July 1, 1930. W. M. JOHNSON 1,769,840

METHOD OF MAKING ELECTRIC LAMPS

Filed Aug. 25, 1928

Fig. 1

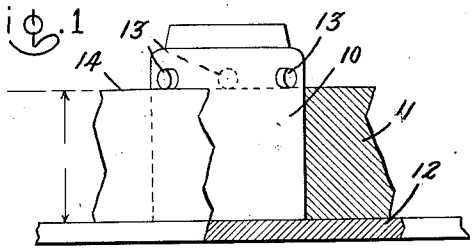


Fig. 2

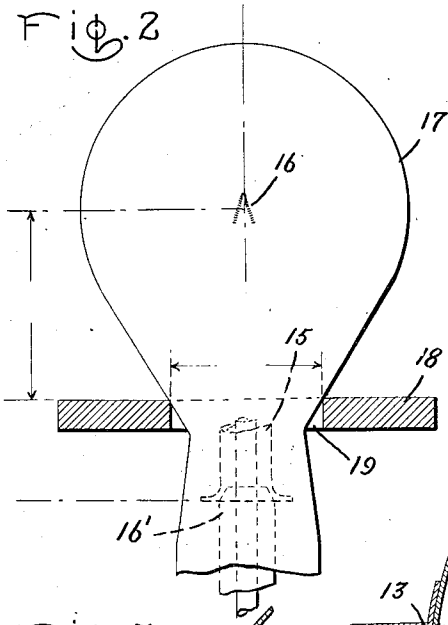


Fig. 3

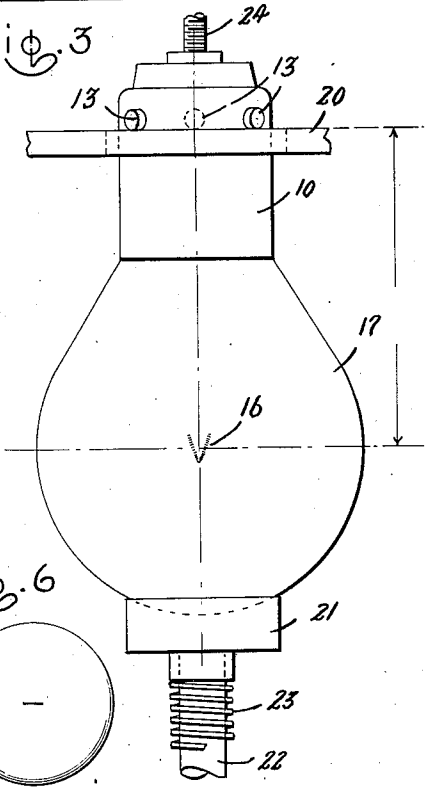


Fig. 6

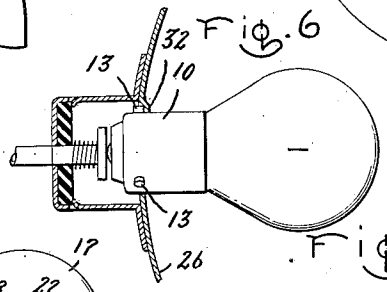


Fig. 5

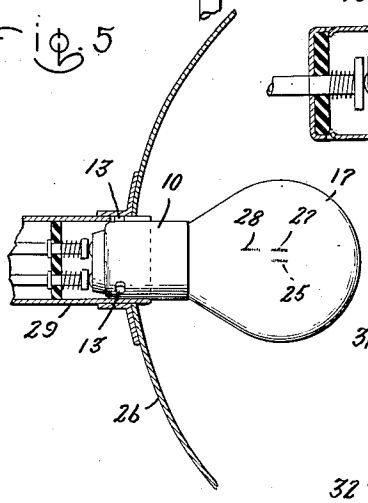


Fig. 4

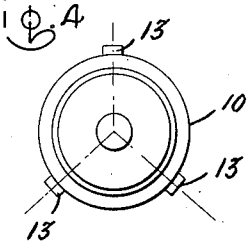
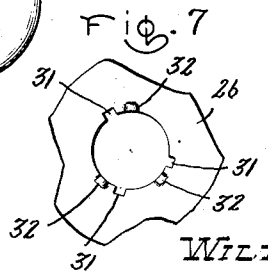


Fig. 7



INVENTOR:
WILBER M. JOHNSON,
BY Charles E. Mullen
HIS ATTORNEY.

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UNITED STATES PATENT OFFICE

WILBER M. JOHNSON, OF EAST CLEVELAND, OHIO, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

METHOD OF MAKING ELECTRIC LAMPS

Application filed August 25, 1928. Serial No. 302,096.

