

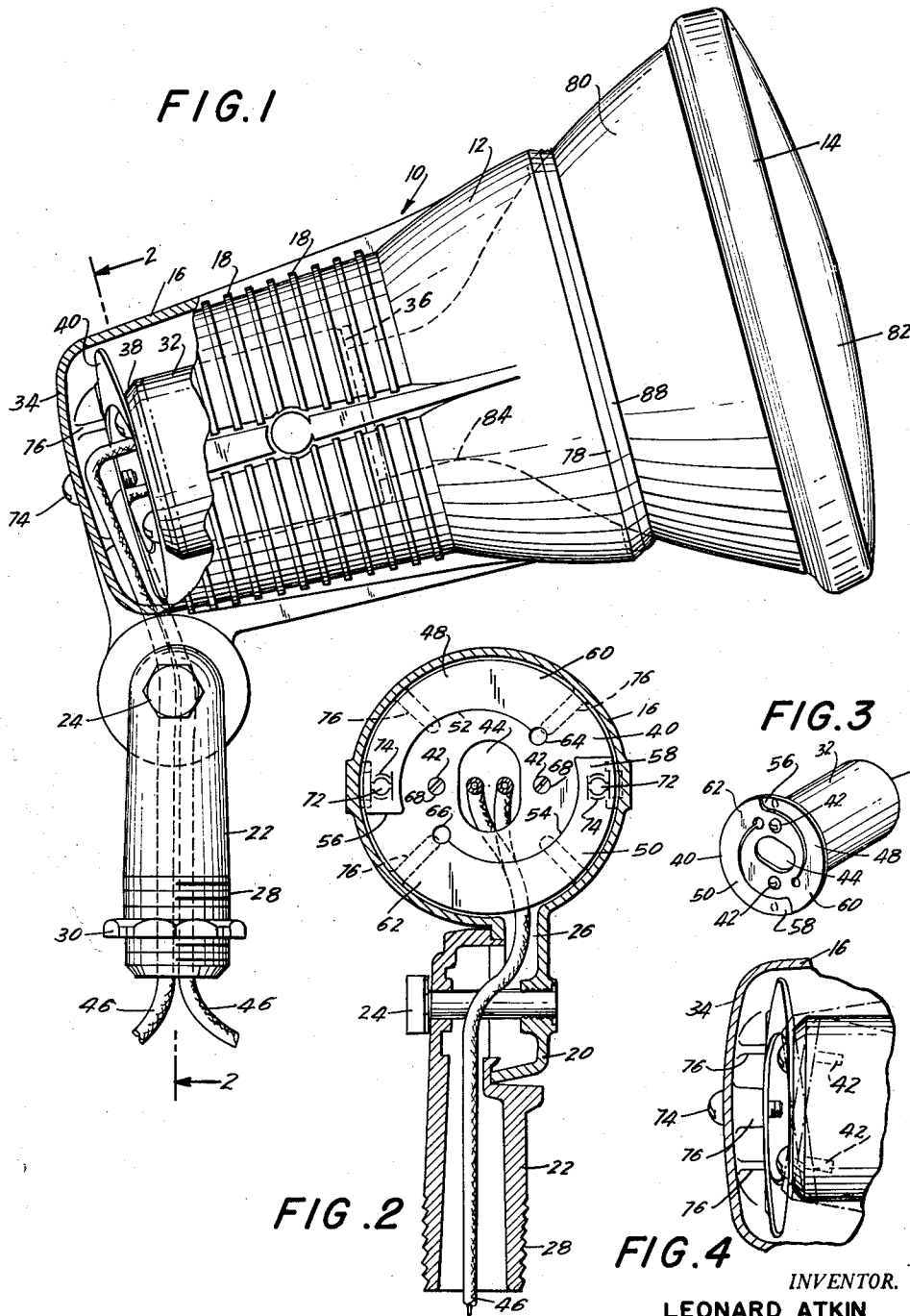
March 15, 1960

L. ATKIN

2,928,934

LAMP HOLDER

Filed Oct. 31, 1956



INVENTOR.
LEONARD ATKIN
BY *Abraham Friedman*
Atty.

