

Feb. 28, 1939.

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2,148,778

REFRIGERATOR LIGHTING FIXTURE

Filed Aug. 30, 1935

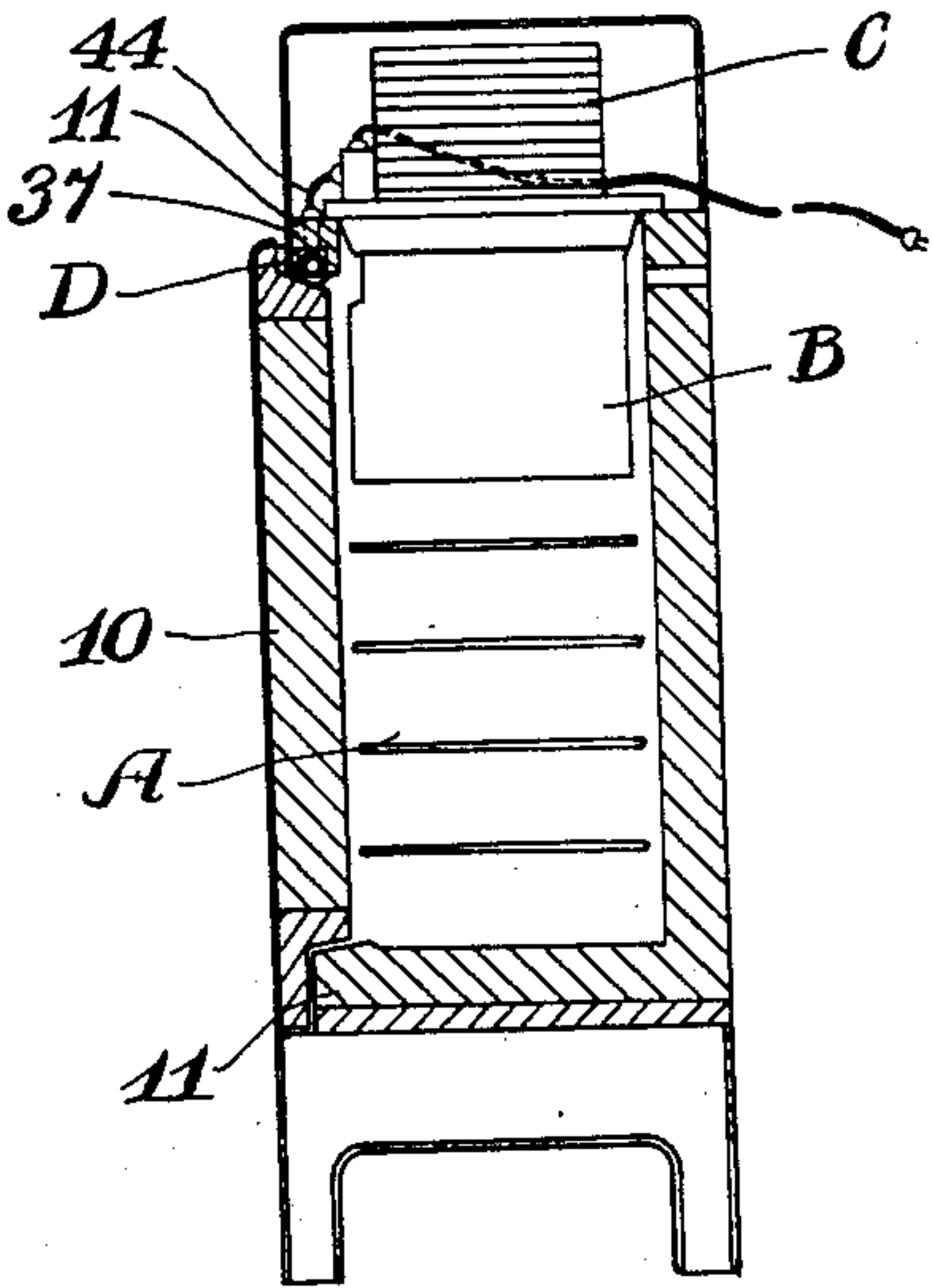


