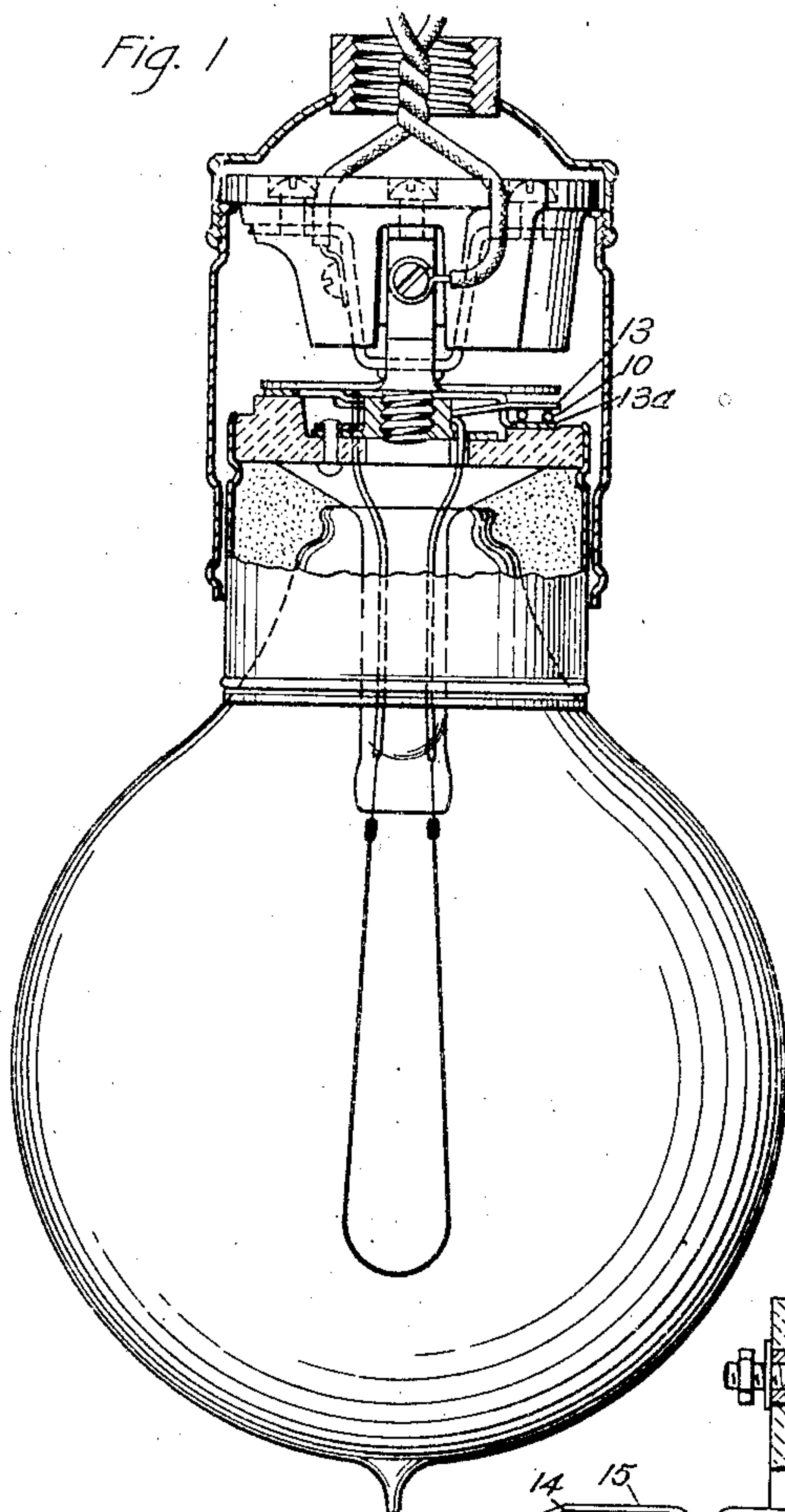


Fig. 3



Fig. 2

