April 7, 1953 D. C. KNIGHT 2,634,345

TESTING DEVICE FOR ELECTRIC LAMPS

Filed March 31, 1950

Fig. 1.

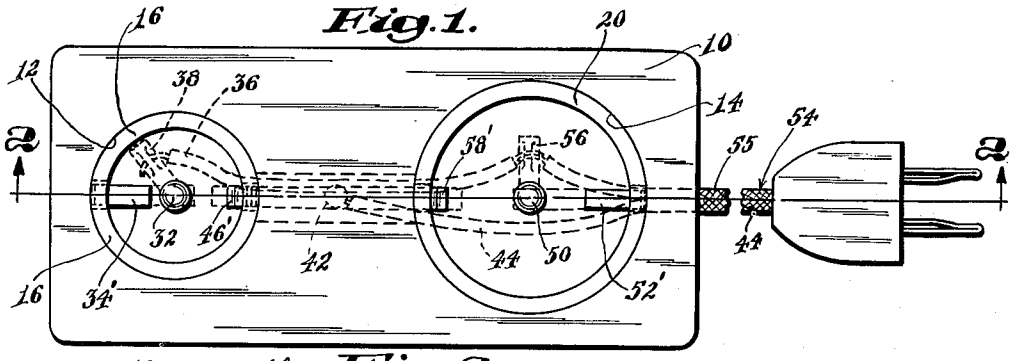


Fig. 2.

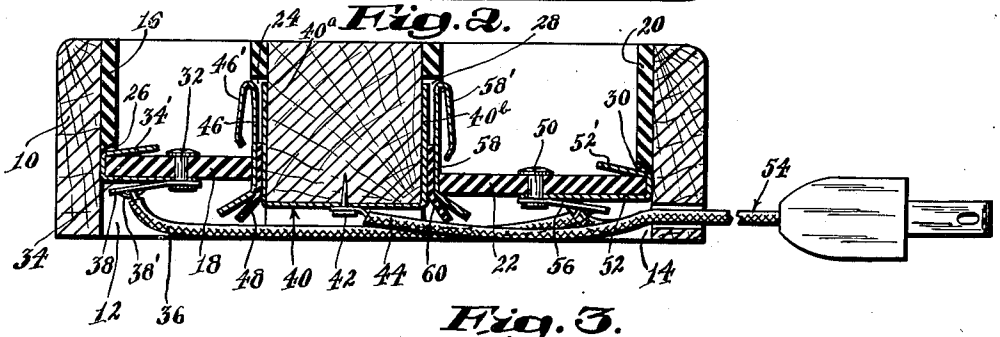


Fig. 3.

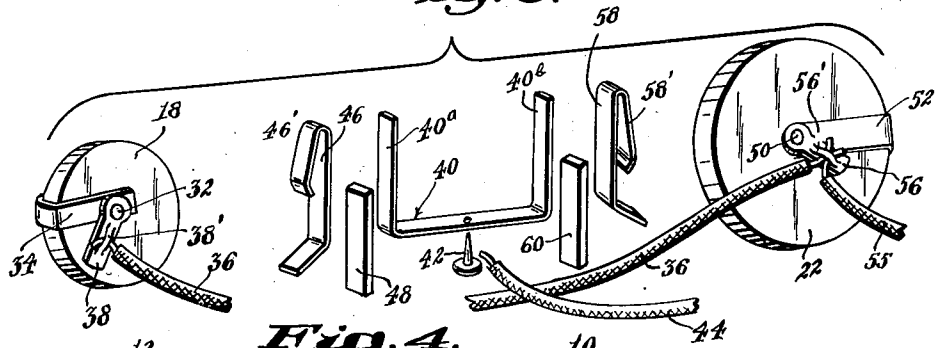
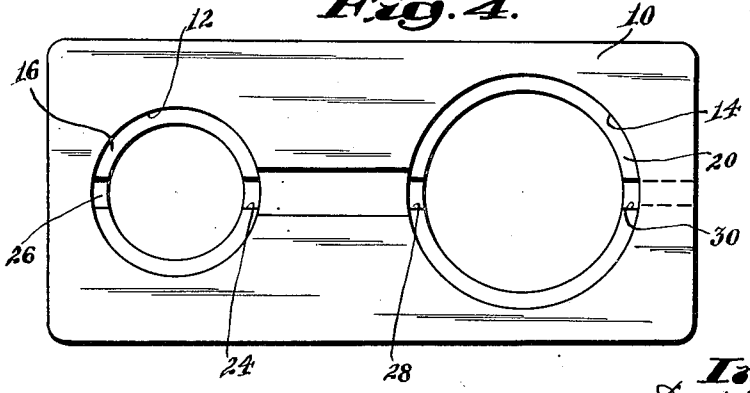


Fig. 4.



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TESTING DEVICE FOR ELECTRIC LAMPS

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3 Claims. (Cl. 200—51.09)

1

This invention relates to improvements in electric lamp testing devices and more particularly to such devices which are capable of testing lamps of both the one and two filament types as well as lamps having bases of different sizes. Lamp testing devices of the general variety to which the invention relates have a particular utility in stores and shops where electric lamps are sold and where it is desirable to test each lamp at the time of purchase.