Fig. 1

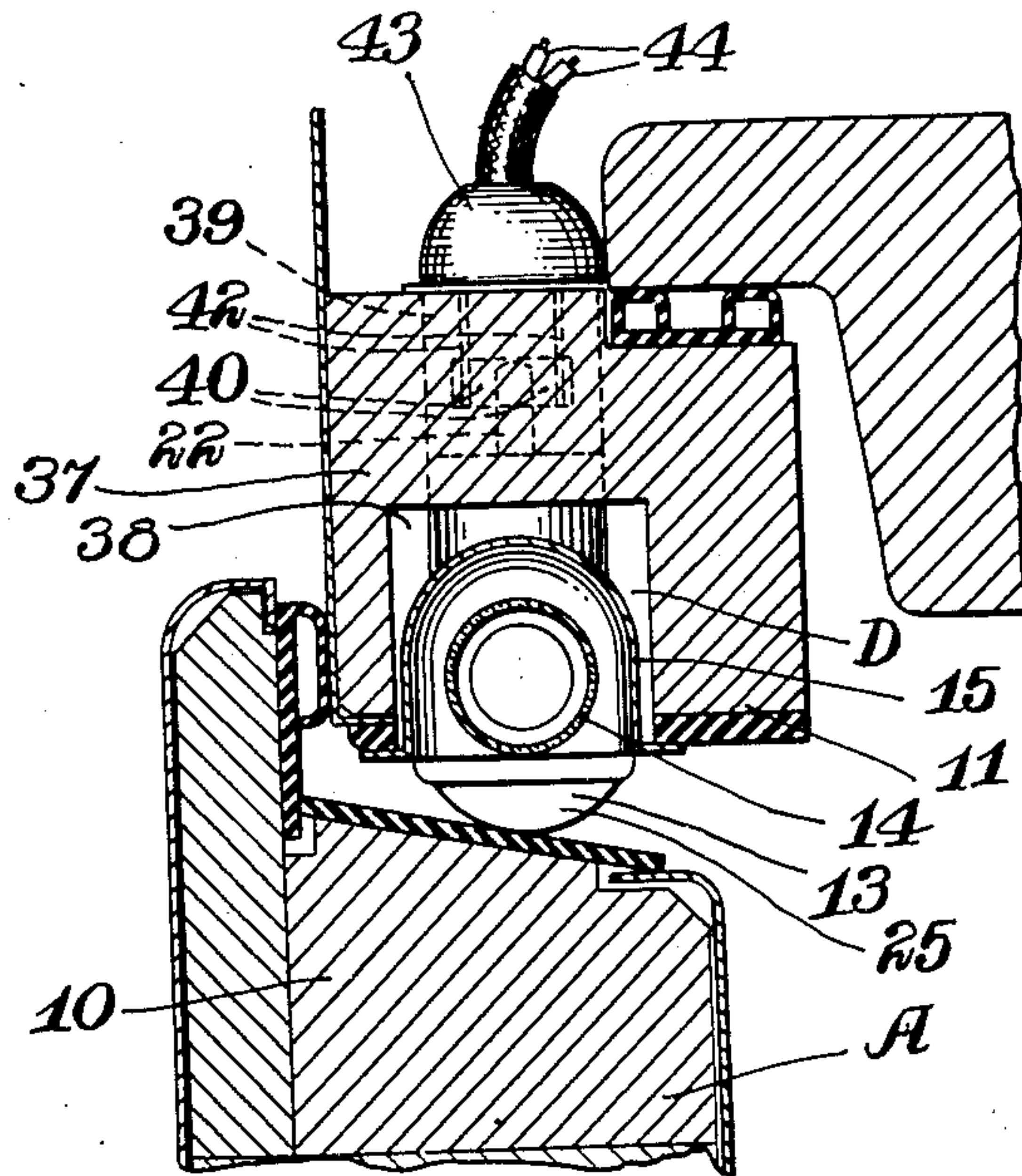


Fig. 2

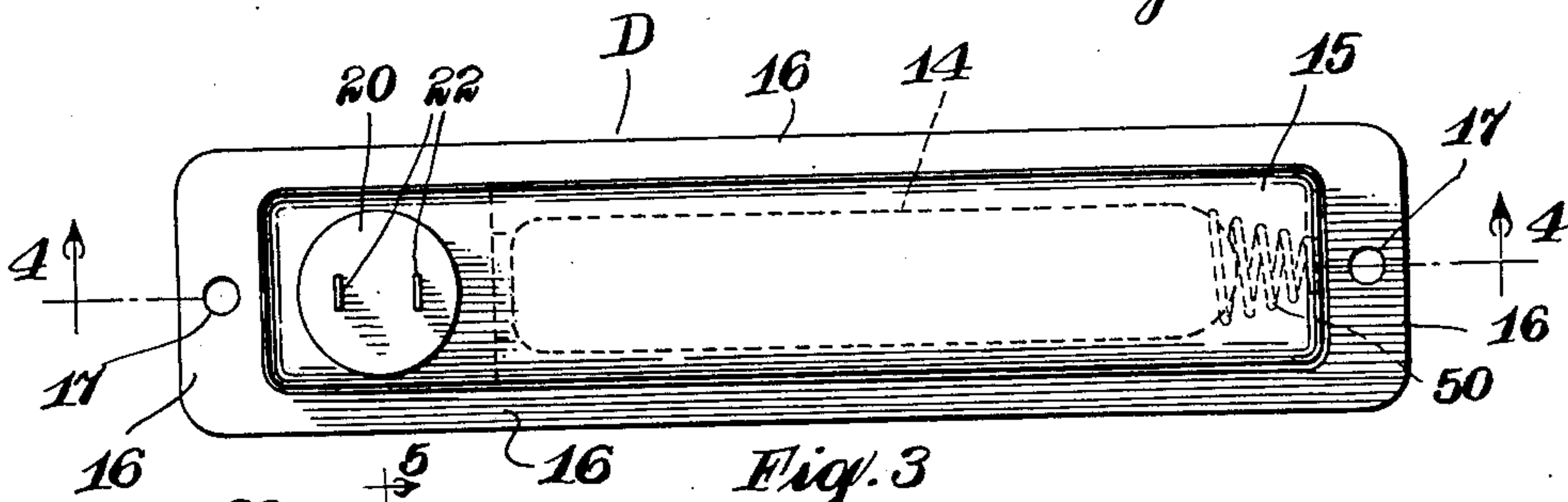


Fig. 3

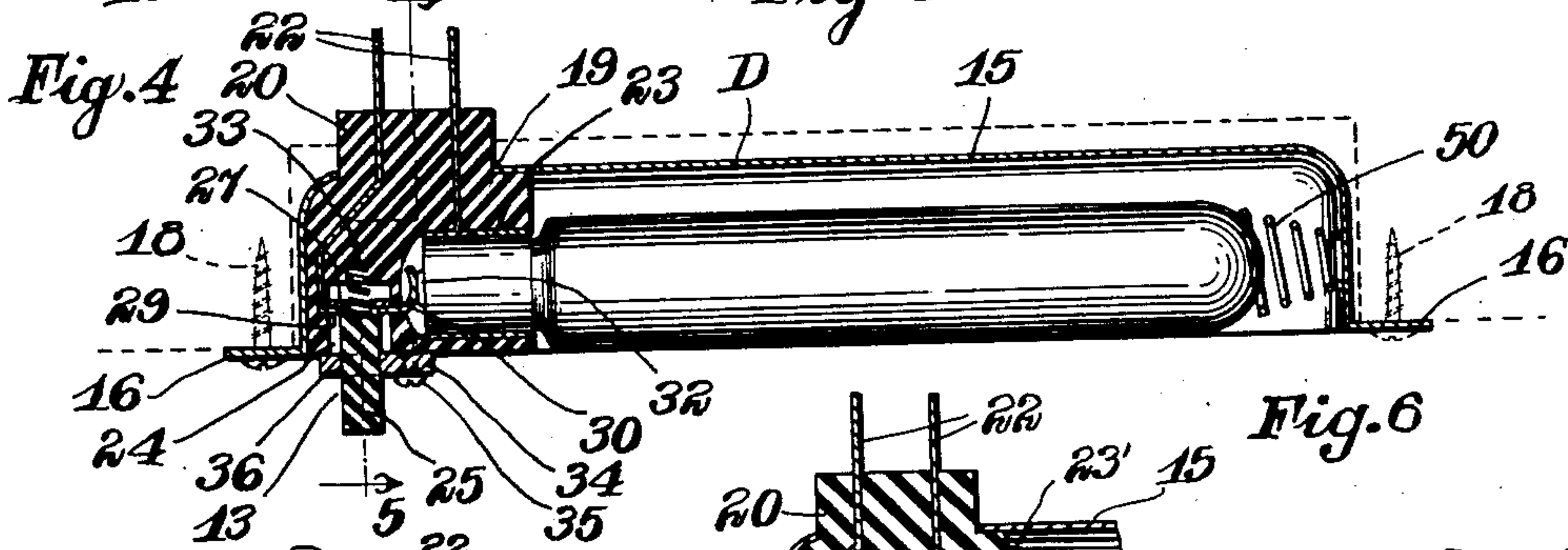


Fig. 4

