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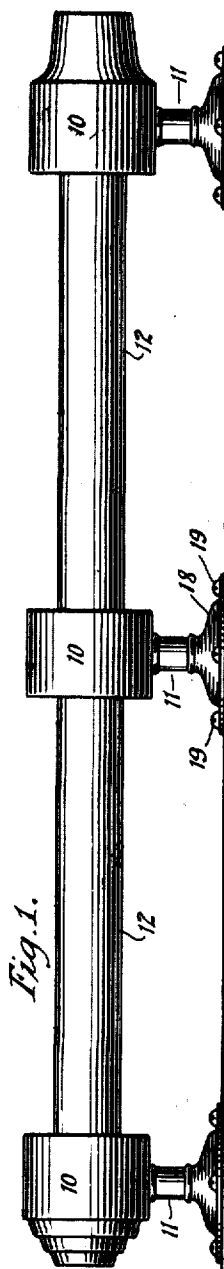
C. REBL

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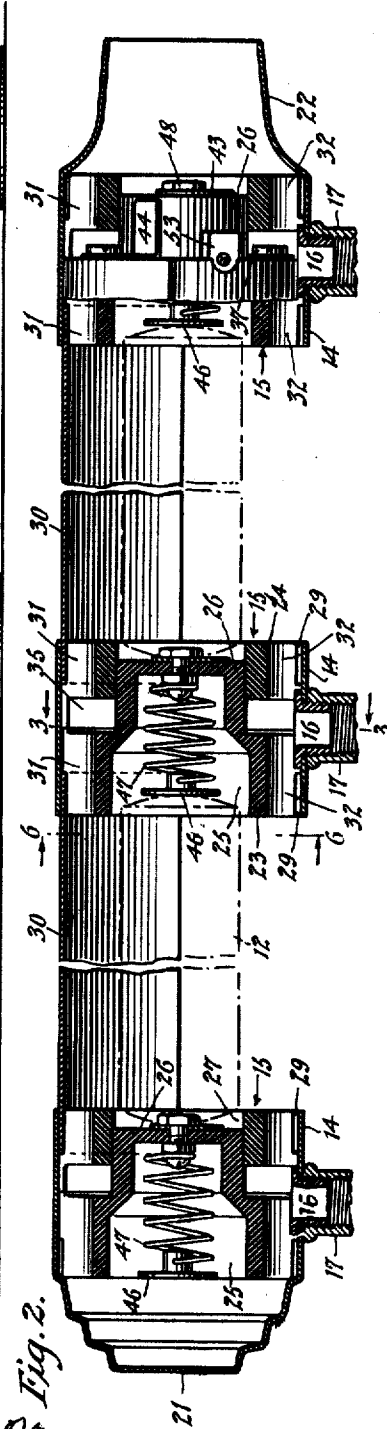
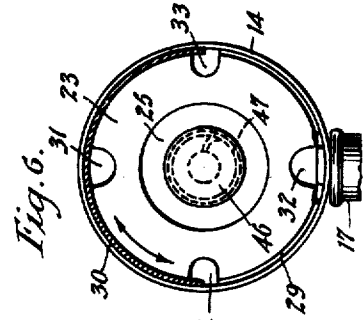
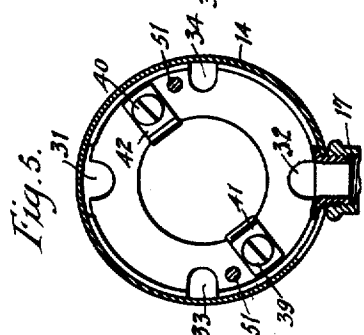
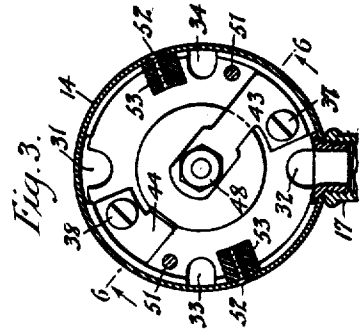
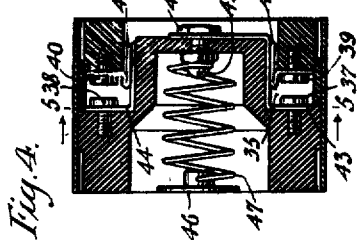
ELECTRIC LIGHTING APPARATUS

