

May 20, 1952

A. B. ODAY ET AL
MOVABLE CONTACT BASE

2,597,666

Filed Nov. 5, 1947

2 SHEETS—SHEET 1

FIG. 1.

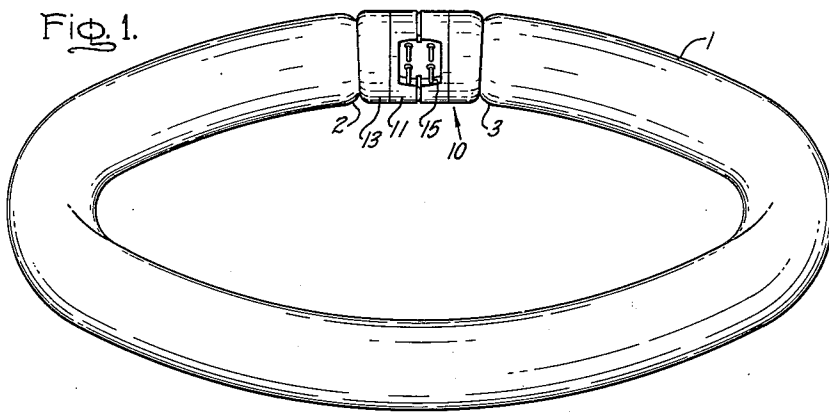


FIG. 2.

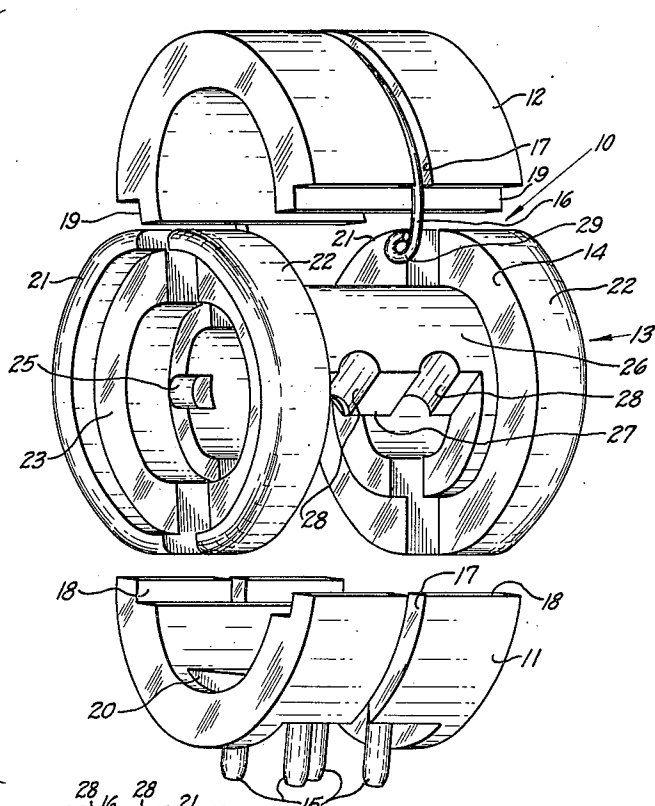
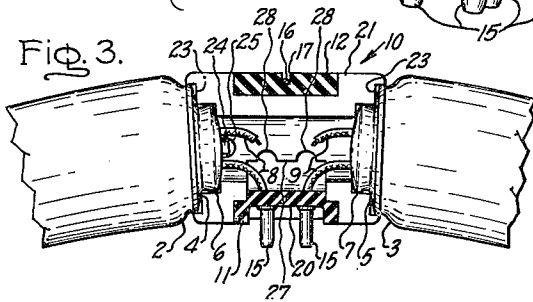


FIG. 3.



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2 SHEETS—SHEET 2

FIG. 4.