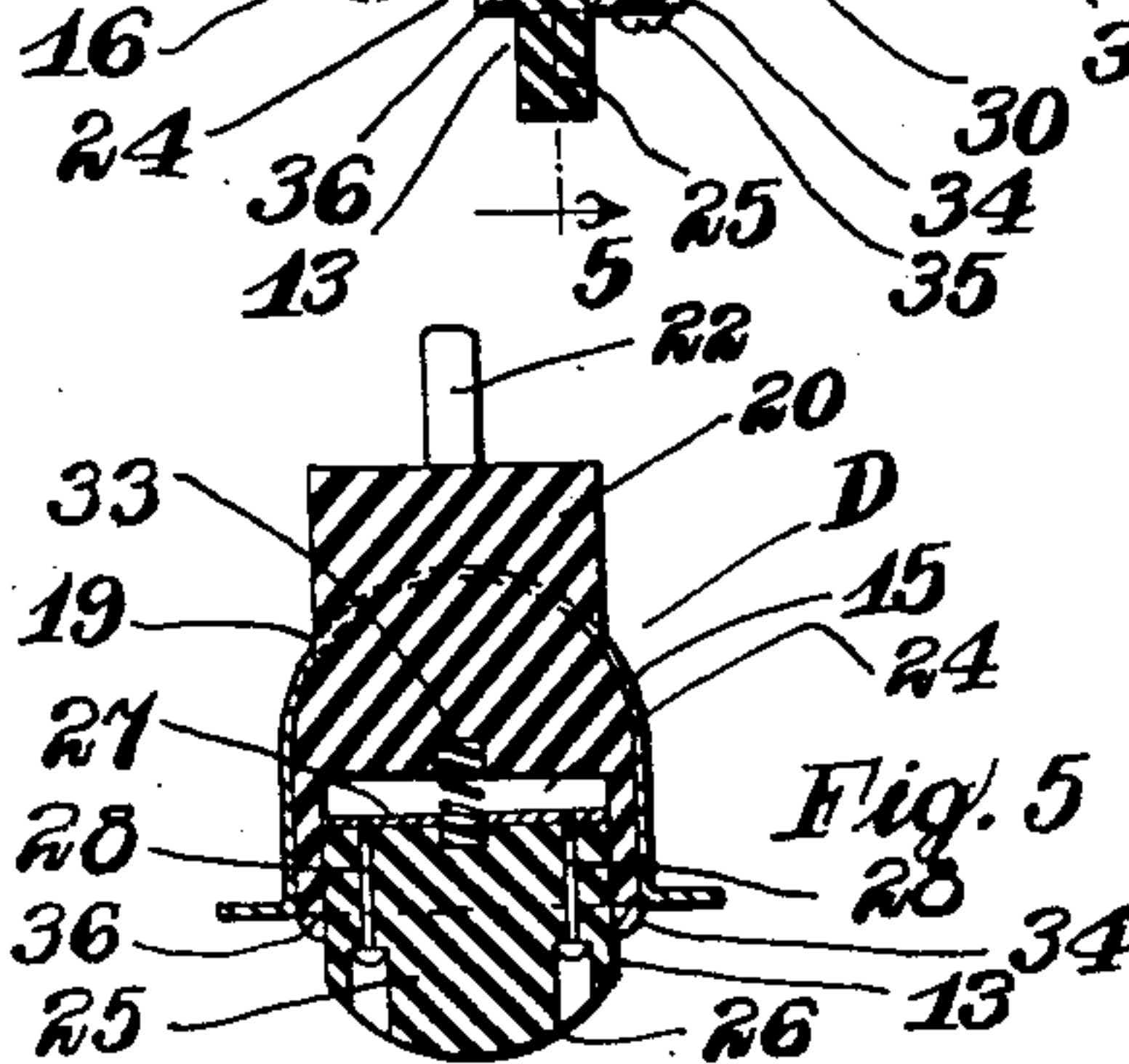


Fig. 5

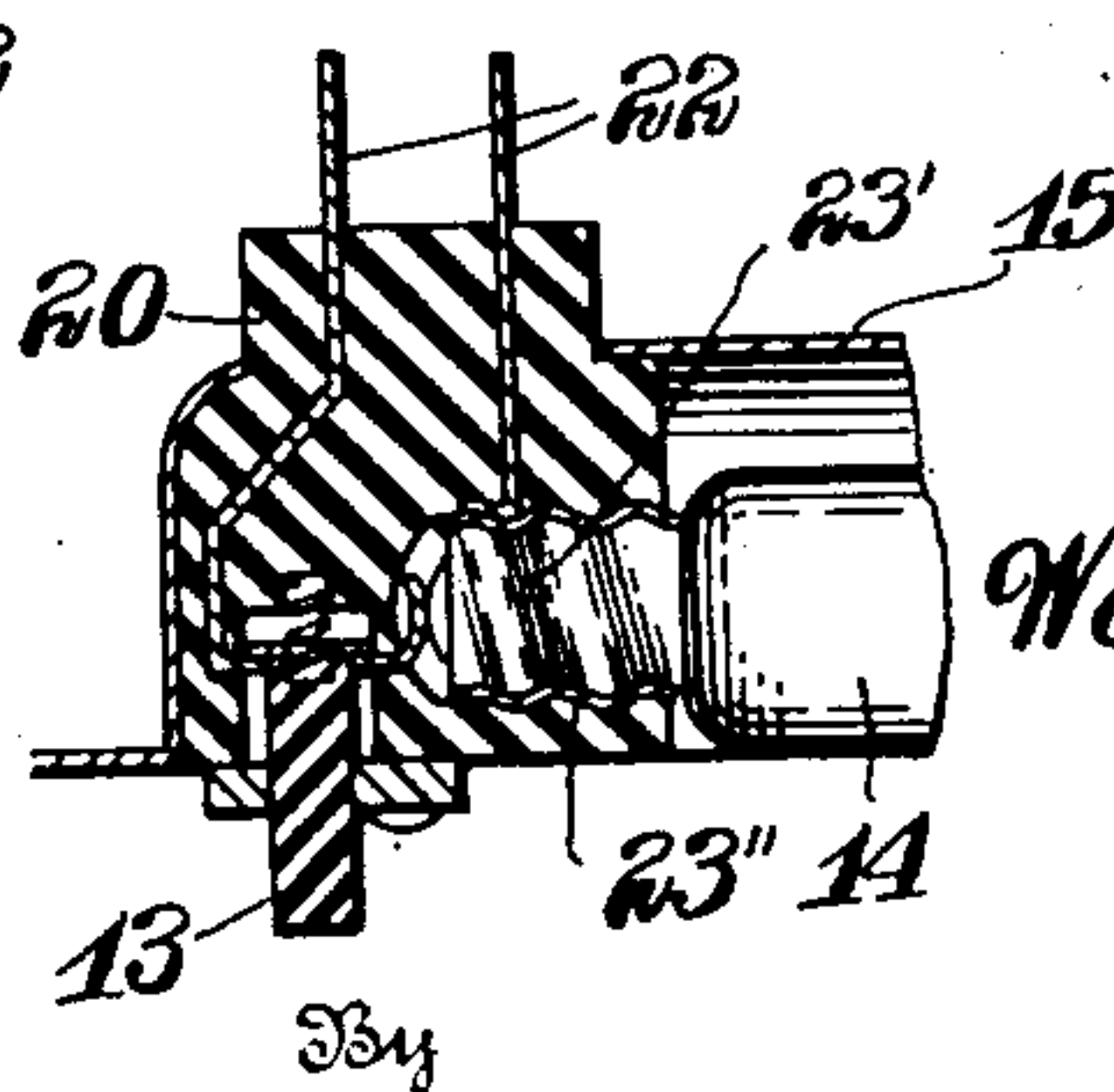


Fig. 6

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## UNITED STATES PATENT OFFICE

2,148,778

## REFRIGERATOR LIGHTING FIXTURE

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Application August 30, 1935, Serial No. 38,561

7 Claims. (Cl. 240—4)

My invention relates to an improvement in lighting fixtures for refrigerator cabinets and the like, whereby the installation of the fixture in a cabinet can be greatly simplified.

