

E. T. R. MURRAY.
LAMP FITTING.
APPLICATION FILED DEC. 1, 1921.

1,407,473.

Patented Feb. 21, 1922.
2 SHEETS—SHEET 1.

FIG. 1.

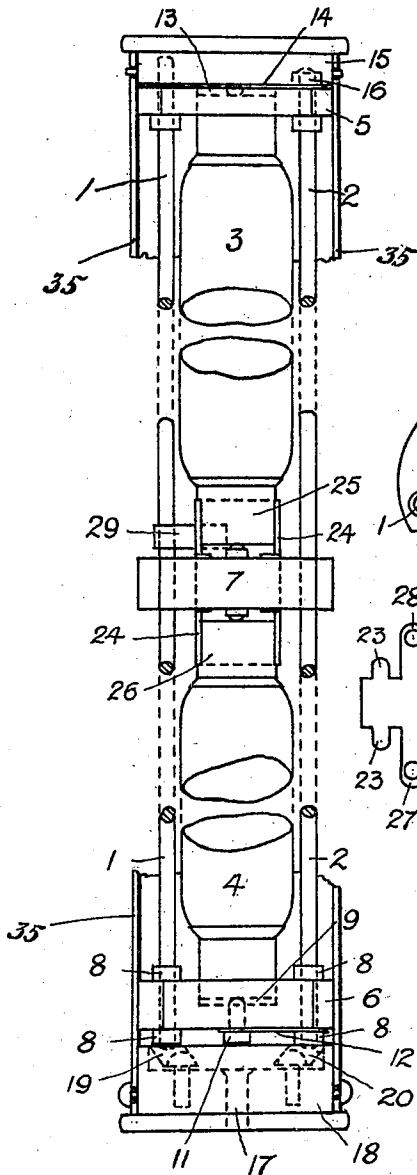


FIG. 2.

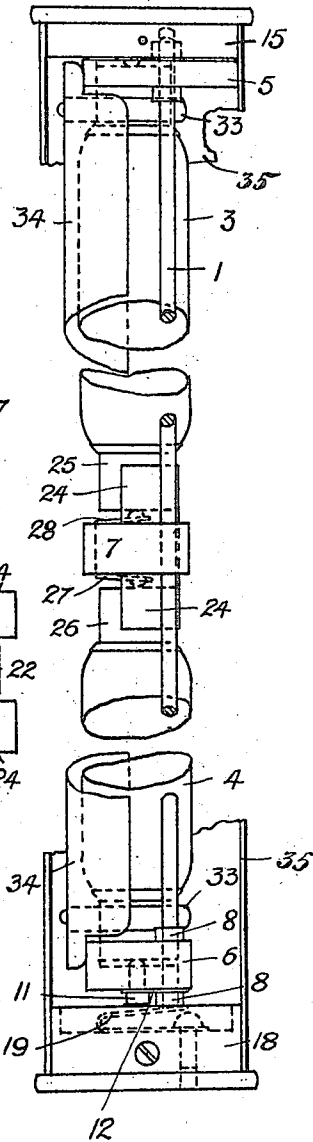


FIG. 5.

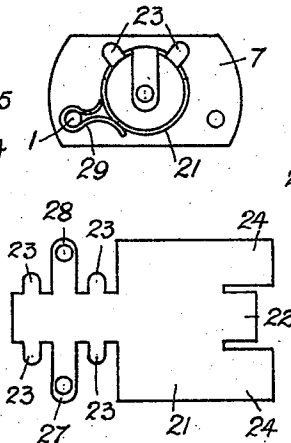


FIG. 4.

