W. A. HARVEY.

ELECTRIC CHANDELIER FIXTURE.

APPLICATION FILED APR. 24, 1920.

1,380,144.

Patented May 31, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

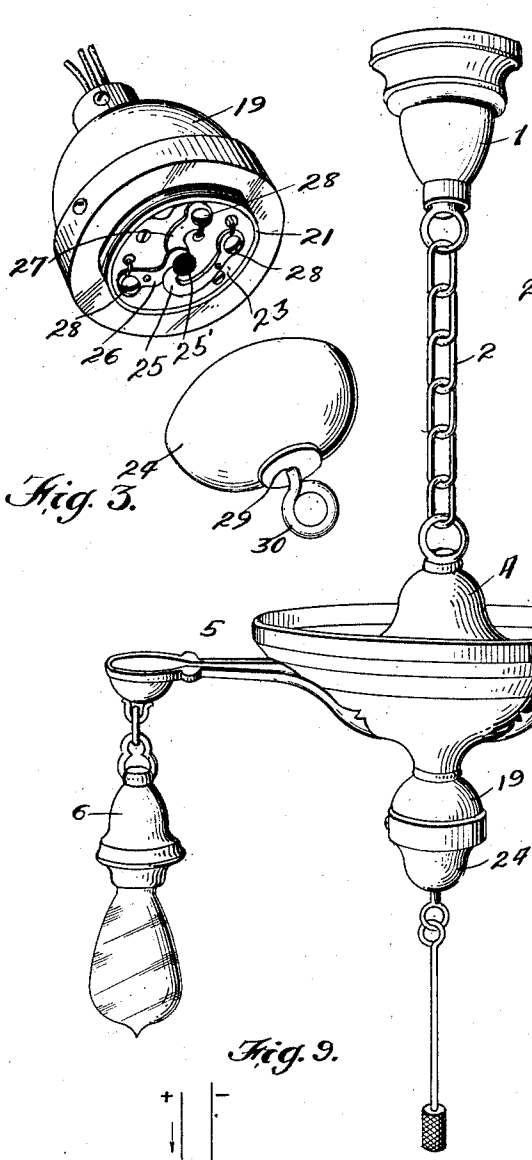


Fig. 3.

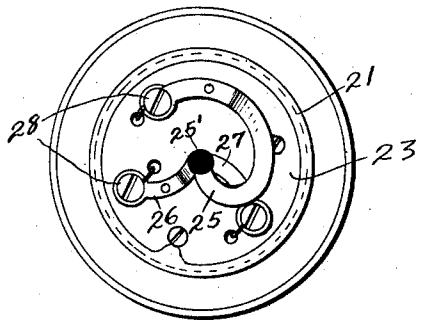


Fig. 4.

Fig. 9.

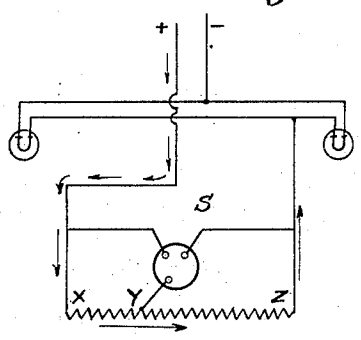
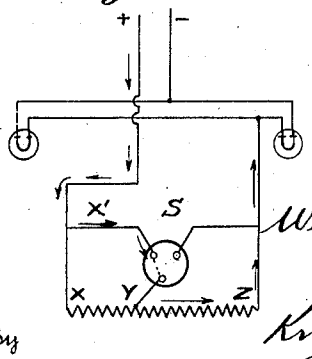


Fig. 10.



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3 SHEETS—SHEET 2.

Fig. 2.