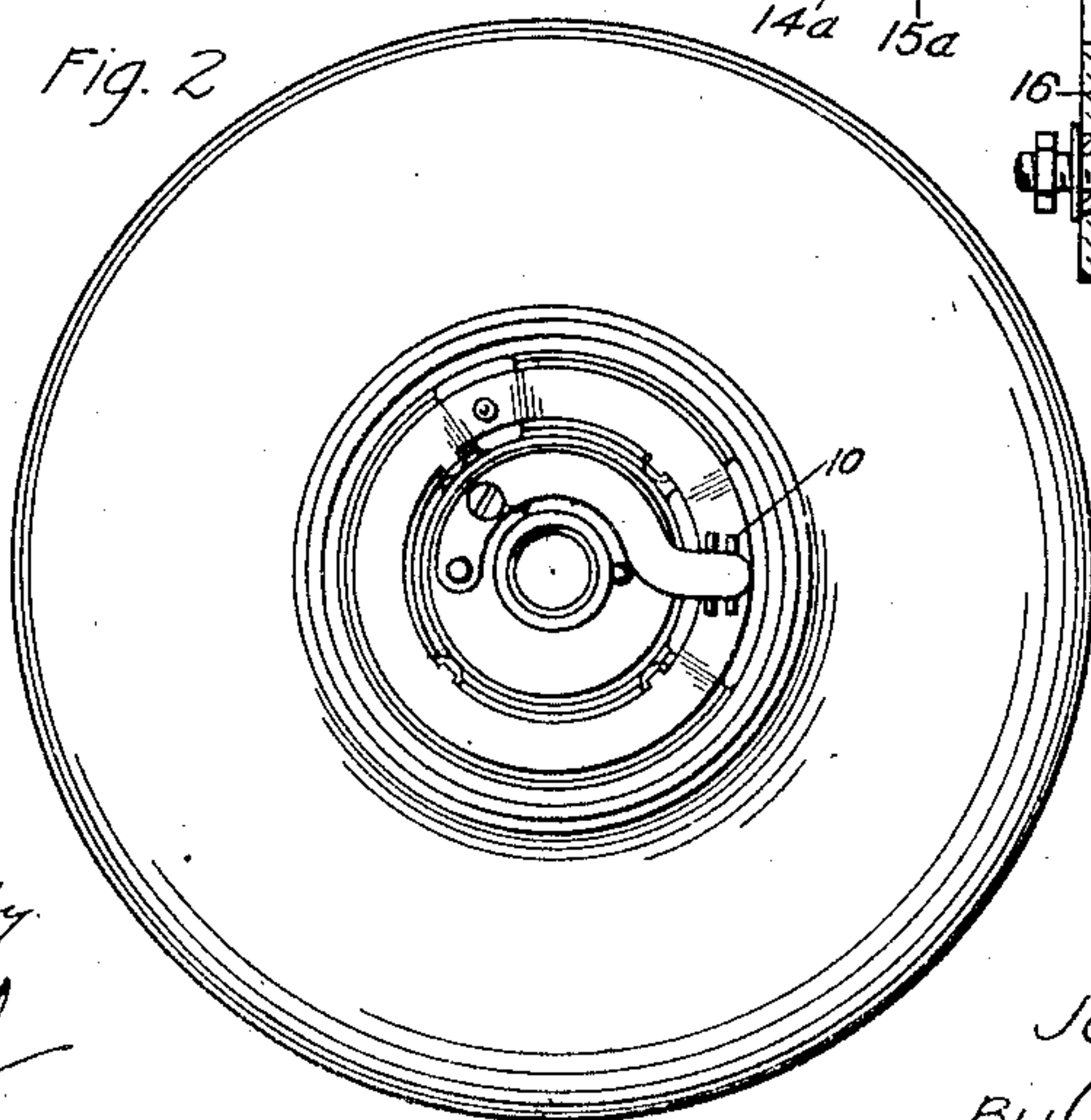
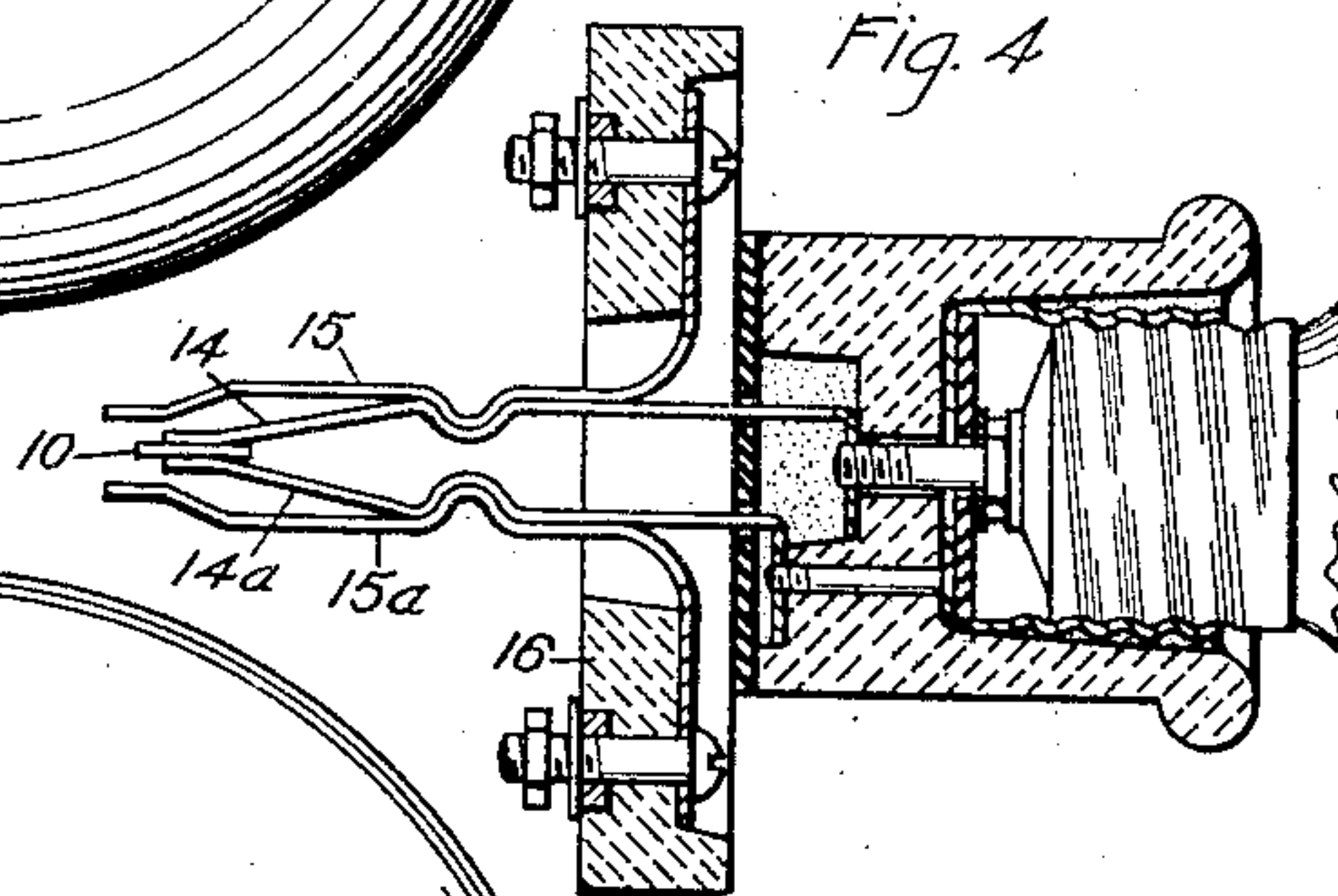


