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ASSEMBLING FIXTURE FOR COLOR LIGHT SIGNALS

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Fig. 1.

Fig. 2.

Fig. 3.

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This invention relates to apparatus for facilitating the manufacture or assembly of light signals for railway signaling purposes, and more particularly to an assembling fixture by means of which a lamp socket or similar lamp support may be accurately positioned with respect to a lens, reflector, or similar optical device.

Light signals for railway signaling uses, in order to have the desired range and spread, require a concentrated source of light accurately located with respect to the focal point of the lens, reflector, or the like used to concentrate and direct the light rays. Incandescent lamps with concentrated filament constitute a simple and convenient source of light for such signals, but incandescent lamps of commercial manufacture do not have their filament ordinarily accurately located with regard to their bases, so that when a lamp is put in a signal to replace one burnt or otherwise unfit for service, a new adjustment must usually be made to bring the filament of the new lamp in the proper place to give the signal the necessary visibility. Such adjustment every time a lamp is replaced is inconvenient and expensive, particularly since two experienced workmen are required, one to make the adjustment and the other to stand at a distance and determine from the appearance of the signal when the proper adjustment has been made.

To obviate the need for such objective adjustment every time a new lamp is put in service, it has been proposed to rebase or adapt a commercial lamp in a suitable way so that their filaments will always stand in a predetermined relation with respect to the socket in which the lamp is placed, the socket in the several light signals being properly located with relation to the lens or the like, such that this position of the filament is the proper one. The present invention deals with the manufacture of a standardized line of light signals capable of receiving such re-based lamps.

The lamp socket best suited for light signals is of the bayonet slot type, and is ordinarily made of relatively light material. Further, these sockets are usually fastened to terminal blocks of porcelain or a similar moulded insulating material. The sockets and blocks, when manufactured in quantities by commercial methods, vary somewhat, so that for accurate results, the lamp receptacle, made up of the porcelain block and the socket must be individually positioned with respect to the lens. According to the present invention it is contemplated that the lamp receptacle will be supported by something having a direct relation to the lens, and the bezel ring or retaining member for the lens is particularly well adapted for this purpose, since it can be easily handled outside of the signal casing separately from the other parts. To take care of the variations in the socket and its supporting block, provisions are made to rigidly fasten the block to the bezel ring in any adjusted position, the desired adjustment having been predetermined so that the socket bears the desired relation to the bezel ring.

One of the objects of the present invention is to devise a simple and efficient assembling fixture by means of which a bayonet type socket may be accurately located with respect to a bezel ring or similar member.

Other features and objects of the invention will appear as the detailed description progresses.

In describing the invention in detail, reference will be made to the accompanying drawings, in which:

Fig. 1 shows in vertical section a typical light signal, in the construction of which the specific embodiment of the invention illustrated may be employed;

Fig. 2 is a side view, partly in section, illustrating the inner bezel ring of the signal shown in Fig. 1, together with an assembling fixture embodying the invention attached thereto in operative position; and

Fig. 3 shows a front view of the bezel ring and assembling fixture.

In order to explain more easily the nature of the present invention, there is illustrated in Fig. 1, one typical form of a light signal adapted for railway signaling. The particular construction of this signal forms no part of the present invention, and comprises in general a cast iron casing 1 provided with a hinged door 2, an outer clear lens 3, an inner colored lens 4, a lens support or barrel 5, and a hood 6. The two lenses 3 and 4 are attached to the lens barrel 5 with their edges bearing directly against finished surfaces associated with this lens barrel, so that the lenses are accurately located with respect to each other and have a definite point at which the source of light should be located.
In the particular construction illustrated, the inner lens is held in place by a retaining member or bezel ring 7, consisting of a ring portion and two extensions 7', as best shown in Fig. 3. This bezel ring 7 is forced directly against the edge of the inner lens 4 by three screws 8, a suitable gasket being preferably interposed between the lens and the recess therefor formed in the lens barrel.

The lamp 9, constituting the source of light, is of the concentrated filament type, and is provided with a base which positions the lamp in the socket with its filament at a predetermined point with respect to that socket. The way in which this lamp is adapted or rebased to bring its filament always in the proper position, forms no part of the present invention. The base of this lamp 9 is made to fit in a bayonet type socket 10 of the usual construction, rigidly fastened to the top of a porcelain terminal block 11. The block 11 is rigidly fastened by screws 12 to a cross-bar 13, which in turn is fastened at its ends to angle brackets 14 (see Fig. 3). The cross-bar 13 is fastened to the projecting legs of the angle brackets 14 by screw bolts 21 passing through enlarged holes 14a in the cross-bar or bracket, as preferred, so as to permit the cross-bar to be fastened in different positions in the plane of said projecting legs. The angle brackets 14 are fastened to the extensions 7 of the bezel ring 7 by screw bolts 22 which pass through slots 7a in said extensions, so that said brackets can be separately raised and lowered to tilt the cross-bar 13. It will be noted that this construction provides various adjusted positions of the socket with respect to the bezel ring.