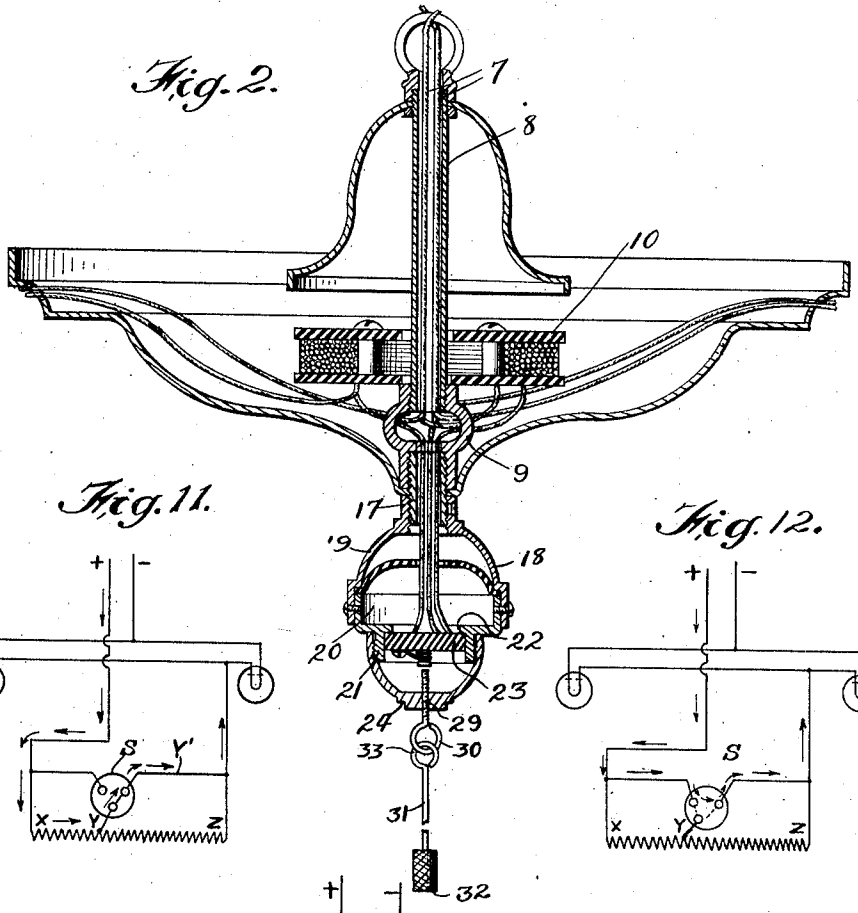
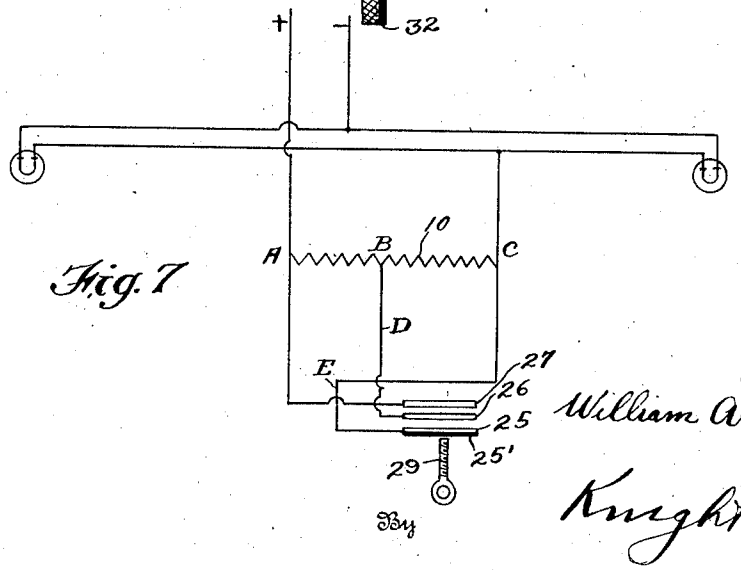


Fig. 11.

Fig. 12.

Fig. 7



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3 SHEETS—SHEET 3.

Fig. 5.

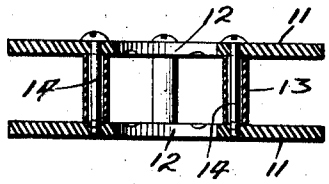


Fig. 6.

