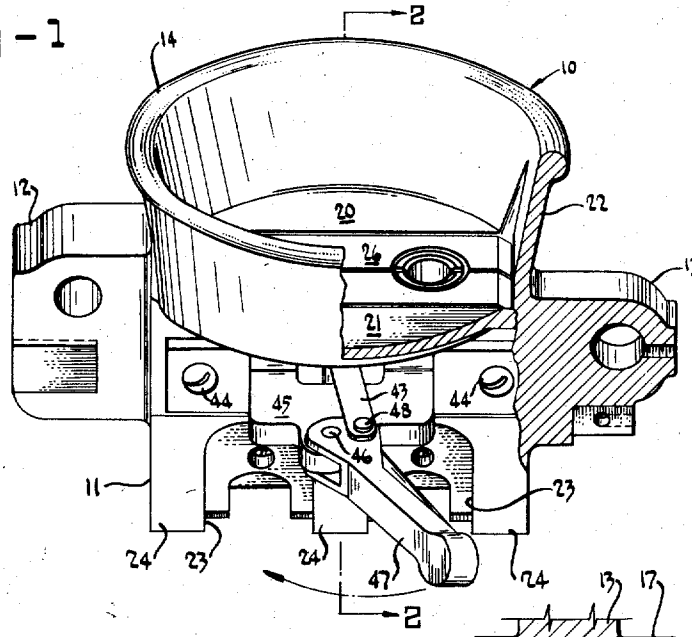
May 12, 1959 R. L. LOGAN Re. 24,647

SOCKET FOR STUDIO LAMP OR THE LIKE

Original Filed Dec. 20, 1954

Fig - 1



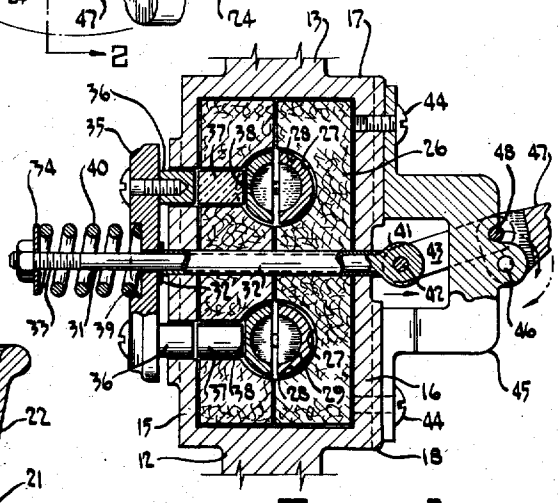


Fig - 3

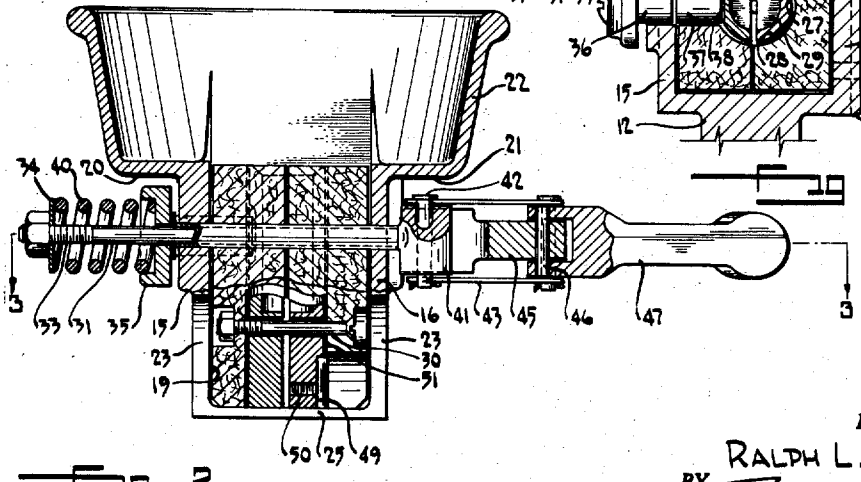


Fig - 2

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SOCKET FOR STUDIO LAMP OR THE LIKE

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12 Claims. (Cl. 339—75)

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

This invention relates generally to lamp sockets and more particularly to an improved lamp socket for use in studio and flood lamps such as are employed for set illumination in motion picture and television studios.