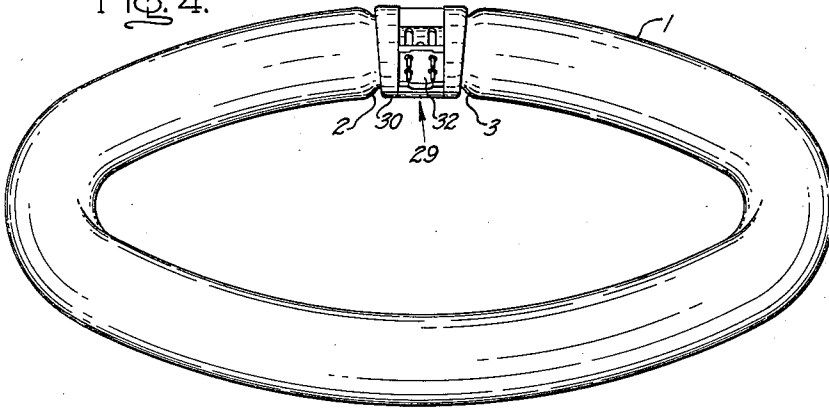


FIG. 5.

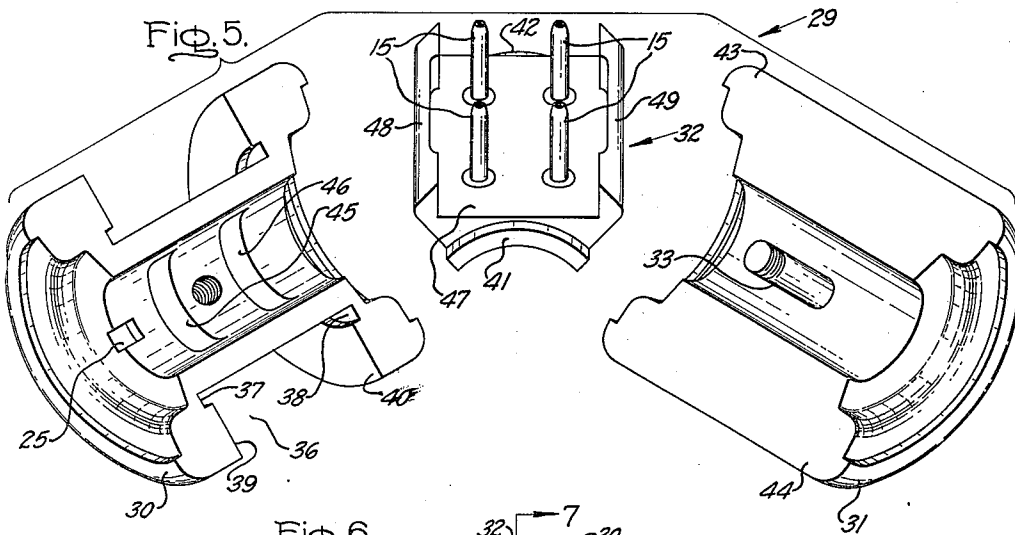


FIG. 6.

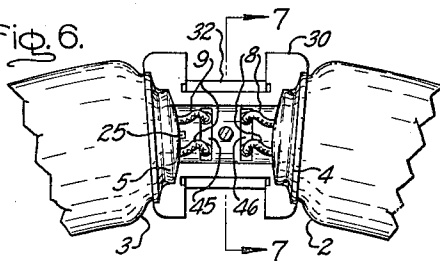
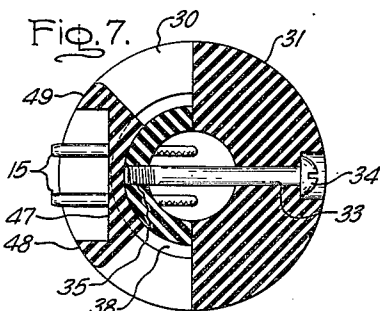


FIG. 7.



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UNITED STATES PATENT OFFICE

2,597,666

MOVABLE CONTACT BASE

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Application November 5, 1947, Serial No. 784,126

5 Claims. (Cl. 313-318)

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The present invention relates to tubular electric lamps such as fluorescent discharge lamps and particularly to such lamps of substantially closed configuration. Fluorescent lamps are now commercially available in which the tubular envelope is bent in the form of a circle with its ends adjacent and directed toward each other. The base for such lamps extends between and engages the ends of the lamp to complete the circle. Contact pins for engaging a socket for the lamp project from the inner side of the base. Lamps equipped with such bases are disclosed and claimed in the U. S. Patent No. 2,339,166, issued January 11, 1944, to Harrison.