In recent years it has been common practice to install within a refrigerator cabinet an illuminating means which operates simultaneously with the opening of the cabinet door, in order that the contents of the refrigerator may be readily observed. These illuminating means are ordinarily costly to install, for as they extend into the interior of the cabinet, they must be applied after the refrigerator is mostly completed. The illuminating means usually comprises an electric light detachably secured in a holder which is ordinarily attached to the interior of the cabinet after completion thereof, and which must be wired to a source of electric current. The wiring of course, must also be connected to a switch which is automatically operated by the refrigerator door.

It is my purpose to provide a self-contained illuminating unit, switch and power connection which may be placed in operating position by any workman and secured in place by a simple mechanical connecting means. In this manner an electrician need not be provided to install the wiring of the light and switch, and the unit may be completely assembled before installation. In the preferred form, my lighting fixture is held in position with two screws. An ordinary prong receiving plug fits into a recess in the frame in such a manner that there are no electrical connections to be made by the workmen in installing the fixture.

Not only does such a construction save considerable in the cost of manufacture; it also provides a construction which is interchangeable and which is practically indestructible in the ordinary operation of the refrigerator. The electrical connections and contacts of the switch may be embedded in insulation so that destruction is almost impossible while the fixture is in position within the cabinet. Furthermore, there are no connections to become loosened through vibration or jarring of the cabinet. If any fixture proves to be defective, the entire unit may be interchanged in an extremely short time. The light in my unit is held by spring tension to hold it firmly in place, yet easily removable, in one form of the same. The light may also be held in a threaded socket to support it in the unit. Where the light is held by spring tension it is cushioned in the unit so that it may be protected against the jar of the shutting of the refrigerator door.

Further objects and novel features of my inven-

tion will be more clearly and fully set forth in the following specification and claims.

In the drawing forming a part of my specification:

Figure 1 illustrates diagrammatically a refrigerator having my lighting fixture applied therein.

Figure 2 is an enlarged sectional view through the upper edge of a refrigerator door and the adjacent portion of the cabinet, illustrating my lighting fixture.

Figure 3 is a top plan view of my lighting fixture ready to be installed.

Figure 4 is a sectional view on the line 4—4 of Figure 3, illustrating diagrammatically the socket and switch construction, and the means of connecting the unit in position.

Figure 5 is a cross-sectional view on the line 5—5 of Figure 4, illustrating one type of switch construction.

Figure 6 illustrates a sectional detail of the electric light held in a screw socket on one end. The other end of the light which is not shown in this view, may or may not be contacted by a spring.

The refrigerator cabinet A is provided with a cooling unit B and an operating unit C. In the modification illustrated, the cabinet A is provided with a single door 10. The door 10 is provided with a door frame 11, in which is positioned my lighting fixture unit D.

The unit D is preferably mounted in the door frame 11 at the top of the door, as illustrated in Figure 1, but of course, may also be arranged in the sides of the frame, or in the bottom, if desired. The lighting fixture unit D is provided with a switch 13 and an electric light 14, which provides an illumination throughout the entire interior of the cabinet A.

The lighting fixture unit D is formed with an elongated trough-shaped reflector 15. This reflector 15 is provided with peripheral flanges 16 on either side and at either end. Openings 17 through the flanges 16 accommodate screws 18 by means of which the reflector 15 may be attached to the frame 11 of the door 10 of the cabinet A.

An opening 19 is provided adjacent one end of the reflector 15, through which the plug 20 formed of molded insulation may extend. The usual prongs 22 extend from this plug 20 to extend into a motor connector body. One of the prongs 22, in the form illustrated, is electrically connected to the socket 23 which is also embedded in the insulation material molded to form the plug 20. The other prong forms an electrical connection with the switch 13.