It is among the objects of my invention to provide a lamp testing device of the mentioned general variety which may be manufactured and assembled at costs substantially below the costs to manufacture and assemble the prior comparable devices of which I am aware.

Another object is to provide a lamp testing device wherein each lamp-receiving socket has a normally open switch therein which must be closed before a circuit can be completed between contacts within the socket, whereby any mere bridging of exposed socket contacts by a person's finger or fingers cannot result in completion of a circuit with resulting electric shock. According to the invention, one exposed contact in each socket is a resilient switch contact which must be closed before current can flow between socket contacts, and which is difficultly closable by a person's fingers, especially while contact is being made with any other contact of the socket.

It is, moreover, my purpose and object generally to improve the structure, utility and safety characteristics of electric lamp testing devices and more especially such devices having provision for testing both one and two filament electric lamps.

In the accompanying drawing:

Fig. 1 is a top plan view of a lamp testing device embodying features of my invention;

Fig. 2 is a cross-sectional view on line 2—2 of Fig. 1, on a larger scale; and

Fig. 3 shows in perspective the electrical contact elements and conductors in separated relation.

Fig. 4 is a bottom plan view of said device.

Referring to the drawing, the base 10 may be a block of wood or of any other suitable material having relatively good electrical insulating properties, and may be of any desired shape. The illustrated two-socket lamp tester conveniently may have a rectangular base 10 through which two holes 12, 14 are drilled, or otherwise formed. Hole 12 is smaller in diameter than hole 14, and a bushing 16 of insulating material, such as Bakelite, is secured in hole 12 in any suitable manner. However, bushing 16 terminates substantially

2

short of extending through the base 10, so that its inner end provides an annular shoulder against which an insulating contact-carrying disk 18 may be seated.

The larger hole 14 has a similar insulating bushing 20 secured therein and terminating substantially short of extending through base 10, whereby it provides an annular shoulder at its inner end against which insulating disk 22 may be seated.

Bushing 16 is deeply notched at 24 from its inner end toward its outer end, and notch 24 is located at that portion of bushing 16 which is closest to bushing 20. Diametrically opposite its notch 24, bushing 16 has a relatively shallow notch 26 at its inner end.

Bushing 20 is similarly deeply notched at 28 from its inner end toward its outer end, and notch 28 is located at that portion of bushing 20 which is closest to bushing 16, whereby the notches 24, 28 of the two bushings are in alignment. Bushing 20 also has a relatively shallow notch 30 at its inner end diametrically opposite notch 28.

Insulating disk 18 has a central rivet 32, or the like, extending through it, with the head of the rivet constituting a center contact within the socket provided by bushing 16. A contact element 34 also is secured to disk 18 by the rivet 32, it being secured to the under side of the disk and extending over the edge of the disk with a resilient contact portion 34' extending within the shallow notch 26 and projecting within the socket in spaced relation to the upper surface of disk 18, whereby it can yield resiliently within notch 26 toward the disk 18. A conductor 36 is electrically connected to contact element 34 in any suitable manner, as by being pinched by the outset part 38' of a terminal strip 38 which is secured against contact element 34 by the rivet 32, as best seen in Fig. 3.

Before the insulating disk 18 is inserted to its seat on the annular shoulder provided by the inner end of bushing 16, a generally U-shaped conductor strip 40 is secured in place on base 10 with one leg 40a extending within notch 24 of bushing 16 and with its other leg 40b extending within notch 28 of bushing 20. Strip 40 may be secured to base 10 in any suitable manner, as by a tack 42 driven through the bridge of the U-strip and into the base, the tack serving also as a means for connecting a conductor 44 to the U-strip 40.

According to the invention, the leg 40a of U-strip 40 constitutes a relatively fixed contact of a switch which has a resilient contact element 46 exposed within the bushing 16 opposite the

notch 24 therein. Conveniently and economically, contact element 46 is clamped in operative relation to leg 40a by the insulating disk 18 when the latter is inserted to its seat. A strip of insulation 48 is arranged between contact element 46 and leg 40a at the lower vertically extending portions thereof and, while these strips are held together in notch 24 by the fingers, the insulating disk 18 is forced to its seat with its edge engaging the contact element 46 and clamping it, insulation strip 48 and leg 40a together. The vertical portion of contact element 42 extends within notch 24 so that the walls of the notch maintain it in vertical position, and the exposed contact portion 46' of element 46 is resiliently disposed within the bushing 16 in position to be engaged by the screw shell contact of a lamp inserted in the bushing 16 of the testing device, thereby to press the upper end portion of element 46 into contact with leg 40a of conductor U-strip 40. Meanwhile, the center contact of the lamp will have engaged the center contact rivet of insulating disk 16 to close a circuit to the conductors 36, 44. If the particular lamp being tested is a two-filament lamp, the usual ring contact at the base of the lamp simultaneously will have engaged socket contact 34' to close a circuit for testing the second filament.