The light globes generally employed in lamps of the above type are of relatively high wattage and comprise a large glass envelope enclosing the filaments and a bi-post form of base structure including extending posts or prongs which are connected at their inner ends to the filaments.

Heretofore, the sockets for such lamps have generally assumed two forms, each of which forms included a pair of longitudinally split socket elements disposed within the lamp socket housing for receiving the posts extending from the base of the light globe. In one of these prior socket arrangements, the posts of the light globe were retained within the split socket elements by screws, or other positive means, which were manually operated to force the split portions of the socket elements together whereby to clamp the light globe posts therebetween.

In another prior lamp socket arrangement, the split portions of the socket elements were urged together by springs, or the like, and the light globe was inserted in the lamp socket by axially forcing of the light globe posts into the socket elements whereby the split portions of the latter would be separated against the action of the springs.

Owing to the relatively high temperatures at which the light globes operate, substantial expansion is produced in the parts of the lamp socket. Because of this expansion of parts, the prior socket arrangements employing positive means for clamping the light globe prongs in the split socket elements have proved to be unsatisfactory. Thus, after the lamp had been operated a few times, expansion and contraction of the parts would cause loosening of the light globe posts in their socket elements with the resultant possibility of accidental separation of the light globe from the socket where the lamp was tilted or inverted. This, of course, would create not only an inconvenience but also a safety hazard to personnel.

Moreover, carelessness on the part of personnel inserting the globe might result in the globe not being properly secured in the socket owing to insufficient drawing up of the clamping screws.

The foremost disadvantage of such loosening of the light globe posts was, however, the possibility of the creation of an arc between the posts, which are of relatively thin tubular construtcion, and the socket elements. Such electrical discharges would, within a short period of time, eat through the thin walls of the posts, which have their interior in communication with the interior of the globes, with the resultant admission of air to such interior and hence destruction of the globe filaments.

While those prior socket arrangements employing spring biased split socket elements effectively avoided the above disadvantages of the positively clamped split socket arrangements, owing to the ability of the springs to

maintain firm contact between the split socket portions and the posts, the spring tension necessary was relatively high. Substantial axial force was, therefore, required to insert the light globe posts into their socket elements with the resultant creation of an extreme safety hazard to personnel due to the possibility of the relatively thin glass envelope of the globe collapsing under such force.

Accordingly a general object of this invention is the provision of an improved lamp socket for use in studio or flood lamps.

Another object of the invention is the provision of such a lamp socket, for use with a light globe having a bi-post base structure, which is effective to maintain the posts of the light globe securely clamped within their socket elements over substantially unlimited periods of time whereby to effectively eliminate the possibilities of destruction of the light globe due to the formation of arc discharges between the posts and socket elements, and accidental separation of the globe from the socket.

A further object of the invention is the provision of a lamp socket as in the foregoing wherein insertion of the light globe into the socket may be readily accomplished with a minimum of applied force whereby to substantially eliminate the possibility of globe breakage and which is not susceptible to improper securing of the globe in the socket by careless personnel.

The invention will be more fully understood from the following detailed description thereof, reference for this purpose being had to the accompanying drawings wherein:

Fig. 1 is a perspective view of a preferred embodiment of the present lamp socket with parts thereof broken away for the sake of clarity;

Fig. 2 is a section taken along line 2—2 of Fig. 1; and

Fig. 3 is a section taken along line 3—3 of Fig. 2.

As viewed in Fig. 1 of the drawing, the present lamp socket comprises generally a body portion **10** including a lower hollow rectangular portion **11**, having ears **12** and **13** extending from opposite faces thereof, and an upper, generally cup-shaped portion **14**.

Lower rectangular portion **11** comprises, as shown more clearly in Figs. 2 and 3, a pair of spaced parallel side walls **15** and **16** and a pair of spaced parallel end walls **17** and **18**, the latter having said ears **12** and **13** projecting therefrom. Side walls **15** and **16** and end walls **17** and **18** define therebetween a rectangular chamber **19** open at its upper end as shown in Fig. 2.