An object of the present invention is to provide a lamp of this type in which the contacts are movable around the base so that the pins may be inserted in sockets disposed at various angles to the mounting plane of the lamp. Another object of the invention is to provide such a base of simple structure comprising a minimum number of parts. Further objects and advantages of the invention will appear from the following detail description of species thereof and from the accompanying drawing in which Fig. 1 is a tilted or perspective view of a circular lamp showing a base embodying my invention; Fig. 2 is an exploded view of the base showing in perspective the various parts thereof; Fig. 3 is an elevational view showing the lamp ends in full and the base thereon partly in section; Fig. 4 is a view similar to that of Fig. 1 showing another species of my invention; Fig. 5 is a view similar to that of Fig. 2 showing in perspective the second embodiment of the base; Fig. 6 is an elevational view of the lamp ends and the base thereon turned about 180° from its position in Fig. 4 and with a portion of the base removed to show the inner structure, and Fig. 7 is a transverse sectional view along the line 7-7 of Fig. 6 and in the direction of the arrows.

The lamp shown in Fig. 1 is a fluorescent lamp of the positive column discharge type disclosed and claimed in the U. S. Patent No. 2,182,732, issued December 5, 1939 to Meyer et al. The tubular glass envelope 1 of the lamp is bent to a circular outline with the closed ends 2 and 3 of the lamp envelope spaced apart a short distance and directed toward one another. The ends of the lamp envelope have thereon metal end discs 4 and 5 (Fig. 3) constituting the ends of the lamp and presenting on their outer sides apertured bosses 6 and 7 circumferentially constricted adjacent the disc proper as disclosed and claimed in U. S. Patent No. 2,392,661 issued Janu-

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ary 8, 1947 to Greiner. These discs 4 and 5 provide a gripping surface useful in bending the tubular lamp to the circular configuration shown. A pair of insulated flexible current leading-in wires 8 and 9 constituting electric terminals extend from each end of the lamp envelope and through the discs 4 and 5 for connection with the base 10. The base, as shown in Figs. 1 and 3, overlaps and engages the discs 4 and 5 and encloses the space between the ends 2 and 3 of the envelope to complete the circle. Preferably the diameter of the base 10 is the same as that of the envelope 1 to give the lamp a smooth circular contour.

The base 10 is of electrically insulating material, is generally cylindrical in shape and is made up of a contact bearing sleeve made in two longitudinal sections 11 and 12 and mounted on a tubular shell 13 having open ends shaped to receive the ends 2 and 3 of the lamp. The sleeve fits into a wide annular groove 14 at the mid-portion of the shell 13 (Fig. 2) and is movable in the groove so that the contact pins 15 on the sleeve may be moved around the longitudinal axis of the base 10 into various angular positions with respect to the mounting plane of the lamp. This affords greater flexibility to the lighting fixture designer in locating the socket for the base 10 with respect to the mounting plane of the lamp in fixtures.

The sleeve sections 11 and 12 are held together around the shell 13 by a ring shaped spring 16 mounted in an annular groove 17 in the sleeve sections 11 and 12. A rabbet joint is provided between the longitudinal edges 18 and 19 of sections 11 and 12, respectively, to prevent relative lateral displacements thereof. Relative longitudinal displacements of the sleeve sections 11 and 12 are prevented by the sides of the groove 14 in the shell 13. The contact bearing section 11 of the sleeve has a flat wall portion 20 forming a recess in its outer surface and a protuberance on its inner surface. The four projecting hollow contact pins 15 are fixed in the flat wall portion 20 (Fig. 3). The recess is adapted to receive a socket for the pins 15 and the protuberance limits the rotary motion of the sleeve around the shell as explained below.

