

G. O. WILLEY.
INCANDESCENT ELECTRIC LAMP.
APPLICATION FILED MAY 24, 1917.

1,293,594.

Patented Feb. 4, 1919.

FIG. 1.

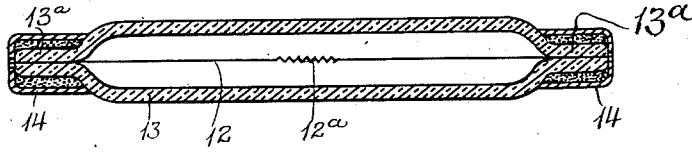


FIG. 2.

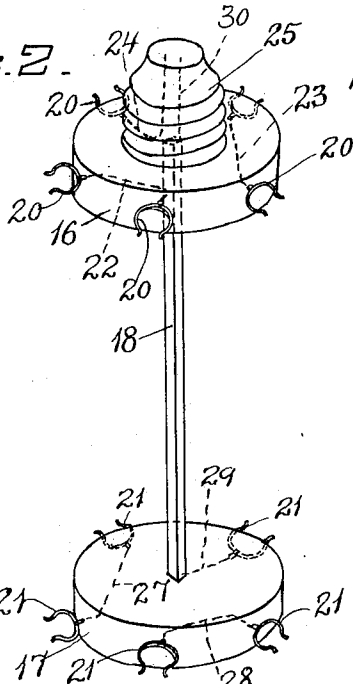


FIG. 3.

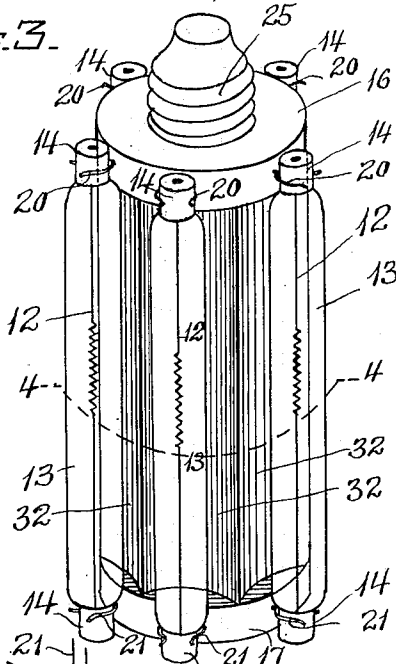


FIG. 4.

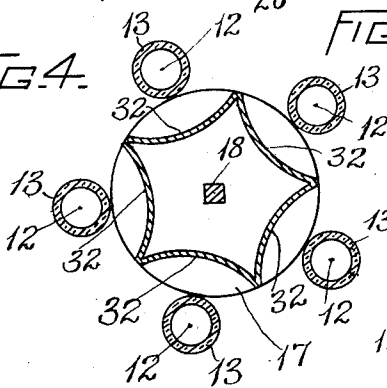


FIG. 5.

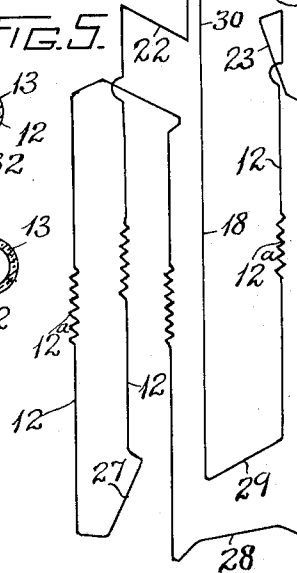


FIG. 6.

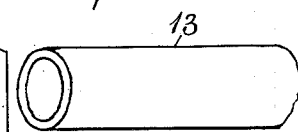
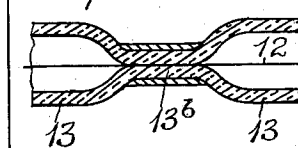


FIG. 7.



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INCANDESCENT ELECTRIC LAMP.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE O. WILLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification.

This invention is embodied in an incandescent electric lamp adapted to be used either singly, or as a unit of a group or cluster, the lamp being of simple construction and comprising a single length of tungsten wire which includes an incandescing portion and leading-in end portions integral therewith, a glass tube forming a chamber inclosing the incandescing portion of the wire and contracted at its ends to form nipples which are closed on the leading-in portions of said wire, and conducting caps or bases mounted on said nipples and in electrical connection with the leading-in portions of the wire.

Of the accompanying drawings forming a part of this specification,—
Figure 1 is a longitudinal section of a lamp embodying my invention.

Fig. 2 is a perspective view of a holder organized to support a group of lamps constructed as shown by Fig. 1.

Fig. 3 is a perspective view showing the holder and a group of lamps assembled thereon.

Fig. 4 is a section on line 4—4 of Fig. 3.
Fig. 5 is a perspective diagram, showing the filaments and electrical connections between the same.

Fig. 6 is a perspective view, showing a portion of the tube represented by Fig. 1, before its ends are contracted.