Upper cup-shaped potrion **14** of body **10** comprises a pair of generally sector-shaped bottom portions **20** and **21** extending laterally of side walls **15** and **16**, respectively, along the upper edges of the latter and an inverted conical wall **22** which merges, at its lower end with the outer peripheries of sector portions **20** and **21** and with the upper ends of end walls **17** and **18**, as shown.

Side walls **15** and **16** of rectangular portion **11** are formed with spaced slots **23** opening through their lower edges whereby to provide, in effect, three spaced leg portions **24** on each side wall. The corresponding leg portions **24** of the two side walls are joined at their lower ends by straps **25** extending across the bottom of chamber **19**.

The aforedescribed body **10** of the lamp socket may be in the form of an integral casting, as illustrated, or, if desired, may be constructed of separable portions welded or otherwise joined together. Ears **12** and **13** are provided with bores and are notched in a conventional manner, as shown, to provide for mounting of the socket within a lamp housing, not shown.

Loosely fitted in chamber **19** and resting on straps **25** is a block of insulating material **26**, such as some form of asbestos, capable of withstanding the high temperatures encountered in studio and flood lamps. Block **26**

has formed therethrough a pair of spaced, parallel bores **27**, extending parallel to walls **15** through **18**, for receiving a pair of socket elements **28** for receiving posts of a light globe.

The spacing between the center lines of bores **27** is made to correspond substantially to the distance between centers of the posts on the light globe to be inserted thereinto. Moreover, the diameter of bores **27** is made somewhat greater than the diameter of the socket elements **28**, as shown, so as to accommodate for slight variations in post spacing by lateral movement of the socket elements in the bores. Insulating block **26** may be split along a plane including the axes of bores **27**, as illustrated, to accommodate for expansion of the lamp socket parts during lamp operation.

Socket elements **28** have bores **29** axially extending part way therethrough from the upper ends thereof and the socket elements are longitudinally split along a diameter, as clearly shown in Figs. 2 and 3. The arrangement is such that when the posts of a light globe are positioned in bores **29**, the split portions of each socket element will be slightly spaced to permit clamping of the posts in the socket elements by forcing of the split sections toward each other. Socket elements **28** are retained in bores **29** by means of recessed bolts **30** extending through insulating block **26** and through enlarged bores in socket elements **28**, as shown in Fig. 2.

The novel means of this invention for urging the split portions of the socket elements together comprises a clamp rod **31** axially slidable in a bushing **32** the latter extending slidably through and projecting somewhat beyond side walls **15** and **16** and through insulating block **26**. One end of rod **31** is threaded as at **33** for receiving a nut against which abuts a collar or washer **34**. Slidably mounted intermediate its ends on clamp rod **31** is a transversely extending clamp bar **35** fixedly carrying adjacent its ends, in outrigger fashion, a pair of cylindrical plungers **36** which are axially movable in bores provided in side wall **15**, as shown. Insulating block **26** has provided therethrough a pair of bores in alignment with the above-mentioned side wall bores and having slidably disposed therein a pair of cylindrical spacers **37** of ceramic or other suitable electrically insulating material. Spacers **37** are movable into engagement with flat portions **38** milled, or otherwise formed in the sides of socket elements **28**.

Encircling clamp rod **31** between collar **34** and clamp bar **35** and abutting at one end the collar and at the other end the bottom of an annular spring retaining seat **39** formed in the bar **35**, is a compression spring **40** whereby upon axial movement of clamp rod **31** to the right, as viewed in Figs. 2 and 3, spacers **37** will be urged against socket elements **28** to force the split portions of the latter together.

To the end that such clamping action may be achieved, clamp rod **31** is formed at its right hand end, as seen in Figs. 2 and 3, with an enlarged apertured portion **41** to which is pivotally secured, as by a pin **42** passing through said aperture, one end of a pair of toggle links **43**. Bushing **32** abuts at one end the enlarged portion **41** of rod **31** and at the other end a washer **32'** which in turn abuts the clamp bar **35**, as shown.