The insulating disk 22 has a centrally disposed rivet 50 whose head serves as the center contact for the socket formed by bushing 20, and has a contact element 52, similar to contact element 34 of disk 18. Contact element 52 is secured by rivet 50 to the under side of disk 22, and extends over the edge of the disk into bushing notch 30, with the resilient contact portion 52' disposed within the socket above disk 22. Conductor 44 leading from U-strip 40 extends out of base 10 and constitutes one lead-in conductor of a conductor cord 54 whose other lead-in conductor 55 is connected to contact element 52 as by being pinched under outset portion 56' of terminal strip 56 which is secured against element 52 by the rivet 50. Conductor 36 leading from terminal strip 38 of disk 18 leads to the similar terminal strip 56 and is shown secured thereto by the outset portion 56' of the terminal strip.

Before disk 22 is seated in base 10, a contact element 58 is arranged in notch 28 of bushing 20 with a strip 60 of insulation intervening between the lower vertical portions of element 58 and leg 40b of U-strip 40, following which the disk 22 is forced to its seat to securely hold the contact element 58 in operative relation to leg 40b of U-strip 40. As in the earlier described case, the leg 40b of U-strip 40 constitutes a relatively fixed contact of a switch whose resilient contact 58 has the exposed contact portion 58' disposed within the socket in position to be engaged and pressed into contact with leg 40b by the screw shell contact of a lamp inserted in the socket. The center contact of the lamp will engage the center contact rivet 50, and the ring contact of a two-filament lamp will simultaneously engage the contact 52'.

It will be apparent from the foregoing description that I have provided a lamp testing device which is economical to manufacture and assemble and which can effectively test different sizes of lamps of both the one filament and two filament types. But, of primary commercial importance, my testing device provides greater safety against persons receiving an electric shock by inserting their fingers into engagement with the exposed contacts within the sockets of the testing device. The provision of a normally open switch in each socket which is readily closable by a lamp inserted in a socket, but which is difficultly manually closable, constitutes a safety feature of major importance which is embodied in my testing device with no increase in production costs as compared with prior lamp testing devices capable of performing the same tests. Actually, my disclosed structure enables the manufacture and assembly of my improved lamp testing devices at costs substantially below the costs to manufacture and assemble the prior comparable testing devices of which I am aware.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

I claim as my invention:

1. A lamp testing device comprising an insulating base having a cross-sectionally circular hole therethrough, one end portion of said hole having larger cross-section than the remainder of the hole whereby an annular shoulder is provided at the plane of juncture of the larger cross-section and smaller cross-section portions of the hole, the wall of said smaller cross-section portion of the hole having a groove therein extending from said shoulder to a mid-location along the axial extent of the smaller cross-section portion of said hole, a relatively fixed contact element secured in said groove and extending from said groove into the larger cross-section portion of said hole, an insulating strip laid against the portion of said contact element which extends into said larger cross-section portion of said hole, a resilient contact element laid against said insulating strip and extending into said groove in spaced relation to said relatively fixed contact element therein, an insulating disk pressed into said larger cross-section portion of said hole and seated against said annular shoulder, with the edge of the disk clamping said contact elements and insulating strip together, said disk having a center contact therein and said resilient contact element having a contact portion disposed within the smaller cross-section portion of said hole, and lead-in conductors connected respectively to said center contact on the disk and said relatively fixed contact element in said groove.

2. A lamp testing device having an insulating base with two axially parallel holes therethrough, each said hole having a portion of reduced cross-section providing an annular shoulder at a mid-location along the extent of the hole, said portion of reduced cross-section of each hole having a groove in its side wall and said grooves being in the portions of the walls of the two holes which are closest to each other, a generally U-shaped conducting element having its bridge portion secured to the base with one leg of the U-element extending within the groove in the wall of one hole and with the other leg of the U-element extending into the groove in the wall of the other hole, a strip of insulation laid against each leg of the U-element, a resilient contact element laid against each said strip of insulation and extending into said grooves in spaced relation to the leg of the U-element in each groove, an insulating disk disposed across each said hole and seated against the said annular shoulder thereof, with the edge of each said disk clamping a said resilient contact element and a said insulating strip against one of the legs of said U-element, a center contact on each said insulating disk, a separate

lead-in conductor connected to the center contact of each said insulating disk, and a second lead-in conductor connected to the said U-shaped conducting element.

3. A lamp testing device comprising a base made of insulating material and having a circular hole extending therethrough, said hole having generally uniform diameter throughout a major portion of its extent and having abruptly increased diameter at one end whereby an annular shoulder is provided around the axis of the hole, said uniform diameter portion of the hole having a groove in its side wall extending from said shoulder, a fixed contact at the bottom of said groove, a resilient contact spaced and insulated from said fixed contact and having a resilient portion disposed within said hole and laterally yieldable into engagement with said fixed contact, an insulating disk seated against said annular shoulder, a center contact on said disk, a resilient contact on said disk and yieldable toward the disk, said center contact, and resilient contacts being adapted to

be contacted by different contacts of a lamp base inserted in said hole toward said disk, with said resilient portion of the side wall contact yielding into engagement with said fixed contact, a lead-in conductor connected to said fixed contact and a second lead-in conductor connected to both the center contact and the resilient contact on said insulating disk.

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