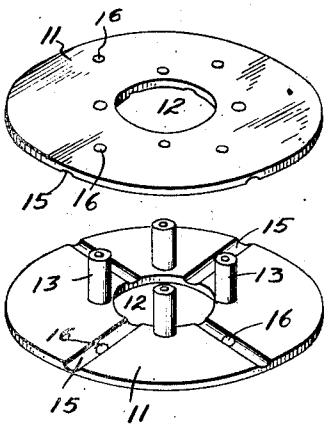


Fig. 8.

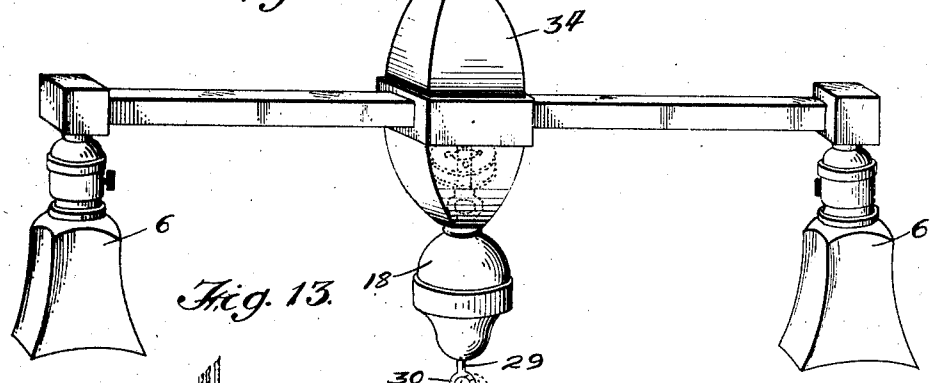
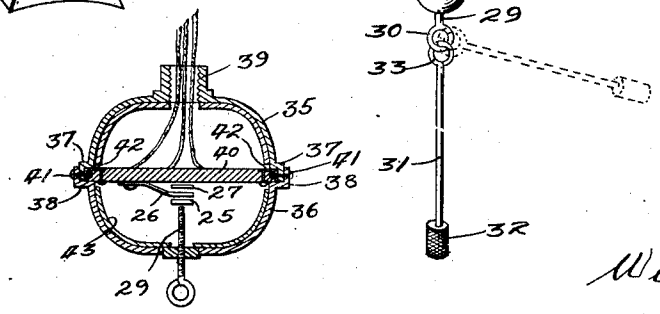


Fig. 13.



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UNITED STATES PATENT OFFICE.

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ELECTRIC CHANDELIER FIXTURE.

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Application filed April 24, 1920. Serial No. 376,186.

To all whom it may concern:

Be it known that I, WILLIAM A. HARVEY, a citizen of the United States, and resident of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Electric Chandelier Fixtures, of which the following is a specification.

My invention relates to an electric chandelier fixture, and more particularly to a fixture of this type provided with means for varying the luminosity of the lamps.

It is desirous in chandelier fixtures to provide means for varying the degrees of illumination given off by the lamps. Chandelier fixtures are generally controlled as an entirety by a wall switch, and by this arrangement it is impossible to vary the degree of light except by individually operating one or more of the lamps, inasmuch as the control by the wall switch provides only for turning on or off the lights.

My invention contemplates providing a resistance element concealed within the ordinary chandelier fixture, whereby the lamps are caused to burn at different degrees of brilliance, irrespective of the control by the usual wall switch. By this arrangement I am enabled to regulate the degree of brilliance given off by the lights, without the necessity of individually regulating the several electric bulbs forming part of the fixture.

My invention is also adapted to fixtures which are not controlled by a wall switch, but in which the lights are individually turned on or off. The resistance element would still be housed within the fixture and be regulatable to control the amount of current passing through each individual bulb. Consequently, when it is desired to have only a dim light burning, the resistance element may be so operated, and thereafter when the electric bulb is turned on, its degree of brilliance will be correspondingly dim.

Other objects of my invention will appear more fully hereinafter in the specification and in the drawings, in which—

Figure 1 is a perspective view of a chandelier fixture embodying my invention;

Fig. 2 is a fragmentary, cross-sectional view of the fixture shown in Fig. 1;

Fig. 3 is a perspective view of the controlling switch:

Fig. 4 is a plan view thereof:

Fig. 5 is a sectional view of the resistance element core;

Fig. 6 is a perspective view of the structure shown in Fig. 5;

Fig. 7 is a diagrammatic view of the electric circuit employed in the fixture shown in Fig. 1;

Fig. 8 is a perspective view showing another form of electric fixture;

Figs. 9 to 12, inclusive, are diagrammatic views of another arrangement of circuits employed in connection with my invention, and

Fig. 13 is a sectional view showing another form of the switch.