Fixed to side wall **16**, as by screws **44**, is a generally yoke-shaped support **45**, the bight portion of which is straddled by the toggle links **43** as clearly shown in Fig. 2. Pivoted to yoke **45**, as by having a bifurcated portion straddling the yoke and a pin **46** extending through the bifurcations and yoke, is a toggle lever **47** having pivotally secured thereto in spaced relation to the lever pivotal axis **46**, as at **48**, the other ends of the toggle links **43**.

The socket elements **28** are cut away as at **49** to provide a flat recessed face and provided with a tapped hole as at **50**, accessible through the slots **23** in side wall **16** and alined slots **51** in insulating block **26**, to provide means for connecting the socket elements to a source of electrical power, not shown.

The operation of the present lamp socket will be apparent from the foregoing description. The nut on the threaded portion **33** of clamp rod **31** is rotated to provide in the spring **40** a desired initial tension such that upon subsequent operation of the toggle lever, the split portions of the socket elements **28** will be urged together with a desired force. During this initial tensioning of spring **40**, clamp bar **35** and washer **32'** will be urged against the end of bushing **32**. With the toggle lever disposed in the position shown in Fig. 3, the light globe posts may be easily inserted into the socket elements **28**, the split portions of the latter now being freely separable to permit such insertion with a minimum of axial force. To cause spacers **37** to be resiliently urged against the split socket elements **28** with a force determined by the initial tension in spring **40**, whereby to force the split portions of the latter into clamping engagement with the light globe posts, toggle lever **47** is swung in the direction indicated by the arrows in Fig. 3 to a position wherein pin **48**, joining the toggle links **43** to the lever, is past dead center and lever **47** abuts yoke **45**. The toggle lever will thus be retained in its clamping position until released.

It will be appreciated that the present lamp socket arrangement provides for relatively free insertion of a light globe so as to substantially eliminate the possibilty of collapse of the light globe envelope during assembly of the globe and socket. Moreover, the toggle and spring assembly for effecting clamping of the light globe posts in the socket assures efficient contact between the posts and socket elements over substantially unlimited periods of time whereby the possibility of destruction of the light globe as a result of arc discharges between the prongs and socket elements or due to accidental separation of the socket and light globe is eliminated without the necessity of frequent and regular inspections of the lamps. The loose mounting of the clamp bar **35** on the clamp rod **31** and the engagement of spring **40** with the bar intermediate the plungers **36** permits limited rocking movement of the bar and assures substantially equal clamping pressures of the spacers **37** against their respective sockets.

Finally, it will be seen that the present socket arrangement precludes improper securing of the light globe in the socket by careless personnel, since unless the toggle lever is swung to its clamping position past dead center it will return to its original position. Thus, it will be immediately apparent to such personnel that the light globe has not been properly clamped in the socket.

It will be readily apparent from the foregoing that the invention is susceptible to numerous modifications in design and arrangement and, therefore, that within the scope of the following claims the invention may be practised otherwise than as specifically described and illustrated herein.

I claim:

1. A lamp socket for use with a light globe of the type having a base and spaced posts extending therefrom, comprising, a hollow body portion, a mass of insulating material within said body portion and including a plurality of parallel bores having a spacing substantially equal to the spacing between the light globe posts, a split socket element within each of said bores for receiving the light globe posts, the transverse dimensions of said socket elements being somewhat less than those of the bores whereby to permit limited lateral movement of the socket elements in the bore; and means for forcing the split portions of the socket elements together whereby to clamp said posts therebetween, comprising an actuating rod movably mounted in the housing, a clamp bar including extensions movable in bores in the housing, spacer elements movable in bores formed in said insulating material in alinement with the second mentioned bores and opening into said first mentioned

bores, said spacer elements being engageable with said extensions and with said socket elements, a spring operatively connecting said rod and bar whereby movement of the rod in one direction will cause said spacer elements to be resiliently urged against the socket elements to force the split portions of the latter together, and manually operable means for moving the rod.

2. A lamp socket according to claim 1 wherein said spacer elements are formed of an electrical insulating material.

3. A lamp socket according to claim 1 wherein said manually operable means comprises a toggle lever pivoted to the body portion and toggle links operatively connecting the rod and lever.