1

2,928,934

LAMP HOLDER

Leonard Atkin, Springfield, N.J., assignor to Stone Manufacturing Co., a corporation of New Jersey

Application October 31, 1956, Serial No. 619,593

4 Claims. (Cl. 240—3)

This invention relates to lamp holders and more particularly to holders for electric lamps for use in outdoor lighting commonly designated as reflectors, flood or spot lamps.

Electric lamps of the type hereinabove indicated and to which this application particularly refers are usually formed with a shank or neck portion on one end of which a screw base is provided adapted to be engaged in a complementary socket while the other end of the lamp is enlarged and forms a bell shaped reflector. Electric lamps of this character are usually mounted in lamp holders of general cup shape. The base of the cup shape lamp holder is provided with a screw type socket mounted therein which is adapted to receive the screw base of the electric lamp and to make appropriate contact with the required electric conductors. Since lamp holders of this type are quite often employed for outdoor use, the holder is additionally provided with a lamp seat or a sealing ring for engagement with the peripheral surface of the enlarged or bell portion of the lamp envelope to form a weather proof or vapor tight seal therewith and as well as to provide an appropriate cushioning means between the lamp and holder surfaces. In order to appropriately effectuate the seal and cushion it has been found desirable to provide for a resiliently yielding connection between the socket and the lamp holder, which resilience and tension is of course communicated between the electric lamp and the body of the lamp holder. Furthermore, although lamps of this type are substantially uniform in configuration, certain unavoidable differences in dimensions do exist. Similarly, there may be variations in the socket and lamp holder mounts, as well as in the dimensions and physical characteristics of the seating and cushioning ring. It has therefore been found essential to provide the resiliently yielding connection above referred to for the purpose of compensating for these variations in order to accommodate various lamps and their replacements and to insure an efficient seal between the bell portion of the electric lamp envelope and the lamp holder therefor. Although a number of solutions have been suggested for resiliently mounting the socket within the lamp holder, such arrangements are cumbersome, costly and involve relatively complicated assembly procedures.

It is therefore an object of this invention to provide a socket mounting arrangement for a lamp holder of the character indicated which is adapted to compensate for variations in manufacture or size of either the electric lamp or portions of the lamp holder.

It is an additional object of this invention to provide means of the character indicated whereby the lamp holder is capable of accommodating itself to receive electric lamps varying in shank or neck length or bell diameter, within a reasonable range.

It is another object of this invention to provide an arrangement of the character indicated wherein the socket is resiliently supported for resiliently yielding axial movement as well as resiliently yielding lateral displacement so that when an electric lamp is screwed into the socket,

2

in addition to providing a "free floating" mount, the pressure of the bell portion of the lamp against the sealing ring of the lamp holder may be conveniently set to provide for an efficient seal therebetween while eliminating the possibility of fracturing the electric lamp.

Other and further objects, benefits and advantages of this invention will become apparent from the description thereof contained in the annexed drawings, specification and claims or will otherwise become obvious. It will be understood that the invention herein disclosed may be employed for other purposes for which the parts, structure and arrangement are adapted.

In the accompanying drawings:

Figure 1 is a side elevational view of a lamp and holder arrangement in accordance with the present invention partly broken away to show the socket mounting;

Figure 2 is a cross-section of Figure 1 taken along line 2—2 thereof;

Figure 3 is a perspective view of the socket and spring assembly shown removed from the holder; and

Figure 4 is a fragmentary cross-sectional view of the base of the lamp holder broken away to more clearly show the nature of the swivelling action of the socket mount.