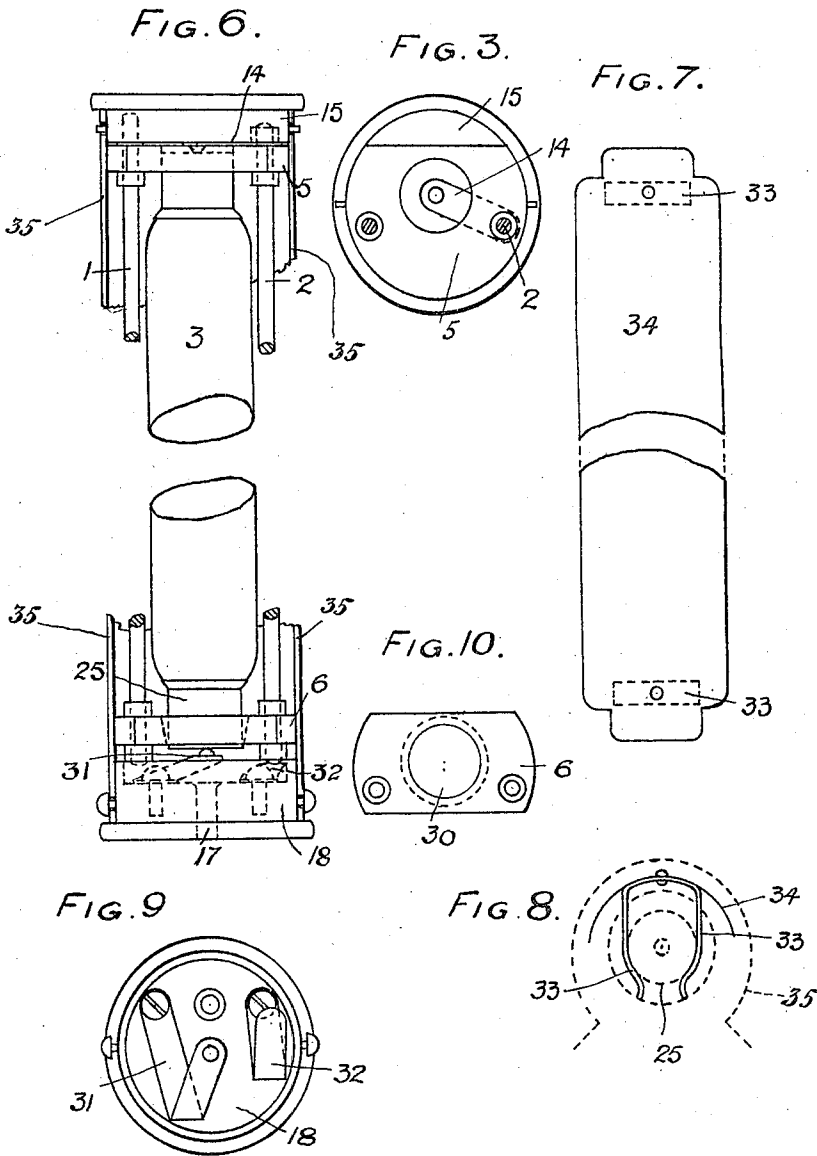
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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LAMP FITTING.

1,407,473.

Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed December 1, 1921. Serial No. 519,082.

To all whom it may concern:

Be it known that I, ETHELBERT THOMAS RUTHVEN MURRAY, a subject of the King of Great Britain, residing at Hertfordshire, England, have invented a certain new and useful Improvement in Lamp Fittings, (for which I have filed application in England, September 17th, 1920,) of which the following is a specification.

This invention relates to fittings for tubular electric lamps of the type having a terminal contact at either end of the lamp bulb, and has for its object to provide improved arrangements for mounting and supporting lamps of this character, whereby the necessary mechanical support and electrical connections may be conveniently effected by an extremely simple, cheaply manufactured, and efficient construction.

One of the principal difficulties in connection with the employment of tubular lamps is the necessity for mechanically supporting the elongated lamp bulb at both ends and providing connections to the external circuit from the contact terminals of the lamp, which are separated from one another by the full length of the bulb.

These two conditions are both fulfilled by the improved construction of the invention which enables one or more lamps to be satisfactorily supported and the necessary electrical connections to be effected in a simple and efficient manner.

The invention is primarily intended to enable one or more tubular lamps to be removably mounted in a cylindrical casing forming part of an illuminated sign for advertising and other purposes, the casing being provided with a longitudinal slot or opening through which the light is emitted to enter the edge of a polished glass plate bearing an inscription, device or the like cut or etched on its surface and illuminated by internal reflection within the body of the plate. The invention is, however, not limited to this particular application and may be usefully employed in all cases in which a fitting for tubular electric lamps is required.