Referring now more particularly to Figs. 1 and 2, it will be seen that the fixture embodies the ordinary canopy 1, chain support 2, and inverted bell-shaped housing 3. The usual bell portion 4 is shown, and is provided mainly for giving a finished appearance to the fixture. Projecting radially from the inverted bell-shaped housing 3 are a plurality of arms 5 for supporting the usual electric light bulbs and sockets 6. The structure thus far described is of the usual commercial type of chandelier fixture, and is shown as one type of fixture in which my invention may be embodied.

Referring now more particularly to Fig. 2, it will be seen that the lead wires 7 are housed within a pipe 8, usually employed in fixtures of this type, and pass out through the hickey 9 to enable them to be connected to the electric bulbs and sockets 6.

The inverted bell-shaped housing 3 provides space for containing the resistance element 10, which is connected in circuit with the electric bulbs. A more detailed illustration of the manner in which I construct this resistance element will be had by an examination of Figs. 5 and 6.

I desire to form the core upon which the resistance wires are wound, of two circular plates 11, provided at their centers with registering apertures 12. These plates 11 are spaced apart by tubes 13 and secured rigidly in this position by means of screws 14 passing through one plate 11, the tubes 13, and threaded into the other plate 11. It is, of course, understood that the plates 11 and tubes 13 are of fiber or some other insulating material. Upon the inner faces of the plates 11 I provide a series of radial grooves 15 extending from the central apertures 12 to the outer edges of the plates 11. Com-

municating with these radial grooves 15 are a series of apertures 16, bored in the plates 11.

After the resistance element core has been assembled, as shown in Fig. 5, the resistance wire may be wrapped thereon to form the complete resistance element as shown at 10, in Fig. 2. The grooves 15, coöperating with the apertures 16, allow a circulation of air through the resistance element, to assist in dissipating the heat generated while the resistance element is in use. It should also be noted that the central apertures 12 formed in the plates 11 allow for additional circulation of air centrally of the resistance element, which also materially assists in dissipating the heat. The resistance element is thereby formed in such a manner that a considerable portion of the heat ordinarily generated in resistance elements is dissipated and the efficiency of the resistance element correspondingly increased.

By providing the registering apertures 12 centrally of the plates 11, I am enabled to place this element upon the pipe 8 while assembling the fixture. Any suitable support may be provided for the resistance element, but, as shown in Fig. 2, it rests upon the hickey 9.

Screw-threaded upon the stud pipe 17 projecting from the lower end of the fixture, is the resistance element controlling switch 18. By this switch I am enabled to cut in or out portions of the resistance element, to regulate the degree of illumination of the electric bulbs 6.

This controlling switch 18 may be of any suitable construction, but I have here shown it as comprising a bell-shaped housing 19, contracted at its upper end and internally screw-threaded to provide for its attachment to the stud pipe 17. A shouldered ring member 20 is forced into this bell-shaped housing 19, and is provided with a depending flange 21, shouldered as at 22, to provide a stop for the contact carrying block 23, formed of fiber or other insulating material. A bell-shaped cap 24 is screw-threaded upon the depending flange 21, as clearly indicated in Figs. 2 and 3.

Mounted upon the contact carrying block 23 are three spring contact plates 25, 26 and 27, respectively. Screws 28 provide means for securing electric wires for connecting these spring contacts in circuit with the resistance element 10. The lower face of the contact member 25 is insulated, as shown at 25′.

Screw-threaded in the bell-shaped cap 24 is a contact operating member 29, provided with an eye 30 at its lower end. A rod 31, provided with a knurled end 32, is loosely connected to the operating screw 29 in any suitable manner, here shown by means of an eye 33. The structure just described provides means for rotating the operating screw 29, at the same time allowing the rod 31 to swing should some one passing under the fixture accidentally come in contact with the same.