4. A lamp socket according to claim 1, and means for providing a desired initial tension in said spring.

[5. A lamp socket for use with a light globe including a base and spaced posts extending from the base, comprising a body portion formed of a one piece casting and including a cup-shaped portion for receiving the light globe base and a hollow portion depending from the under side of the cup-shaped portion and having its interior opening through the bottom of the cup-shaped portion, a block of insulating material within said hollow portion and including a pair of parallel bores opening at one end into said cup-shaped portion and having a spacing substantially equal to the spacing of the light globe posts, a pair of split socket elements in the bores for receiving the light globe posts and having a diameter somewhat less than the diameter of said bores whereby to be capable of limited lateral movement in the bores, said socket elements having means for the connection thereof to a source of electrical power, a clamp rod slidably extending through said hollow portion and the insulating material therein, a transverse clamp bar slidably mounted on the rod, electrically insulating spacer elements movably mounted in alined bores in the wall of the hollow portion and in the insulating material opening into the first mentioned bores and being engageable with the socket elements and clamp bar, a spring operatively connecting the clamp rod and clamp bar whereby movement of the rod in one direction will cause said spacer elements to be resiliently urged against the socket elements to force the split portions thereof together, and toggle means for moving the rod.]

[6. A lamp socket according to claim 5 wherein said toggle means comprises a toggle lever pivoted to said body portion and toggle links operatively connecting the lever and clamp rod.]

[7. A lamp socket according to claim 5 and means for providing a desired initial tension in said spring.]

[8. A socket for holding a light globe and the like having a base and a pair of spaced parallel posts extending from the base, comprising: a body, a pair of split sockets carried by the body for receiving said posts, clamping means on the body including a clamp bar in a transverse plane of said split sockets and socket engaging means spaced along the bar in said plane for engagement with the split sockets respectively, said bar being rockable in said plane and movable toward said split sockets for moving said socket engaging means into forced engagement with their respective split sockets for forcing the split portions thereof together, a spring operatively engaged at one end with said bar intermediate said socket engaging means, and means carried by the body for releasably tensioning said spring to resiliently urge said bar toward the split sockets.]

[9. The subject matter of claim 8 wherein said last mentioned means comprises means movably supporting said bar and spring on the body for movement thereof as a unit toward and away from said split sockets, said bar being movable on said supporting means toward and away from said split sockets and being biased on the supporting means in the direction of the split sockets by said spring, stop means on said supporting means for limiting the movement of the bar relative to the support in said direction, means on the supporting means engaging the other end of the spring and being adjustable to provide an initial tension in the spring with the bar engaged with said stop means, and means for moving said supporting means toward the split sockets to first bring said sockets engaging means into engagement with the split sockets and thereafter increase the tension in the spring above said initial tension.]

[10. The subject matter of claim 9 wherein said means for moving the support means comprises a toggle device.]

11. A lamp socket for a light globe having a base and a pair of spaced, parallel posts extending from the base, comprising: a hollow metal body open at one side, a block of insulating material in said body having one side exposed through said open side of the body, said block having a pair of first parallel bores opening through said one side of the block, a pair of split post-receiving sockets in said bores, said block and one wall of said body having pairs of aligned, parallel second bores in a transverse plane of and opening to said first bores, clamping means for forcing the split portions of said sockets together including a rigid clamp bar in said transverse plane and having its ends overlying the outer ends of said aligned bores, electrical insulating spacer elements slidable in said second bores of the block and engageable with said split sockets, means engaging between said bar ends and said spacer elements for urging the latter against said split sockets when said bar is moved toward said body, a clamp member rockably connected to said clamp bar intermediate said ends, said member being movable in one direction to move said clamp bar toward said body to a clamping position wherein said spacer elements are urged against the split sockets and in the opposite direction to relieve the pressure of said elements on the split sockets, said clamp bar being rockable in said plane on the member to assure approximately uniform clamping pressure of said elements on said split sockets, and means connected to said body and member for moving the latter in said directions and for locking said clamp bar in its clamping position.