The invention is illustrated in the accompanying drawings of which—

Figures 1 and 2 are views in front and side elevation respectively of a preferred construction embodying the invention as applied to the mounting of two aligned tubular lamps in a cylindrical casing.

Figure 3 is a view in end elevation of one of the end caps or plugs shown in Figures 1 and 2.

Figure 4 being a plan view of the blank from which an intermediate contact element employed in the construction of Figures 1 and 2 is formed.

Figure 5 is a view in end elevation showing the completely formed intermediate contact.

Figure 6 is a view similar to Figure 1 but illustrating a construction embodying the invention as applied to the mounting of a single tubular lamp.

Figure 7 is a view in front elevation of the reflector for the lamp shown in Figure 6,

Figure 8 being a sectional view showing the reflector in position; the lamp and cylindrical casing being indicated in dotted lines.

Figure 9 is a view in end elevation of one of the end caps employed in the construction of Figure 6,

Figure 10 being a similar view of the corresponding bridge piece.

Referring now first to the construction shown in Figures 1 to 5 inclusive, it will be seen that the frame supporting the lamps comprises a pair of brass or copper rods or stout wires 1, 2, arranged parallel with one another at a distance somewhat greater than the external diameter of the lamp bulbs 3, 4. The two rods 1, 2 are cross-connected together at each end by means of bridge pieces 5, 6, composed of fibre, vulcanite, or other suitable insulating material, a similar cross-connecting bridge piece 7 being provided at the middle of the length of the rods 1, 2, so that the frame is divided into two portions, each having approximately the axial length of one lamp bulb. The rods 1, 2, at one end of the frame pass through holes formed in the corresponding bridge piece 6 and are secured thereto by means of a pair of nuts 8 for each rod, arranged one on either face of the bridge piece 6. The inner face of the latter is provided with a cylindrical or preferably slightly conical recess or cavity 9 adapted to accommodate the end cap 10 of the lamp 4, a brass screw or pin 11 being provided at the centre of the cavity 9 which projects through the bridge piece 6 and on the external face thereof is connected to the rod 2 of the frame by a suitable conducting link or strip 12. The central screw or pin 11 constitutes a contact adapted to engage

with the contact terminal of the lamp 4 when the end cap 10 of the lamp is in position in the recess in the bridge piece 6. At the opposite end of the frame the ends of the rods 1, 2 are connected to a similar bridge piece 5 also having a cylindrical recess or aperture, 13, and provided with a resilient contact strip 14 which is connected to the rod 2 of the frame. The outer face of the bridge piece 5 engages with an end cap or plug 15 adapted to fit into one end of a tubular casing 35 in which the lamps 1, 2 are to be mounted, the end cap 15 being preferably formed of the same material as the bridge pieces 5, 6. The end cap 15 is secured to the bridge piece 5 by extending the frame rod 1 so that its projecting end passes through the bridge piece 5 and is screw threaded into the cap 15; the outer securing nut 16 for the other rod is accommodated in a cavity recessed in the inner face of the cap 15 so that the cap 15 and bridge piece 5 are mechanically connected together. The conductors for connection to the external circuit are arranged to pass through an axial opening 17 in a second similar end cap 18 permanently mounted in one end of the cylindrical casing, the end cap 18 being provided with two spring contacts 19, 20 to which the ends of the external circuit conductors are connected, the free ends of the spring contacts 19, 20 being so located as to engage with the outer securing nuts 8 of the rods 1, 2, on the corresponding bridge piece 6 when the frame is in position in the casing. The central contacts 11, 14, in the bridge pieces 6, 5 and the axes of the cavities 9, 13, are arranged to be slightly displaced from the centres of the caps 15, 18 and therefore from the axis of the tubular casing in which the frame is mounted.