The shell 13 is also split longitudinally into two sections 21 and 22 (shown spaced apart in Fig. 2) so that it may be mounted about the adjacent ends 2 and 3 of the lamp. As shown in Figs. 1 and 3 the ends of the shell 13 and the lamp ends 2 and 3 are in planes which converge toward the center of the lamp. The ends

of the shell are recessed and reentrant (Figs. 2 and 3) to receive the discs 4 and 5 on the ends 2 and 3 of the envelope and provide shoulders 23 which engage and butt against the said discs. The disc 4 has a metal projection 24 welded thereto which engages the sides of a cavity 25 in the shell section 21 to hold the base 10 against rotation on the lamp ends 2 and 3. The shell 13 is hollow to receive in its interior the current inlead wires 8 and 9 extending from the ends 2 and 3, respectively, of the lamp and constituting the lamp terminals.

The mid-portion of the shell 13 is in the form of a tube 26 having a smaller diameter than the end portions 21 and 22 so as to provide a wide circumferential groove 14 for receiving the sleeve 11 and 12. A longitudinal portion of the tubular part 26 is cut out to provide an opening in the bottom of the groove 14 so that the inlead wires 8 and 9 may be connected to the contact pins 15 on the sleeve (Fig. 3). The remainder of the tubular part 26 is in two sections connecting the end portion of shell sections 21 and 22. The inner surface of flat wall part 20 of the sleeve section 11 limits the movement of the sleeve about the shell 13 by engaging the longitudinal edges 27 of the opening in the side of the tubular part 26 of the shell 13. The said edges 27 each have two notches 28 therein to receive the inlead wires 8 and 9 when the flat wall portion 20 engages either edge 27 to stop the sleeve. Usually the edges 27 of the shell sections 21 and 22 are spaced apart an angular distance sufficient to allow the pins 15 to be moved in an arcuate path around the shell 13 an angular distance of approximately 90° though larger or smaller angular movements of the pins may be obtained by changing the spacing of the edges 27. The base 10 is mounted on the lamp ends 2 and 3 in such manner that the pins 15 may point in either a horizontal or a vertical direction when the lamp envelope 1 is in either a vertical or a horizontal plane so that the socket for the pins 15 may be mounted vertically or horizontally or in any position therebetween on a lamp fixture.

The sections 21 and 22 of the shell 13 are held together by the spring ring 16 on the sleeve sections 11 and 12 which clamps both the sleeve sections and the shell sections together. The ends 29 of the spring 16 are turned inwardly (Fig. 2) to engage the walls of cavities (not shown) in the sleeve section 11 bearing the contacts 15. Relative longitudinal displacements of the shell sections 21 and 22 are prevented by the sleeve 11 and 12 mounted in the groove 14.

The base 29 shown in Figs. 4 to 7 is similar to that shown in Figs. 1 to 3 in that it is made up of a tubular shell split longitudinally into two sections 30 and 31 and a contact carrying member 32 movable on and around the shell. In this embodiment, however, the contact carrying member 32 is in the form of a saddle which slides in grooves in one section 30 only of the shell. The shell sections 30 and 31 are held together around the discs 4 and 5 on the lamp ends by a bolt 33 (Fig. 7) having its head 34 recessed in the shell section 31 and its screw-threaded end 35 turned into a screw threaded hole in the other shell section 30. The recessed ends of the shell 30 and 31 and the protruding lug 24 on the disc 4 are of the same construction as in the embodiment of Figs. 1 to 3. The shell section 30 having the cavity 25 for receiving the lug 24 has a wide circumferential groove 36 in its center portion for receiving the saddle 32 and two small-

er grooves 37 and 38 in the side walls 39 and 40 of the wide groove 36 in which protruding arcuate ridges or tongues 41 and 42 on the sides of the saddle 32 slide when moving the contacts 15 around the base 29. The movement of the saddle 32 around the base 29 is limited by the longitudinal walls 43 and 44 of the shell section 31.

The four contact pins 15 are fixed in the saddle 32 with the ends of the pins exposed through slots 45 and 46 in the bottom wall of the wide groove 36 in the shell section 30. The leading-in wires 8 and 9 are extended through the slots 45 and 46 and are connected to the pins 15 in the usual manner. The outer surface of the saddle 32 has a flat portion 47 and upstanding edges 48 and 49 to receive a socket plug for the base.