Fig. 4



Witnesses:

Murray D. Badgley  
Helen Orford

Inventor:

John T. Marshall.  
By Albert B. Davis  
Att'y.



# UNITED STATES PATENT OFFICE.

JOHN T. MARSHALL, OF METUCHEN, NEW JERSEY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## CUT-OUT.

No. 854,751.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed June 26, 1905. Serial No. 266,954.

*To all whom it may concern:*

Be it known that I, JOHN T. MARSHALL, a citizen of the United States, residing at the borough of Metuchen, county of Middlesex, State of New Jersey, have invented certain new and useful Improvements in Cut-Outs, of which the following is a specification.

The present invention relates to that class of circuit controlling devices commonly called "cut-outs" which depend upon the rupturing or breaking down of an insulating substance held between contact surfaces for the purpose of maintaining an electric circuit. Such devices are usually arranged in shunt to a translating device such as a series incandescent lamp used on constant current circuits and operate upon the occurrence of a break in the lamp circuit to complete the shunt circuit and thus maintain the remaining good lamps on the circuit in operation.

It has been proposed heretofore to use a thin film of insulating substance or fabric between the contact surfaces which would be broken when the potential reaches the proper point. It has also been proposed to build up a unit to be inserted between the opposing contact surfaces consisting of two metal blocks with an interposed film of insulation. These and other devices of the sort which have been proposed heretofore bring the contact surfaces themselves or the live portions of the circuit adjacent to the film so close together that there is often a considerable leakage of current between them due to moisture forming a path between the contacts.