Filed Jan. 23, 1936

2 Sheets-Sheet 1



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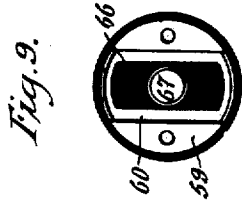
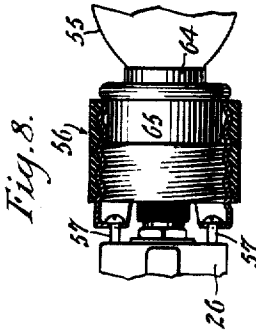
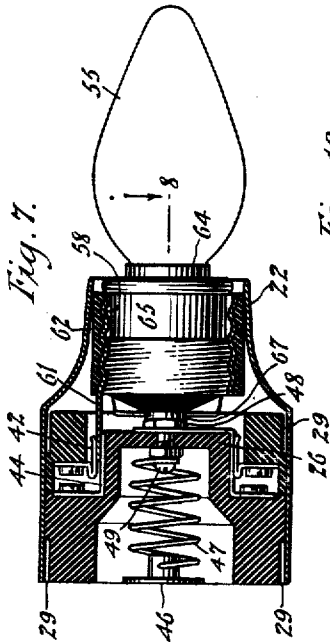
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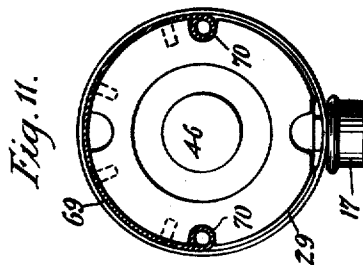
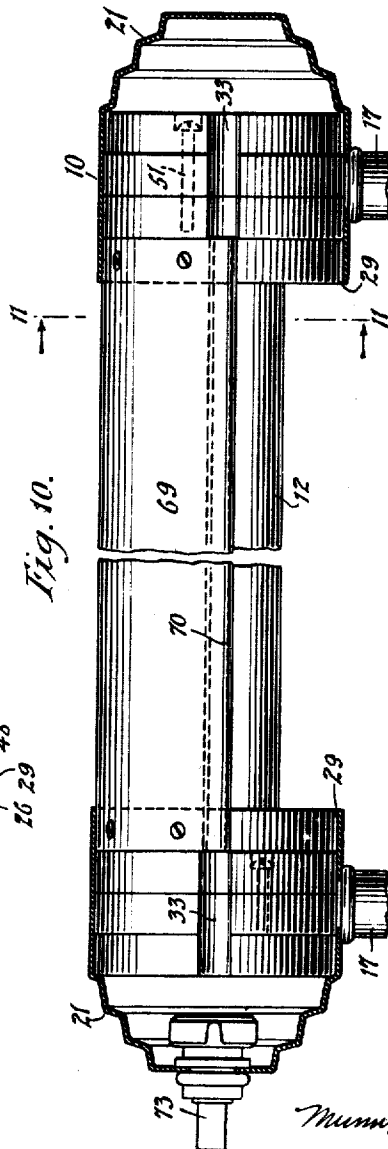
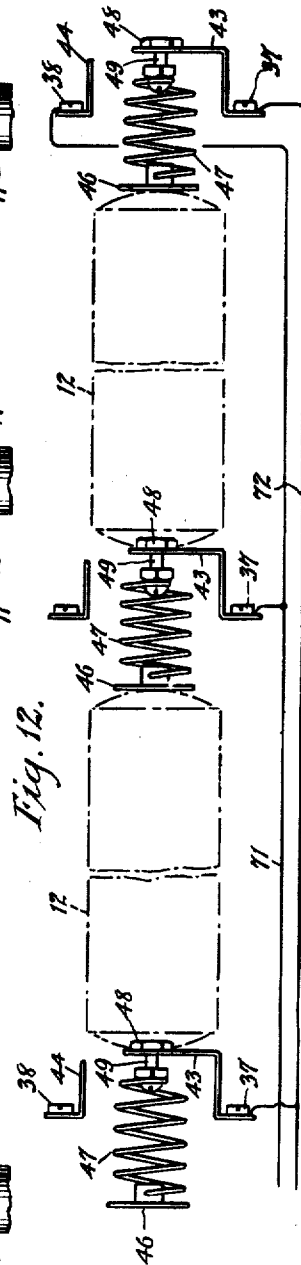
Filed Jan. 23, 1936

2 Sheets-Sheet 2



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2,109,341

ELECTRIC LIGHTING APPARATUS

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Application January 23, 1936, Serial No. 60,429

1 Claim. (Cl. 173—337)

This invention relates to improvements in electric lighting apparatus, and has particular relation to improved electric lamps and sockets.