The proper position of the socket 10 relative to the bezel ring is that where the socket has such a space relationship to the bezel ring 7 that a rebased or standardized lamp 9, intended for the particular signal, will have its filament located at the proper and desired point with respect to the lens held by said bezel ring, when this lamp is inserted in the socket. After the particular location of the socket with relation to the lens retaining bezel ring has been determined by calculation or experiment, for the size and type of standardized lamp to be used, then the several sockets for a series of light signals are made to have the required location to the bezel rings during the process of manufacture by a fixture comprising a circular plate or base member 15 to which are riveted three posts 16 spaced the same as the holes in the bezel ring 7 for the screws 8, the ends of said posts being tapped to receive these screws. In the center of the plate 15 is a square hole in which fits snugly the square shank 23 of an aligning member or socket supporting bracket B, shown as made of two bars rigidly bolted together. The bracket B is clamped to the plate 15 by a thumb nut 18 and washer, as shown in Fig. 2. The outer end or tip 19 of bracket B is round in cross section and provided with pins 20 so as to correspond with the base of the lamp 9 and fit in the socket the same as the lamp base. The usual spring-pressed center contact associated with the socket 10 positively holds the socket on the tip 19 of the bracket B, seating the pins 20 firmly in the bayonet slots of the socket.

The manipulation of the device is as follows:

The bracket B and plate 15 are first assembled, and a lamp socket 10 with its attached porcelain block 11, is applied to the tip 19 of the bracket. A bezel ring 7 is then fastened to the plate 15 by screws 8. A cross-bar 13, and the angle brackets 14, are now added and fastened by their screw bolts to hold the block 11 and socket 10 in the position determined by the fixture; or, if preferred the cross-bar 13 and angle brackets 14 may be loosely attached to the block 11 before the bezel ring 7 is fastened to the plate 15. In either case the parts are shifted and tightened with care to avoid springing the socket or introducing any stresses which would tend to displace the socket when freed. If necessary, the angle brackets 14 may be bent slightly so as to fit flat against the bezel ring 7, or to make the cross-bar 13 seat properly on these brackets. The socket is now held in the correct position to receive any lamp which has been rebased or initially manufactured to have a fixed location of its filament with relation to its base suitable for the particular signal, and it is intended that the adjustment made in this way at the factory is permanent and should not be disturbed.

Since it is necessary to turn the bracket B and socket 10 relative to each other to disengage the pins 20 from the bayonet slots of the socket, it is necessary to remove the plate 15 separately from the bezel ring before the bracket can be disengaged from the socket, the socket now being held against the same turning movement by which it was applied by its fastening to the bezel ring. To do this, the thumb nut 18 and washer are taken off, the screws 8 removed, and the plate 15 pulled away from the bracket B, whereupon the bracket may be given the partial turn necessary to disengage its tip 19 from the socket. By employing the assembling fixture embodying this invention, it is possible to obtain the desired position of the lamp sockets relative to bezel rings or similar members in a simple, effective and cheap manner. Since the work is done in a most direct way on a single part that can be easily and conveniently handled, the assembly can be more accurately and cheaply performed, than where a socket must be assembled accu-
rately to the lens or other part in place in the signal casing. It will be obvious that the manipulation of the fixture requires no special skill or training, and yet assures accurate results in all cases.

The invention has been described in connection with one specific type of signal, and obviously the particular construction shown and described may be modified and adapted for use in the manufacture and assembling of other specific types of signals, without departing from the invention; and I desire to have it understood that the construction shown and described is merely illustrative of the nature of the invention.

What I claim is:

1. An assembling fixture of the character described for use in the manufacture of light projecting devices employing lenses to position bayonet type lamp sockets in the various devices so that these sockets have the same uniform space relation to their corresponding lenses, said fixture comprising a member shaped to detachably engage at three or more points the surface of a lens retaining part of the light projecting device, and another member having a cylindrical end portion with radial pins to fit the lamp sockets, and means for holding said members together in that particular relation corresponding to the desired location of the sockets to the lenses, said members being reattively movable when the holding means is released to permit disengagement of the second member from the socket after the socket has been fixed at the desired point.

2. An assembling fixture of the character described for positioning lamp sockets of the bayonet type in a predetermined space relation to a bezel ring or like lens retaining element, comprising a plate attachable to said retaining element in a particular prescribed relation, and a bracket detachably secured to said plate and extending angularly therefrom, the outer end of said bracket having a cylindrical portion with radial pins to fit the lamp sockets, said bracket being separable from the plate to permit disengagement of said end portion from a lamp socket after the lamp socket has been secured in place.

3. An assembling fixture of the character described comprising, a plate having a non-circular hole therethrough, and a bracket detachably and non-rotatably fastened at one end in said hole and having its opposite end shaped to fit a lamp socket.

4. An assembling fixture of the character described comprising, a base member, and a bracket member supported by said base member in a prescribed relation, said bracket member having a cylindrical portion with radially extending pins adapted to fit a bayonet type lamp socket, by the use of which assembling fixture lamp sockets may be secured in a uniform fixed relation to parts with which the base member engages.

In testimony whereof I hereby affix my signature.

SALISBURY M. DAY.