Fig. 7 is a fragmentary sectional view, showing portions of two lamps arranged in tandem order.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 12 represents a single length of tungsten wire, which is substantially straight, although it may have a helical portion 12^a.

13 represents a substantially straight glass tube preferably cylindrical, hermetically closed at its opposite ends on the end portions of the wire 12, said tube as here shown, having contracted end portions 13^a forming nipples which are hermetically closed upon the end portions of the wire 12. The hol-

low portion of the tube 13 forms a chamber inclosing the main portion of the wire. Said main portion constitutes the incandescing portion of the wire, and the end portions of the wire extending through and protected by the nipples 13^a, constitute leading-in portions integral with the incandescing portion.

The said leading-in portions are connected with conducting means, so that when the lamp is installed in a suitable holder, it forms a part or resistance member of an electric circuit; the single wire constituting a one-piece substitute for an incandescing filament and leading-in wires made separately from each other and joined together.

In the embodiment of the invention here shown, the leading-in portions of the wire 12 are electrically connected with conducting terminals or bases 14 formed as caps applied to the nipples 13^a. The number of parts is reduced to the minimum because the incandescing and leading-in portions are integral with each other. Tungsten wire is adapted to withstand a temperature of above 3200° F. without melting, hence the incandescing portion is not liable to break away from the protected leading-in portions when the incandescing portion is raised to any temperature suitable for illumination.

Figs. 2, 3 and 4 illustrate a holder having means for separably engaging the end portions of the lamp to support the latter, said holder being provided with electrical connections adapted to complete a circuit through the wire 12, the holder in this instance being adapted to support a group or cluster of lamps, each contracted as above described.

While the holder may be made in a variety of forms, I have for purposes of illustration, shown it as composed of two heads 16 and 17, which are spaced apart and connected by a rod 18, which is a conductor of electricity.

The head 16 is provided with a series of resilient clips 20, and the head 17 with a series of resilient clips 21, these clips being electrical conductors and adapted to both mechanically and electrically engage the lamp terminals or bases 14.

The electrical connections with which the holder is provided include conducting wires 22 connecting two of the clips 20, a similar wire 23 connecting two other clips 20, and a

conducting wire 24 connecting with another clip 20 and forming one of the circuit terminals, the wire 24 extending into a screw plug 25 attached to the head 16 and adapted to engage a fixed lamp socket.

The said electrical connections also include a conducting wire 27 connecting two of the clips 21, a conducting wire 28 connecting two other clips 21, and a conducting wire 29 connecting the remaining clip 21 with the conducting rod 18. The conductor formed by said rod may extend into the plug 25 to constitute the other circuit terminal, or, as here shown, may be provided with a conducting wire 30 constituting the last-named terminal.

It will now be seen that when the lamp units are engaged with the clips 20 and 21, and the plug 25 is engaged with a lamp socket, the wires 12 of the group or cluster of lamps are connected in series. It is obvious, however, that the holder may be constructed and adapted to support and complete the circuit through one lamp, instead of a group or cluster.

As shown by Figs. 3 and 4, the holder may be provided with a reflector 32, for each lamp, said reflector facing the inner side of the lamp and being formed and arranged to reflect outwardly the light rays directed inwardly by the lamp. The series of reflectors 32 may be parts of a fluted tube interposed between the heads 16 and 17.

As shown by Fig. 7, a plurality of lamps may be arranged in tandem order, the tubes 13 being connected by a neck 13^b formed by contracting a portion of the tube as originally formed upon a portion of a wire 12 extending through both tubes.

The many advantages resulting from the improved lamp or lamp unit construction above described will be readily apparent to

those skilled in the art, without further description.

The helically coiled portion of the wire may extend continuously from one of the contracted portions or nipples 13^a to the other, thus forming a concentrated filament. The wire 12 may be either round or flat-sided wire.

The invention may be embodied in a vacuum lamp, air being exhausted from the tube, or in a gas lamp, the tube containing any suitable rare gas such as nitrogen, argon, etc.

I claim:

1. A cluster lamp comprising a plug member having an enlarged head, a second head substantially corresponding to the first head and held spaced therefrom by a connecting rod, a plurality of resilient clips arranged around the edges of the heads, a plurality of lamp units adapted to have their ends engage with the clips on said heads, and a plurality of reflectors between said heads and behind said units.

2. A cluster lamp comprising a holder consisting of two heads held in spaced relation by a rod secured at the center of the heads, one of said heads having a threaded plug rising from the outer face thereof, a plurality of arcuate reflectors disposed between the heads adjacent the edges thereof and arranged edge to edge with their concave faces exposed, a plurality of resilient clips secured to the edges of the head, and a plurality of lamp units adapted to extend longitudinally of the holder and having their opposite ends engaging with the resilient clips on the heads, each of said units being arranged before one of said reflectors.

In testimony whereof I have affixed my signature.

GEORGE O. WILLEY.