It is an object of the invention to provide an improved elongated electric lamp made of a plurality of sections and which is so constructed that varying numbers of sections may be employed so as to produce a lamp of any desired size and having the desired number of electric bulbs therein.

A further object is the production of an improved lamp having a universal socket therein which is adapted to receive tubular bulbs of varying sizes and which also is provided with an adapter to receive the conventional type of bulb having a screw-threaded stem.

Another object is the provision of an improved and ornamental electric lighting fixture which may be used in many different associations and which may be provided with adjustable reflectors for each of the bulbs provided in the lamp.

Among other objects is the provision of improved lamp sockets provided with a spring contact member which in cooperation with a fixed contact member serves to retain a tubular electric light bulb in position and also supplies electric current thereto.

For a fuller understanding of the invention reference should be had to the accompanying drawings, in which:

Fig. 1 shows one form of lamp embodying my invention;

Fig. 2 is a view partly in section of a lamp similar to the one in Fig. 1, but showing adjustable reflectors mounted thereon;

Fig. 3 is a sectional view in the direction of the arrows on the line 3—3 of Fig. 2 showing an end view of one of the socket members;

Fig. 4 is a sectional view on the line 6—6 of Fig. 3;

Fig. 5 is a view on the line 3—3 of Fig. 2 in an opposite direction to Fig. 3 showing the inner end of the other socket member;

Fig. 6 is a view in the direction of the arrows on the line 6—6 of Fig. 2;

Fig. 7 is a detail view showing an adapter, for receiving a conventional type of screw-threaded bulb, applied to the lamp;

Fig. 8 is a partially sectional view in the direction of the arrows on the line 8 of Fig. 7 showing the adapter from a position at right angles to Fig. 7;

Fig. 9 is a view of the inner end of the adapter;

Fig. 10 is a view of a modified form of apparatus

having a different type of reflector mounted thereon;

Fig. 11 is a view in the direction of the arrows on the line 11—11 of Fig. 10; and

Fig. 12 is a diagram showing one form of electrical circuit that may be employed with my apparatus.

Referring more particularly to Figs. 1 to 9, my apparatus preferably includes a plurality of supporting elements 10 which are spaced apart and are mounted upon stands 11 and between which are supported tubular electric light bulbs 12 which are of conventional construction having metallic external contacts at their two ends connected to filaments inside the bulbs. In Figs. 1 and 2 I have illustrated an assemblage of three supporting elements, but of course it is to be understood any desired number may be employed. Each of the supporting elements is formed of a generally cylindrical casing 14 and a socket member indicated generally by the numeral 15 disposed inside the casing, the casing preferably having an opening in the lower portion which receives an externally threaded nipple 16 which is screwed to a hollow upright 17 secured to a base 18 which is preferably rigidly secured in position as by means of screws 19.

The casings 14 which are intermediate or spaced between the other casings are open at their two ends as shown most clearly in Fig. 2, while the end casings are preferably provided with an ornamental cap as indicated at 21 in Fig. 2 which may be formed integral with the casing or secured over the end thereof or, if desired, one of the end casings may be provided with a truncated extension 22 so as to permit the insertion of an adapter or socket for receiving a conventional type of electric light bulb, as shown most clearly in Fig. 7.

The sockets 15 disposed inside of each of the casings are preferably the same and are formed of two generally cylindrical mating parts 23 and 24 made of an insulating material, the part 23 having a central chamber 25 and having a plug 26 which projects into a cylindrical opening 27 formed through the center of the member 24. The periphery of both sections 23 and 24 adjacent the abutting portions are of substantially the same external diameter as the internal diameter of the shell 14 so as to fit snugly therein, but adjacent the outer ends both members are of slightly less diameter so as to provide annular channels or recesses 29 extending completely around the socket inside the casing 14. If desired, arcuate reflectors 30 made of a good reflecting mate-

rial may be provided between adjacent supporting elements 10 and fitted into the channels 29 provided in the confronting faces thereof, and in this manner it will be seen that the reflectors may be adjusted or shifted in an arcuate direction to any desired position.