12. The subject matter of claim 11 wherein said clamping means further includes yieldable means for resiliently urging said spacer elements against the split sockets.

13. A lamp socket for a light globe having a base and a pair of spaced, parallel posts extending from the base, comprising: a hollow metal body open at one side, a block of insulating material in said body having one side exposed through said open side of the body, said block having a pair of first parallel bores opening through said one side of the block, a pair of split post-receiving sockets in said bores, said block and one wall of said body having pairs of aligned, parallel second bores in a transverse plane of and opening to said first bores, clamping means for forcing the split portions of said sockets together including a rigid clamp bar in said transverse plane and having its ends overlying the outer ends of said aligned bores, electrical insulating spacer elements slidable in said second bores of the block and engageable with said split sockets, means engaging between said bar ends and said spacer elements for urging the latter against said split sockets when said bar is moved toward said body, a toggle connection between said body and clamp bar for moving the latter toward the body to and releasably locking the bar in a clamping position wherein said spacer elements are urged against said split sockets, said toggle connection having one link pivoted on said body and a second link, and means rockably connecting said second link to said clamp bar intermediate said ends thereof for rocking of the clamp bar in said plane to assure approximately uniform clamping pressure of said spacer elements on said split sockets.

14. A lamp socket for use with a light globe including a base and spaced posts extending from the base, comprising a body portion formed of a one-piece casting and

including a cup-shaped portion for receiving the light globe base and a hollow portion depending from the underside of the cup-shaped portion and having its interior opening through the bottom of the cup-shaped portion, a block of insulating material within said hollow portion and including a pair of parallel bores opening at one end into said cup-shaped portion and having a spacing substantially equal to the spacing of the light globe posts, a pair of split socket elements in the bores for receiving the light globe posts and having a diameter somewhat less than the diameter of said bores whereby to be capable of limited alteral movement in the bores, said socket elements having means for the connection thereof to a source of electrical power, said block having a second pair of parallel bores extending transversely of and opening to said first-mentioned bores and through a side of the block, electrically insulating spacer elements slidable on said second pair of bores and engageable with said socket elements, the wall of said hollow portion having a third pair of bores aligned with said second pair of bores, a clamp rod parallel to said second pair of bores and extending slidable through said block and wall, a transverse clamp bar slidably mounted on said rod and overlying said third pair of bores, means on said clamp bar extending loosely through said third pair of bores and engaging said spacer elements, a spring operatively connecting the clamp rod and clamp bar whereby movement of the rod in one direction will cause said spacer elements to be resiliently urged against the socket elements to force the split portions thereof together, and toggle means for moving the rod.

15. A lamp socket according to claim 14 wherein said toggle means comprises a toggle lever pivoted to said body portion and toggle links operatively connecting the lever and clamp rod.

16. A lamp socket according to claim 14 and means for providing a desired initial tension in said spring.

17. A socket for holding a light globe having a base and a pair of spaced, parallel posts extending from the base, comprising a body, a pair of split sockets carried by the body for receiving said posts, a clamp bar in a transverse plane of said split sockets, a clamp member carried on the body and slidably supporting said clamp bar for movement toward and away from said split sockets, a spring acting between said clamp member and clamp bar for biasing the latter on the member in the direction of said split sockets, stop means on the member engageable by the clamp bar for limiting movement of the latter in said direction on the member under the action of said spring, means on the member for adjusting the tension of said spring when said clamp bar engages said stop means, manually operable means acting between said body and clamp member for moving the latter to move said clamp member, spring and stop means as a unit toward and away from said split sockets, and socket engaging means acting between said clamp bar and split sockets to force the split portions of the sockets together when said clamp bar is movd toward said split sockets by said manually operable means.

18. The subject matter of claim 17 wherein said socket engaging means are spaced along said clamp bar, and said clamp member comprises a clamp rod slidably supported on the body for axial movement in a direction parallel to said first-mentioned direction and extending loosely through an enlarged hole in the bar intermediate said socket engaging means whereby said bar is capable of limited rocking on the rod in said plane to equalize the clamping pressure on said split sockets.

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