My invention relates to electric lamps comprising a filament or other light source enclosed in a bulb and connected to a base which is united to said bulb, and more particularly to methods for manufacturing such devices so that the light source will have a definite relation to the said base. My invention is of particular advantage in the manufacture of lamps for projection purposes. Such lamps are ordinarily used with a reflector such as the well-known paraboloid reflector of the automobile headlamp. It is highly desirable that such lamps be accurately made so that when inserted in the headlamp, for instance, the filament will have a definite relation with the reflector. My invention provides a method of manufacture whereby the filament is positioned definitely with respect to a part or parts of the lamp base such as the pins which are later used to locate the lamp with reference to the reflector. Upon the insertion of the lamp these pins enter slots in the lamp socket or the reflector itself, which are definitely located with reference to the reflector and consequently this insures the definite location of the filament with reference to the said reflector. Various other features and advantages will appear from the detailed description of a species thereof which follows and from the accompanying drawing.

In the drawing Fig. 1 is a fragmentary elevation partially in section of a gauging die for accurately positioning the base pins on an electric incandescent lamp base; Fig. 2 is a fragmentary elevation of a portion of a sealing-in machine; Fig. 3 is a fragmentary elevation of a portion of an incandescent lamp basing apparatus; Fig. 4 is a plan view of one form of electric incandescent lamp base having three pins; Fig. 5 is a fragmentary elevation of an electric incandescent lamp, its socket and associated reflector; Fig. 6 is a fragmentary sectional side elevation of a modification; and Fig. 7 is a fragmentary front elevation thereof.

Referring now to the drawing and more particularly to Fig. 1, an electric incandescent lamp base 10 of the bayonet type is placed in a gauging die 11 so that its open end rests upon the upper flat surface of the plate 12 thereof. The base pins 13 are next united to the base by the usual pin inserting operation and positioned so that they rest upon the top 14 of the gauge which is a predetermined distance from the upper flat surface of the plate 12.

As shown in Fig. 2, a lamp mount comprising the stem 15 and filament 16 is placed on a mount pin 16′ forming part of a sealing-in head (not shown). This may form part of a machine such as disclosed in U. S. Patent No. 1,475,192 issued to Marshall. A bulb 17 is then placed over the mount. In order to definitely locate the filament 16 with respect to a portion of the bulb, I incorporate in the sealing head a gauging plate 18 having an aperture 19 which engages a portion of the bulb during the sealing operation. The diameter of the aperture 19 is the same as the diameter of the open end of the base 10. The axial alignment of the filament is insured by the centering of the amount through its exhaust tube and flange and the focal length is fixed by the disposition of the filament a fixed distance from the plate 18, since the base will later contact with that portion of the bulb which is of the same diameter and which is engaged by the said plate during the sealing-in operation.

After the mount comprising the stem 15 and filament 16 has been accurately sealed in the bulb, the sealed unbased lamp is transferred to a basing apparatus. In Fig. 3 is shown a portion of a head forming part of a basing apparatus (not shown), comprising a base holding gauge 20 and a spring tensioned bulb holder 21 carried on the end of a spindle 22. Such an apparatus is disclosed in U. S. Patent No. 856,129 issued to Burrows. In loading the basing head, a lamp base 10 lined with cement is placed in the gauge 20 so that the base pins 13 rest upon the top face of the said gauge. By using three base pins I establish a fixed plane of reference including the lower surface of the pins, as shown in Fig. 3. The accurately sealed unbased lamp is next placed on the holder 21 and the spindle 22 is raised through its spring 23 and the lamp bulb projects into the open end of the

base until the edge of the base engages the bulb. An adjustable stop 24 which bears against the top of the base 10 tends to hold it in position during the basing operation.

A base having three pins of unequal spacing as shown in Fig. 4 insures that the lamp is inserted in the proper position. This is desirable especially for multiple filament incandescent lamps. Such a lamp having three filaments is shown in Fig. 5 and has a filament 25 at the focus of the reflector 26, a filament 27 above the said focus, and a filament 28 also above the focus and behind the filament 27. In the form shown in Fig. 5 a socket 29 is carried by the reflector 26 and has slots definitely located with reference to the focus of the reflector to receive the pins 13.

In Figs. 6 and 7, the slots 31 are in the reflector itself and the indentations 32 are provided to finally position the pins of the base after insertion and partial rotation of the lamp.

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

1. The method of making a precision electric lamp which consists in positioning a base by means of a plane surface engaging at least three pins laterally projecting from said base and all located at the same fixed distance from the open end thereof, inserting into said open end the neck of a bulb having sealed therein a light source located in the axis of said bulb and a fixed distance from a circle on said bulb surface normal to said axis and of the same diameter as the end opening of said base with the bulb axis normal to the said plane surface and then uniting said base to said bulb.

2. The method of making a precision electric lamp which consists in positioning a base having a plastic lining by means of a plane surface engaging at least three pins laterally projecting from said base and all located at the same fixed distance from the open end thereof, inserting into said open end the neck of a bulb having sealed therein a light source located in the axis of said bulb and a fixed distance from a circle on said bulb surface normal to said axis and of the same diameter as the end opening of said base with the bulb axis normal to the said plane surface and then heating said base to harden said lining.

In witness whereof, I have hereunto set my hand this 22nd day of August, 1928.

WILBER M. JOHNSON.