In the periphery of both portions of socket 15 and preferably at the quadrants thereof are formed four longitudinally extending channels indicated by the numerals 31, 32, 33 and 34, while the inner face of the section 24 which confronts the member 23 is formed with an annular recess spaced a short distance from the periphery so that when the two portions 23 and 24 of the socket have been fitted together as shown in Figs. 2 and 4, an annular passage 35 extending completely around the inside of the socket is provided. Positioned so as to be disposed inside the annular passage 35 are the contact screws 37 and 38 fastened to the member 23 and the contact screws 39 and 40 secured to the confronting face of the member 24. The screws 37 and 39 are preferably disposed diametrically opposite to the screws 38 and 40 and each of the screws makes contact with and retains a contact strip in position. Thus the members 39 and 40 extend through openings formed in the contact strips 41 and 42, respectively, which are preferably formed of relatively resilient material and extend over the vertical edge of the passage 35 along the internal lateral walls of the passage 27 to a position preferably slightly short of the inner end of plug 26 when the socket is assembled, as is most clearly shown in Fig. 4.

The screw 37 is secured to a contact strip 43 passing over the outer surface of the plug 26 to a point slightly past the center of the end thereof and is so positioned as to be engaged by the contact strip 41 when the socket is assembled. A contact strip 44 is also held in position by the screw 38 and it extends over the outer surface of the plug to a distance slightly short of the end thereof and is so positioned as to be engaged by the contact strip 42, as is shown most clearly in Fig. 4.

The principal contact elements of the socket which are adapted to support and to supply electrical current to the tubular bulbs 12 carried in the lamp consists of the contact disk 46 made of a conducting material secured at the end of a spiral spring 47 made of a material which is relatively resilient and which is a good conductor of electricity which is secured in the chamber 25, and also the stationary contact element 48 formed on the outer surface of the plug 26 and which may take the form of a nut secured to the end of a bolt 49 passing through the end wall of the plug 26 and secured to the spiral spring 47 so as to hold it in position. Thus both contact disk 46 and stationary contact element 48 are connected by contact strip 43 to contact screw 37.

The sockets are preferably positioned in the casings so as to all point in the same direction, as shown most clearly in Fig. 2. It will be understood then that the tubular bulbs 12 are supported between the sockets in adjacent supporting elements. Thus a tubular bulb 12 will engage contact strip 43 and nut 48 of one socket at one of its ends and will engage contact disk 46 of another socket at its opposite end, as shown in dotted lines in Fig. 2. The supporting elements 10 are spaced apart at such distance that when the bulb is thus placed in position the spring 47 will be under tension, and in this way the bulb will be retained in position and the contact be-

tween the ends of the bulb and the contact elements is insured. To aid in retaining the bulbs in position the faces of the contact disks 46 are preferably slightly concave.

The two portions 23 and 24 of the socket may be suitably held together when assembled and prevented from shifting relative to each other as by means of screws 51, and each of the sockets may be held in position in its casing by means of screws 52 passing through the casing into the socket at the point of connection between the two portions thereof 23 and 24.

If desired, a conventional type of screw-threaded bulb indicated by the numeral 55 may also be used in association with my apparatus by attaching my adapter 56 to the end of the plug 26 of one of the sockets as by means of screws 57. The adapter is preferably applied to a socket disposed at the end of my lamp over the outside of which a casing having a protruding shell or nozzle 22 is arranged, as shown at the right hand side of Fig. 2. The adapter 56 preferably consists of a metallic screw-threaded socket 58 of any desired size having the bottom thereof 59 provided with an opening 60 extending completely across the center thereof. Formed integral with the side of the socket 58 and extending beyond the lower end of the socket is a contact prong 61 positioned so that it may be projected between the contact strips 42 and 44 of the socket 15.

When an electric light bulb of conventional design is then screwed into the socket 58 the side of the stem of the socket which connects one end of the filament will contact the side of the socket which is connected by prongs 61 to the contact strips 42 and 44, while the contact formed in the end of the stem of the bulb will protrude through the opening 60 formed in the lower end of the socket, and the adapter is so positioned with respect to the plug 26 that the contact at the end of the bulb will engage the nut 48 which it will be remembered is in engagement with contact strip 43. It is preferable to provide a suitable insulation 62 around the outer surface of the socket 58 so as to protect it from engagement with the protruding truncated shell 22.