The intermediate bridge piece 7 is supported upon the rods 1, 2 which pass through suitable holes in the bridge piece 7 with a sliding fit, so that the position of the intermediate bridge piece 7 is capable of adjustment to compensate for small differences in the lengths of the aligned lamps 3, 4. The bridge piece 7 is provided with an axial cylindrical aperture in which is mounted a supporting contact device 21 comprising a cylindrical portion 22 fitted within the cylindrical aperture in the bridge piece 7 and secured thereto by projecting tongues 23 bent over on either side to engage with the opposite faces of the bridge piece 7, and a short semi-cylindrical projection 24 on either side of the bridge piece for accommodating the adjacent terminal end caps 25, 26 of the two lamps 3, 4. The central portion 22 of the contact device 21 is also provided with tongues 27, 28 forming contacts adapted to engage with the terminal contacts of the lamps 3, 4, thus connecting both terminal contacts to the contact device 21. The latter

is electrically connected to the frame rod 1 by means of a spring contact clip 29 comprising a cylindrical portion adapted to grip the frame rod 1, and two arms which embrace and grip one of the semi-circular portions 24 of the contact device 21. The connection of the frame rod 1 to the contact device 21 can be readily effected by affixing the contact clip 29 without the necessity for any soldering or other permanent method of attachment.

In placing the lamps 3, 4, in position in the frame, one end cap of the lamp 3 is inserted in the recess or cavity in the bridge piece 5 and the opposite end cap 25 is then pressed into place in the semi-cylindrical support 24 of the contact device 21 in the intermediate bridge piece 7. The other lamp 4 is placed in position in the other half of the frame in a similar manner, and as will be readily appreciated, the intermediate bridge piece 7 being free to slide along the rods 1, 2, will take up such a position that the adjacent contact terminals of the lamps 3, 4, are in good electrical contact with the tongues 28, 27 of the contact device 21.

The two lamps 3, 4, having been thus placed in position in the frame, the latter is then inserted in the open end of the cylindrical casing, into which it slides longitudinally until the bridge piece 6 engages with the end cap 18 closing the opposite end of the cylindrical casing. The nuts 8 on this bridge piece thus come into engagement with the spring contacts 19, 20 on the end cap 18 and the rods 1, 2, of the frame are thereby connected to the external circuit. The frame, by means of the end cap 15 secured thereto having been finally pushed home in the cylindrical casing is secured therein by pins mounted on the end cap 15 which engage with bayonet joint slots in the corresponding end of the cylindrical casing.

As will be evident from the above description, the circuit through the lamps 3, 4, in parallel with one another is completed from the frame rods 1, 2, which are connected by means of the contact strips 19, 20 to the external supply circuit, the central terminals of the lamps 3, 4, adjacent to the end caps 25, 26, being connected to the frame rod 1 by means of the clip 29 and the other terminals of the lamps being connected to the frame rod 2, through the contact strips 14 and 12 respectively.

In cases in which a series connection of the lamps 3, 4, is required this can be readily effected by reversing the connections of either of the contact strips 14 or 12 so that one of these contact strips is connected to one frame rod and the other to the other frame rod, the clip 29 being removed. In this case the circuit is completed from say the frame

rod 1 through the reversed contact strip 14 which is now connected to this frame rod through the lamps 3 and 4, in series with one another to the other frame rod 2 through the contact strip 12, the connection of which is unchanged. It will be observed that in this case the frame rod 2 is not actually employed as a current carrying conductor.

It will be understood that the frame may be so constructed as to carry a greater number of aligned lamps in the same manner, by providing two or more intermediate bridge pieces with their corresponding contact devices, series or parallel connections being obtained as above described.

Referring now to the construction shown in Figures 6 to 10 inclusive for accommodating a single lamp, the bridge piece 5 and the end cap 15 secured to the frame are substantially the same as in the construction previously described.

The other bridge piece 6 of the frame is provided with an aperture 30 for accommodating the end cap 25 of the lamp bulb 3, the aperture 30 being coned so as to permit the lamp bulb to be tilted during insertion in the frame. As will be readily understood, for the purpose of uniformity in manufacture, the apertures in both the bridge pieces 5 and 6 are preferably similarly coned.

The end cap 18 permanently secured in the cylindrical casing is provided with a central contact strip 31 for engaging the lamp terminal and another contact strip 32 for engaging the nut 8 secured to the frame rod 2.