In both the base structures described above the ease with which the contacts 15 may be rotated around the base is determined solely by the dimensions of the base parts which engage each other and is independent of the spacing of the ends of the lamp and of the relative angular position of the lamp ends which is difficult to control in bending the tubular envelopes. The fact that the spacing of the lamp ends is not critical and that its ends need not be parallel to each other makes the shaping of the lamp easier and reduces the cost of bending. The dimensions of the base parts are easily controlled to close tolerances and may be selected to provide a fit of desired tightness between the relatively movable base parts to give the joint therebetween the stiffness desired.

As shown in Figs. 3 and 6 the interior of both bases provides adequate space free from obstructions for the flexible wires 8 and 9 connected to the base contact pins 15. The wires may thus flex freely when the pins 15 are moved without rubbing against obstructions which would cause the wires to break. Obviously the wires 8 and 9 may be electrically connected indirectly with the pins 15 by attaching them to stationary ring or button contacts on the base and arranging the pins to engage the stationary contacts in their various positions to avoid flexing of the wires.

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

1. A mechanical base for a lamp having an elongated envelope bent to a substantially closed configuration with its ends directed toward each other and electric terminals extending from its ends, comprising a tubular shell having recessed ends shaped to receive and butt against the lamp ends to hold said base between said lamp ends, said shell also having means integral therewith and engageable with cooperating means on said lamp to hold said shell against rotation on said lamp ends and having a circumferential groove in its side with an opening into its interior in the bottom of the groove and comprising also a contact carrying member slidable in the groove with its contacts exposed through the side opening in the shell and electrically connected to the lamp terminals.

2. A mechanical base for a lamp having an elongated envelope bent to a substantially closed configuration with its ends directed toward each other and electric terminals extending from its ends, comprising a tubular shell having recessed ends shaped to receive and butt against the lamp ends to hold said base between said lamp ends, said shell also having means integral therewith and engageable with cooperating means on said lamp to hold said shell against rotation on said

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lamp ends and having a circumferential groove in its side with an opening into its interior in the bottom of the groove and comprising also a contact carrying sleeve split longitudinally and held together in the groove by a clamping ring so as to be slidable around the shell with its contacts exposed through the side opening in the shell and electrically connected to the lamp terminals.

3. A mechanical base for a lamp having an elongated envelope bent to a substantially closed configuration with its ends directed toward each other and electric terminals extending from its ends, comprising a tubular shell having recessed ends shaped to receive and butt against the lamp ends to hold said base between said lamp ends, said shell also having means integral therewith and engageable with cooperating means on said lamp to hold said shell against rotation on said lamp ends and having a circumferential groove in its side with an opening into its interior in the bottom of the groove and comprising also a contact carrying saddle slidable in the groove with its contacts exposed through the side opening in the shell and electrically connected to the lamp terminals.

4. A mechanical base for a lamp having an elongated envelope bent to a substantially closed configuration with its ends directed toward each other and electric terminals extending from its ends, comprising a tubular shell having recessed ends shaped to receive and butt against the lamp ends to hold said base between said lamp ends, having integral means engageable with cooperating means on said lamp to hold said shell against rotation on said lamp ends and having a circumferential groove in its side with an opening into its interior in the bottom of the groove and com-

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prising also a contact carrying sleeve split longitudinally and held together in the groove by a clamping ring so as to be slidable around the shell, said sleeve having a flat wall part extending into the side opening of the shell to limit the movement of said sleeve around said shell and through which its contacts extend for electrical connection to the lamp terminals.

5. A mechanical base for a lamp having an elongated envelope bent to a substantially closed configuration with its ends directed toward each other and electric terminals extending from its ends, comprising a tubular shell having recessed ends shaped to receive and butt against the lamp ends to hold said base between said lamp ends, having integral means engageable with cooperating means on said lamp to hold said shell against rotation on said lamp ends, having a circumferential groove in its side with an opening into its interior in the bottom of the groove and having opposed grooves in the sides of the circumferential groove and comprising also a contact carrying saddle provided with sidewardly extending tongue engaging the opposed grooves in said shell so that said saddle is slidable in the circumferential groove with its contacts extending through the side opening in the shell for electrical connections to the lamp terminals.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
2,392,785	Thomas	Jan. 8, 1946