In the accompanying drawings a bulb 55 is illustrated having a screw-threaded stem 64 of smaller diameter than the internal diameter of the socket 58, with the result that a socket adapter 55 having a screw-threaded external surface equivalent in diameter to the diameter of the socket 58 and an internally threaded socket of a size to receive the stem 64 of the bulb 55, is employed. The sides of the adapter 65 are formed of conducting material and supply current from the socket 58 to the sides of the stem 64 of the bulb 55, which in turn is connected to one end of the filament. The lower end of the adapter 65 is provided with a portion 66 formed of insulating material, through the center of which passes a contact element 67 which is connected to the other end of the filament of bulb 55. When the bulb has been placed in the socket adapter 65 and the socket adapter has been screwed into position as shown, the contact member 67 will then engage fixed contact element 48, as shown most clearly in Fig. 7.

Current may be supplied to the apparatus through wires passing through the hollow stems 17 and thence upwardly through grooves 32, annular passage 35, to the contact screws 37, 38, 39 and 40. The current for the sockets disposed in each of the supporting elements 10 may be supplied independently through the hollow up-

rights 17 of each of the stands or, if desired, wires may be connected between the respective supporting elements by means of the apparatus shown in Figs. 10 and 11 of the drawings.

5 In the apparatus therein shown only two supporting elements and sockets are illustrated and they are of the same construction as previously described. The reflector 69, however, instead of being adjustable is fixed in one position and is provided with beaded or rolled lateral edges 70 providing a pair of longitudinally extending pas-
10 sageways through which the electric wiring may pass from the socket member of one supporting element to the socket member of the next adjacent supporting element. In this form of construction the reflector 69 is preferably of such a size that the beads 70 will project into the grooves 33 and 34 or 31 and 32 formed in the periphery of the socket members. The position
15 of the reflector will accordingly depend upon the position of the socket members 15 in the casings 10 and by altering the position of the socket members the position of the reflector will of course be changed.

25 It will be understood that lighting apparatus made in accordance with my invention may be provided with any suitable type of electric circuit. Thus the bulbs therein may be connected either in series or in parallel. A satisfactory
30 type of wiring diagram is illustrated in Fig. 12 in which the lead wire 71 is connected to contact screw 37 of the center socket, which in turn is in engagement with contact strip 43 and supplies current to fixed contact 48, and by means of
35 screw 49 and spring 47, to the contact disk 46. The lead wire 71 also connects with contact screw 38 of the socket member which has an adapter 56 used in association therewith (in this instance the socket disposed at the right hand
40 end of the lighting apparatus), and thence supplies current to contact strip 44. Lead wire 72 is connected to contact screws 37 of the two end sockets, and thence through contact strips 43 supplies current to the fixed contacts 48 and
45 the contact disks 46 of the two end sockets. Tubular electric light bulbs 12 are then placed between the fixed contact elements and the spring mounted contact elements of adjacent sockets as shown in the drawings, and the contact elements will retain the bulbs in position
50 and will supply electric current thereto. When adapter 56 is employed in association with the end socket, the contact prong 61 supplies current

from the contact strip 44 to one terminal of a bulb disposed in the adapter, and the other terminal of the bulb will receive current from the fixed contact 48 as previously described. The lamp may be controlled by any desired type of
5 switch, but I have found it to be convenient to mount a switch 73 on the cap 21 at one end of the lamp as shown in Fig. 10.

The lighting apparatus herein shown and described may be used for lighting show cases and
10 advertising displays or may be used with or without the reflector to supply illumination for houses and offices. In the accompanying drawings an assemblage of three units and of two units has been illustrated, but of course any
15 desired number of units may be used, with or without reflectors, in association with each other.

It is to be understood, of course, that many modifications may be made in the herein illustrated and described embodiments of my in-
20 vention without departing from the scope of the appended claim such as modifying the wiring circuit, employing varying numbers of adapters in different positions, varying the number and arrangement of units and modifying the form,
25 shape or design of the apparatus.

I claim:

A convertible socket for tubular bulbs and the like comprising an annular member formed of insulating material, a plug cooperable to project
30 into and releasably engage the inner surface of the annular member, said plug being formed with a chamber on one side, a first contact element mounted on a spring in the chamber and adapted to engage the end of a tubular light
35 bulb, a second contact element electrically connected to the first contact element and rigidly mounted on the side of the plug opposite the chamber so as to be exposed through the annular member when the plug is positioned therein, and
40 a third contact element disposed between the inside of the annular member and the outer surface of the plug, said plug and annular member being formed so that the third contact element is accessible to a prong projected between the
45 annular member and plug from the side opposite the chamber in the plug, and said second contact element being adapted to engage the end of a tubular light bulb or in cooperation with the third contact element to engage and support an
50 adapter.

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