It will be seen that when it is desired to rotate the operating screw 29, the knurled end 32 of the rod 31 may be grasped and rotated, and by reason of the connection of the rod 31 with the operating screw 29, this rotary motion will be imparted thereto, to move the operating screw 29 vertically to and from the spring contact plates.

The object of the structure hereinbefore described is that of causing the spring contacts 25, 26 and 27 to successively engage one another as the operating screw 29 is caused to advance vertically, and by reason of their contact, to cut out a portion or all of the resistance element 10 and consequently increase the degree of illumination of the electric lights 6.

The circuit may be more easily traced by reference to Fig. 7. With the parts in the position shown in Fig. 2, and diagrammatically in Fig. 7, that is, with the three spring contact members separated, the current will pass through the positive wire to A, through the resistance element 10 to point C, thence through the electric lights to the negative wire. In this position the lights are at their lowest degree of brilliance, the entire resistance element being included in the circuit.

However, when the operating screw 29 has been advanced so as to cause spring contact 25 to bear against spring contact 26, the circuit will be as follows: Current from the positive wire will pass through the resistance element contained between points A and B, thence through wire D and through spring contacts 26 and 25, which, as hereinbefore stated, are in contact one with the other; thereafter through wire E, through the lights to the negative wire. In this position it is obvious that the section of resistance contained between points B and C is cut out, and the lights will have a correspondingly increased degree of brilliance.

When, however, the operating screw 29 has been advanced to cause spring contacts 25 and 26 to contact the spring contact member 27, the circuit may be traced in the following manner: Through the positive wire, past the resistance element to the spring contact plate 27, thereafter through the spring contacts 26 and 25, through wire E, and thereafter through the lights to the negative wire. In this position all of the resistance element has been cut out and the lights will be at fullest degree of brilliance.

From the foregoing it is obvious that by operating the screw 29 by means of the downwardly hanging rod 31, the resistance element may be caused to function to a greater or less degree, and consequently con-

trol the degree of illumination given by the electric bulbs 6. Should the fixture be controlled by the ordinary wall switch, the lights when turned on will burn with the degree of brilliance depending upon the regulation of the resistance element. It is obvious that this regulation of the resistance element is entirely independent of the ordinary operation of the lights, and that the same may be set for the degree of brilliance desired and thereafter such degree of brilliance be obtained by operating the usual wall switch.

However, if the fixture is operated by turning on or off individually the electric lights in the fixture, the principle of operation is the same. The resistance element may be adjusted and thereafter when the lights are individually operated the corresponding degree of brilliance will be given off.

Referring now to Fig. 8, it will be seen that my invention may be also embodied in this type of fixture. The resistance element may be housed in enlarged portion 34, and the switch housing 18 attached thereto substantially in the same manner as in Fig. 2. It is obvious that my invention may be embodied in any of the general types of fixtures now on the market, in which a space is provided for housing the resistance element 10.

In Fig. 13 I have illustrated another form of switch which I can employ to advantage in connection with my invention. This type is very similar to that disclosed in Figs. 2, 3 and 4 except in structural details. In the structure shown in Fig. 13 the housing is composed of shells 35 and 36, having offset flanges 37 and 38, respectively, provided with registering apertures. The upper shell 35 is provided with an internally screw-threaded projection 39 to adapt it to be screw-threaded upon the stud pipe 17.

An insulating plate 40 is positioned within the housing form by the shelves 35 and 36 and secured in place by the screw 41, passing through the registering apertures in the offset flanges 37 and 38 and into the insulating plate 40. If it is desired, L-shaped metal clips 42 may be secured upon the edge of the insulating plate 40 to receive the ends of the screws 41. Upon this insulating plate 40 the spring contact members 25, 26 and 27 are secured and their successive contact is controlled by means of the contact screw 29. Any suitable insulating material 43 may be used as a lining for the shells 35 and 36.

Thus it will be seen that this structure enables me to quickly assemble or disassemble the switch member and also provides one which is simple in construction and at the same time durable. It should be noted that the insulating plate carrying the spring contact members is so arranged that it can be easily and quickly removed from the housing, and the spring contacts replaced, should the same become worn or broken.