The principal object of the present invention is to provide a member to be located between the faces of the opposing contacts which will insulate them from each other by a very thin layer or coating of insulation and at the same time mechanically hold them a considerable distance apart so that the possibility of leakage between the contacts will be reduced to a minimum.

In carrying out the invention I employ a conducting substance coated with an insulating film. In this way as soon as the insulation is broken down the circuit is completed between the opposing contacts through the intervening conducting substance, while before the circuit is completed the opposing contacts are electrically insulated from each

other only by the thin coatings on the conducting substance. On the other hand the opposing contacts are maintained at all times a considerable distance apart.

The character of my invention will be more fully understood upon reference to the following description taken in connection with the accompanying drawing and the novel features of the invention will be specifically pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a side elevation partly in section of a series incandescent lamp to which my improved cut-out has been applied; Fig. 2 is a top plan view of the same; Fig. 3 is a section of the insulated member which is interposed between the opposing contacts; and Fig. 4 is a sectional elevation of a modified form of socket for an incandescent lamp to which the cut-out may be applied.

Referring in detail to the drawing, 10 designates the member which is interposed between the contacts which are to be electrically connected upon the occurrence of a rupture in the circuit of the translating device. Each of these members, of which there may be one or more consists of some conducting substance covered with a thin layer of insulation; preferably I employ a short piece of copper wire 11 covered with an insulating coating 12 of enamel, lacquer or other suitable insulating material. In the form of lamp illustrated in Figs. 1 and 2, these members are interposed between the shunt contacts 13, 13<sup>a</sup>, which are placed in shunt to the lamp terminals, 13 taking the form of a metal tongue screwed fast to one terminal and lying over the other contact 13<sup>a</sup> which is in the form of a glass ring connected to the other terminal in such a manner that when one or more of the members 10 are slipped under the tongue a shunt to the lamp filament is completed. These contacts 13 and 13<sup>a</sup>, due to the resilience of the material, tend to come into engagement so that whenever the insulation 12 breaks down, a circuit is completed between them through the conductive portion 11 of said member.

The lamp shown is a well known form of construction and need not be described in detail.

In Fig. 4 the members 10 are shown interposed between two resilient strips 14 and 14<sup>a</sup>



connected to the terminals of the lamp socket and adapted to be inserted between two spring strips 15, 15<sup>a</sup> mounted on a switchboard or base 16 on which the circuit connections are made. With this construction the lamp and its socket may be withdrawn from the switchboard and the members 10 put in place between the strips 14, 14<sup>a</sup> and the whole then inserted in the switchboard. So long as the lamp operates satisfactorily the insulation 12 remains intact, but if the lamp filament should become broken or ruptured a greatly increased potential is thrown on the film of the cut-out and the insulation is broken down and circuit between the members 14 and 14<sup>a</sup> completed, thereby completing the circuit of the lamp independently of the lamp.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In an automatic cut-out for electric translating devices, the combination with opposing contacts, movable toward each other when unrestrained, of interposed means for insulating said contacts from each other with a thin layer of insulation and mechanically maintaining them apart a distance greater than the thickness of the insulation.

2. In an automatic cut-out for electric translating devices, the combination with opposing contacts movable toward each other when unrestrained, of an intervening

conductor insulated from each of said contacts.

3. In an automatic cut-out for electric translating devices, the combination with opposing contacts, of an intervening conductor insulated from each of said contacts by an interposed film of insulation and normally holding them under strain.

4. In an automatic cut-out for electric translating devices, the combination with opposing contacts movable toward each other when unrestrained, of an intervening conductor insulated from each of said contacts by an interposed film of enamel.

5. In an automatic cut-out for electric translating devices, the combination with opposing contacts movable toward each other when unrestrained, of an intervening conductor coated with a film of insulation so as to maintain said contacts mechanically a considerable distance apart and electrically insulate them from each other by a thin layer of insulation.

6. The combination with an electric translating device, of opposing contacts in a shunt around the same, and an intervening conductor insulated from each of said contacts.

In witness whereof I have hereunto set my hand this 23d day of June, 1905.

JOHN T. MARSHALL.

Witnesses:

JOHN E. MITCHELL, Jr.,  
GEO. V. DELANEY.