In placing the lamp bulb 3 in position in the frame the end cap 25 of the lamp is first inserted in the coned aperture in the bridge piece 6 which is separated from the bridge piece 5 by such a distance that when the end cap 25 has fully entered the aperture in the bridge piece 6 the lamp 3 may be caused to assume a position in which the other end cap is opposite the aperture in the other bridge piece 5. A longitudinal movement of the lamp 3 towards the bridge piece 5 will then bring the contact terminal of the lamp into engagement with the contact strip 14 and the frame carrying the lamp can be slid into position in the cylindrical casing in the manner above described. When fully home in the casing, the other contact terminal of the lamp will be engaged by the contact strip 31 in the end cap 18 of the casing, and the lamp will thus be connected in circuit and properly secured in position.

In order to prevent the lamp falling out of the frame during the insertion of the latter into the casing clips at either or both ends may be provided, each clip engaging the end cap of the lamp between the inner face of the bridge piece and the enlargement

of the bulb beyond the end cap, so as to prevent longitudinal movement of the lamp bulb within the frame. The clips above referred to may, if desired, be formed by spring tongues or projections 33 integral with or attached to a reflector 34 extending the full length of the frame, the clips 33 in this case serving not only to prevent longitudinal displacement of the lamp in the frame but also to secure the reflector 34 thereto. A reflector and clips may also be utilized as shown in the multiple lamp construction as indicated in Figure 2.

The construction of the cylindrical casing will necessarily depend upon the purpose for which it is designed, and in some cases it is preferably to provide a longitudinal slot or row of ventilating apertures for cooling the lamp and casing, the slot or apertures being covered by a baffle plate to prevent the undesirable emission of light from the casing. The inner surface of the baffle plate above referred to may, if desired, be silvered, or otherwise rendered reflecting and instead of being mounted in the casing may be carried by the frame itself as in the case of the single lamp frame above described, in which case the baffle plate or reflector may constitute one of the current carrying conductors.

Although in one of the constructions above described two frame rods are employed, it will be understood that the invention is not limited in this respect and a single frame rod, if of sufficient rigidity, may be employed, this frame rod in some cases taking the form of a reflecting strip as above described.

A single frame rod or strip, however, can only be employed in the case of a single lamp or two or more series connected lamps, at least two frame rods or their equivalents being necessary for a parallel connection of two or more lamps.

The conducting elements of the construction are, as will be understood from the preceding explanation, of extremely simple character, and can be manufactured in quantities from sheet brass or other suitable metal by simple punching or die cutting operations as will be evident from an inspection of the blank of sheet metal shown in Figure 4, from which the intermediate bridge piece 21 is formed by bending, as will be obvious to those skilled in the art.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an electric lamp fitting, the combination of a tubular electric lamp having a terminal cap at each end thereof, insulating bridge pieces at both ends for supporting said terminal caps, a supporting frame connecting said bridge pieces, an electric connection from the frame to one of the lamp

terminals, an outer casing having end caps, and a contact mounted in one of said end caps for making electrical connection with said frame.

5 2. In an electric lamp fitting, the combination of a tubular electric lamp having a terminal cap at each end thereof, insulating bridge pieces at both ends for supporting said terminal caps, a supporting frame
10 comprising a plurality of longitudinal metal rods extending through said bridge pieces, an electric connection from one of said rods to one of the lamp terminals, an outer casing having end caps, one of the bridge pieces
15 being secured to one end cap, and a contact mounted in the other end cap for making electrical connection with one of said rods.

3. In an electric lamp fitting, the combination of a plurality of aligned tubular
20 electric lamps each having terminal caps at both ends thereof, insulating bridge pieces for supporting both ends of said lamps, a longitudinal metal frame connecting said

bridge pieces, an electric connection from the frame to one of the lamp terminals, an
25 outer casing having end caps, and contacts mounted in one of the end caps for making electrical connections for the lamp circuits through the frame.

4. In an electric lamp fitting, the combination of a plurality of aligned tubular
30 electric lamps each having terminal caps at both ends thereof, insulating bridge pieces for supporting both ends of said lamps, a frame comprising a plurality of longitudinal metal rods extending through said
35 bridge pieces, electrical connections from one rod to one terminal of said lamps, and from another rod to the other terminal of said lamps, an outside casing having end caps, 40
and contacts mounted in one of the end caps for making electrical connections with said rods.

In witness whereof I have hereunto set my hand.

ETHELBERT THOMAS RUTHVEN MURRAY.