Instead of the types of switch hereinbefore described, I might employ any of the pull switches now on the market, and which are generally termed "electrolier ceiling pull switches". It is not thought necessary to illustrate one of these switches, as those familiar with the art are fully aware of its structure and operation.

However, by referring to Figs. 9 to 12, inclusive, it will be more clearly illustrated, diagrammatically, how this type of switch might be used in connection with my invention. This switch is usually a three-point switch. In Fig. 9, with the switch S in the position shown diagrammatically, the current will pass through the positive wire in the directions indicated very clearly by arrows, through the resistance element X, Y, Z, and thereafter through the electric lights to the negative wire. In this position the entire resistance element is in circuit with the lights and the latter will therefore be at their lowest degree of brilliance.

In Fig. 10 the switch S is shown in its next position. While in this position the current flowing through the positive wire will pass through take-off wire X′, thence through the switch and through the resistance element contained between points Y and Z, and thereafter through the lamps and to the negative wire. In this position the portion of resistance contained between X and Y has been short-circuited or cut out. Therefore, it is obvious that a small portion of the resistance has been eliminated and the lights will burn with a higher degree of brilliance.

In Fig. 11 the switch is shown in its next position, and while in this position, current will pass through the positive wire to the point X of the resistance, through the section of resistance contained between X and Y, across the switch S, and by means of take-off wire Y′ to the lamps and thence to the negative wire. In this position the section of resistance contained between points Y and Z has been short-circuited or cut out, and consequently the lights will burn with a still higher degree of brilliance.

In Fig. 12 the switch is in its last position. In this position current passing through the positive wire will, instead of passing through the resistance X, Y, Z, pass (as indicated by the arrows) across the switch S, which has been bridged, and thereafter through the electric lights and to the negative wire. In this position the entire resistance element X, Y, Z has been short-

circuited or cut out, and consequently the lights are burning at their highest degree of brilliance.

The four diagrammatic views hereinbefore briefly described, show the adaptation of this electrolier switch to my invention, and also the manner in which I am enabled to obtain four degrees of brilliance with this type of switch.

It should be noted that the manner in which I construct the core upon which the resistance wire is wrapped, and which, when completed, forms my resistance element, is conducive of the best results, inasmuch as it allows for the maximum amount of circulation of air, which will tend to dissipate to a large extent the heat generated by this resistance element. It is also obvious that this element may be removed and inserted at will, by merely connecting or disconnecting it with the electric circuit and its controlling switch.

I have also shown a novel means for operating the spring contact controlling screw, and one which will not be objectionable, but will swing in all directions should a person accidentally come in contact with it while passing underneath the fixture.

Various modifications and departures may be made from the structure shown in the drawings, without departing from the spirit and scope of my invention, and I specifically reserve this right.

Having thus described my invention, what I claim is:

1. A chandelier fixture having as a part thereof an inverted bell-shaped housing and electric lamps and means for varying the degree of illumination of said lamps and particularly adapted for use with a chandelier which comprises a circular resistance element contained in said inverted bell-shaped housing, a circuit including said electric bulbs and said resistance element, a switch for controlling said resistance element, comprising a plurality of spring contact members, and means operable from a distance for causing said spring contacts to engage one another, as and for the purpose described.

2. A chandelier fixture provided with an inverted bell-shaped housing and electric light bulbs, a circular resistance element shaped so as to be contained in said inverted bell-shaped housing and in circuit with said electric light bulbs, means independent of said circuit controlling means for cutting in and out sections of said resistance element, comprising a plurality of spring contact members, a screw adapted to cause said spring contact members to successively engage one another to cut out sections of said resistance element, and a rod loosely secured to said screw, to enable the same to be operated at a distance, substantially as described.

3. The combination with an electric chandelier fixture provided with electric light bulbs and a circuit, of a resistance element adapted for use with and housed in said fixture, said resistance element being formed with two circular plates provided with central registering apertures, radiating grooves formed on the inner faces of said circular plates and apertures communicating with said grooves, all for the purpose of ventilating said resistance element, substantially as described.

WILLIAM A. HARVEY.