The switch 13 illustrated in Figures 4 and 5 of the drawing is only illustrative of a type of switch which may be used for the desired purpose. In this switch, which fits into a rectangular recess 24 within the molded insulation plug 20, an operating member 25 of insulation engages the door 10 for the cabinet A and is operated thereby. This operating member 25 is provided with an arcuated edge 26 to engage the door 10 with a minimum of friction. A contact plate 27 is secured by screws 28 to the operating member 25, as shown in Figure 5. This plate 27 normally engages the exposed end 29 of the prong 22 forming the electrical connection with the switch. The plate 27 also normally engages the contact member 30, which also contacts the end 32 of the electric light 14, and which is also embedded in the insulation material forming the plug 20. A spring 33 holds the plate 27 in engagement with the end 29 of the prong 22 and the end of the contact member 30, to close the circuit through these elements. By normal position, I mean the position of the switch when the door 10 is open. When the door 10 is closed, the operating member 25 is forced inwardly into the rectangular opening or recess 24, compressing the spring 33 and holding the plate 27 spaced from the end 29 of the prong 22 and from the contact member 30, thus opening the circuit between these two elements.

In order to guide the movement of the operating member 25, I provide a guide plate 34, secured to the plug 20 by means of the screw 35. The operating member 25 slides through an opening 36 in the plate 34. Obviously, when the light 14 has been inserted in the socket 23, a circuit may cause illumination of the light 14 as long as the operating member 25 is extended, so that the plate 27 closes a circuit through this plate from the contact 30 to the end 29 of the other prong 22 of the plug 20. The closing of the door 10 acts to force the member 25 inwardly, spacing the plate 27 from the contact 30 and the end 29, breaking the circuit to the light 14.

In installing the lighting fixture D in the cabinet A, a hole is drilled in the cross bar 37 of the door frame 11, and an elongated aperture 38 is formed in the under surface of this cross bar 37 in communication with the aperture 38. A connector body 39 is positioned in the hole drilled, having contact apertures to accommodate the prongs 22 of the plug 20. The contact apertures on the face of the plug adjacent the plug 20 are electrically connected by contacts 40 to contact apertures adapted to receive prongs 42 of a plug 43. Wires 44 are electrically connected to the prongs 42 to connect the socket 39 to a source of electrical energy; and in preferred form is connected to the circuit providing current to operate the operating unit C.

The elongated aperture 38 to accommodate the lighting fixture unit D, and the hole drilled through the cross bar 37 are formed in the construction of the frame 11, and the connector member 39 is positioned in the hole with the contact apertures in the desired relationship. In completing the refrigerator, the lighting unit D is inserted in the aperture 38 so that the prongs 22 extend into the socket 39. The screws 18 are then inserted through the openings 17 in the flanges 16, and the lighting fixture unit is in place. The socket 39 is then connected by means of the wires 44 and the plug 43 to the source of electrical energy. No experienced electrician is needed to do this simple installation work, and the wiring of the lighting unit is entirely eliminated.

If for some reason the lighting fixture unit D should prove to be defective, it is only necessary to remove the screws 18 to disconnect the unit D. Another unit D may be inserted as before described, to take the place of the defective unit. Should the light 14 burn out, it may be removed from the holder 23 and replaced.

I have described my fixture unit as being installed in the top cross-bar of the door frame 11 of the refrigerator. It is obvious, however, that this unit may be installed in a similar manner at any point of the refrigerator, in a recess formed for the purpose, just so that a provision is made for operation of the switch 13. It is also desired to point out that the construction of the switch 13 is only illustrative of one manner in which such a switch can be constructed.

The unit D is made so that a light 14 may be easily slipped into the socket 23 with the contact 32 bearing against the spring contact 30, while the other end of the light 14 is supported and held under spring tension by the spring 50. When it is desired to remove the light 14, it is moved in a manner to compress the spring 50 which will permit the end of the same to be removed from the socket 23. In this manner the light 14 is held cushioned between the spring contact 30 and the spring 50. This spring supporting means cushions the light against any jar and holds the same firmly in place in the unit.

If it is desired, the light 14 may be held by a threaded end socket 23' which is adapted to fit into a threaded socket 23'', as illustrated in Figure 6. When the light 14 is held in this manner it may be supported solely by the threaded socket 23'', or the spring 50 may also be used to hold one end of the light 14 in a similar manner as is illustrated in Figure 4. In a fixture of this kind, where the light 14 is of a long, slender nature, it is desirable to support both ends of the light and firmly cushion the same against any jar from the opening and closing of the refrigerator.

In accordance with the patent statutes, I have described the principles of operation of my lighting fixture for refrigerator cabinets and the like, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that this is only illustrative of a means of carrying out my invention, and that obvious changes may be made within the scope of the following claims without departing from the spirit of the invention.

I claim:

1. The combination of, a refrigerator or the like having a door opening, an electric receptacle mounted adjacent said opening and adapted to be connected to a suitable source of electric current, a door for closing said opening, a unitary electric light fixture including a reflector casing, means for embedding said casing in the refrigerator doorway, an electric light socket and switch formed in said casing, electrode prongs electrically connected to said switch and socket and extending from said casing to engage into said electric receptacle, and a spring urged arcuated cam-like button against which the refrigerator door slides to open and close said switch.

2. In combination with a refrigerator having a door, a door frame, an electrical outlet in said frame, a light fixture unit including an elongated reflector channeled casing, a contact socket in one end of said channel adapted to receive one end of an electric light, a resilient connector at the other end of said channel, a switch in said casing electrically connected to said light and



opened by engagement with said door when said door is closed, and a pair of prongs engaged in said electrical outlet extending from said casing and electrically connected to said socket and said switch.

3. In combination with a refrigerator having a door and door opening, an electrical outlet adjacent said door opening connected to a source of supply of electricity, a lighting fixture, comprising a housing member secured adjacent said door opening having a socket, a pair of contact members in said socket engageable with the terminals of a lamp, a pair of terminals secured to said housing engageable with said electrical outlet, one of said last mentioned terminals being fixedly connected electrically with one of said contact members, there being a gap between the other of said last mentioned terminals and the other of said contact members, a switch actuating member engageable with the refrigerator door when the door is closed and arranged in said housing and a conductor carried thereby, and resilient means normally urging said actuating member into a position where said conductor bridges said gap to complete the electrical circuit.

4. In combination with a refrigerator having a door frame and a door hinged therein, and an electrical outlet in said frame, a lighting fixture, comprising a housing member having a socket, a pair of contact members in said socket engageable with the terminals of a lamp, one of said contact members having a resilient part adapted frictionally to support said lamp, a pair of terminals secured to said housing engageable with said electrical outlet, one of said last mentioned terminals being fixedly connected electrically with one of said contact members, there being a gap between the other of said last mentioned terminals and the other of said contact members, a switch actuating member engageable with the refrigerator door when the door is closed and arranged in said housing and a conductor carried thereby, and resilient means normally urging said actuating member when out of engagement with the door into a position where said conductor bridges said gap to complete the electrical circuit.

5. A lighting fixture, comprising a molded

member having a socket portion and a cavity constituting a switch housing, a pair of contact members in said socket engageable with the terminals of a lamp, a pair of terminals secured to said molded member engageable with an electrical outlet, one of said last mentioned terminals being fixedly connected electrically with one of said contact members, there being a gap between the other of said last mentioned terminals and the other of said contact members, a switch actuating member and a conductor carried thereby seated in said cavity, and resilient means also disposed in said cavity normally urging said actuating member into a position where said conductor bridges said gap to complete the electrical circuit.

6. In combination with a refrigerator having a door, a door frame therefor, and an electrical outlet mounted in said door frame and connected to a source of current, an electric light fixture including a casing, a light socket and switch member positioned within one end of said casing, an electric light adapted to fit into said socket, a pair of electrodes projecting from said socket and switch member adapted to connect said switch and electric light to said electrical outlet, and a spring urged cam-shaped switch button engageable with the refrigerator door and adapted to open said switch when pressed inwardly by the refrigerator door, and to close said switch to illuminate said light when said button is released by the opening of the door.

7. In combination with a refrigerator having a door and door frame having an electric outlet therein, an electric fixture in said frame including a casing, an electric switch having a pair of electrodes protruding therefrom adapted to fit into said electric outlet connected with a source of electric current, a socket having two terminals, means connecting one electrode directly to one of said terminals, a gap between the other of said terminals and the other electrode, and a spring urged switch button having an arcuated cam face engageable with the closed refrigerator door which may be operated by a sliding movement against the same to open and close said gap to open and close said switch.

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