As shown in Figure 1 the lamp assembly comprising the present invention is designated by the numeral 10. Said assembly is comprised of lamp holder 12 and electric lamp 14. The lamp holder 12 comprises a hollow cup shaped casing or housing 16 which may advantageously be formed as a metal casting although other suitable materials may be employed for this purpose. Housing 16 is also advantageously provided with a plurality of circumferential rings 18 which form cooling fins for the housing and aid in dissipating any heat which may be generated by the lamp within the housing, thus serving to maintain the housing at a lower and more even temperature. The base portion of the housing is provided with a depending ear 20 which is pivotally secured to supporting arm 22 by means of bolt 24. Supporting arm 22 is formed as a hollow member to permit the insertion of suitable electrical conductors therethrough and into the interior of the lamp housing through access opening 26 provided in ear 20. The lower end of supporting arm 22 is suitably threaded as shown at 28 and is thus adapted for mounting on a suitable pole or supporting surfaces as by means of nut 30. From the foregoing it will be apparent that the lamp holder thus mounted is readily adapted for pivotal movement in a vertical plane so that it may be adjusted to any desired position in that plane. Adjustment of the disposition of the lamp in the horizontal plane is readily accomplished by securing the supporting arm as desired.

A lamp base receiving socket 32 is mounted within the base portion of the holder in juxtaposition with base wall 34. Socket 32 is of conventional form and is provided with an open end 36 within which there is disposed the usual screw threaded conductive insert and is also provided with an enclosed base 38. The base portion of the socket is provided with threaded openings within which mounting screws 42 are received. The socket 32 is mounted within the housing by means of disc spring 40 as may be more clearly seen in Figures 2 and 3. Said spring is advantageously stamped from a flat sheet of spring material such as spring steel or phosphor bronze, it being understood that other similar suitable spring materials may be employed for this purpose. The diameter of the circular disc 40 is such that it is larger than the diameter of the socket but clears the interior surface of the housing wall, being slightly spaced therefrom. Disc spring 40 is provided with a central aperture 44 which permits the passage of electrical conductors 46 therethrough in order to make suitable elec-

trical connection with the socket terminals. A pair of arcuate spring vanes 48 and 50 are formed from the disc blank by shearing or severing the disc material along lines 52 and 54. The arcuate spring vanes thus formed are thus provided with free ends 56 and 58 and with attached ends or roots 60 and 62. The line of severance terminating at the root of each of the vanes merges into perforations 64 and 66. These perforations or enlarged openings serve to prevent the spring material from being fractured as the spring vanes are deflected from the plane of the disc as will more clearly appear hereafter. Furthermore, the arcuate vanes taper toward the peripheral edge of the disc in the direction of the free ends 56 and 58 of the vanes so that the root ends 60 and 62 of the vanes are wider than are the free ends 56 and 58 thereof. The disc body or blank is provided with perforations 68 through which screw fasteners 42 are inserted in order to mount the socket upon the disc. The free ends of the vanes 48 and 50 are provided with perforations 72. Portions of the rim of each of perforations 72 are advantageously deflected so as to form screw engaging lips and to serve as nuts for screw fasteners 74 which are inserted through the base wall of the housing and thus serve to secure the free ends of the vanes to the housing. It will be understood, of course, that the free ends of the vanes may be secured to the housing by the use of independent nuts or by other similar suitable fastening means. The vanes are maintained in spaced relation with respect to the base wall of the housing by means of radially extending bosses 76 which serve as abutment stops to space and support the disc with respect to the base wall of the housing. It will be apparent from the foregoing that the vanes thus constitute resilient spring arms which may be deflected from the plane of the disc and which provide a spring tension when so deflected, said vanes being constantly urged to return into alignment with the plane of the disc. When the socket is mounted in the foregoing manner it is therefore also apparent that it may be drawn toward the mouth 78 of the housing against the resiliently yielding resistance of the disc vanes.

The electric lamp 14 which forms part of the lamp assembly 10 is of conventional type and comprises an envelope bell shaped head 80 provided with a face plate or lens 82 and a rearwardly extending neck portion 84 which terminates in a screw base adapted to be disengageably received in the lamp socket. The enlargement of the envelope into a bell shaped head forms a reflector for the lamp filament. The lip or rim of the mouth end of the lamp holder is provided with a sealing ring or lamp seat 88 interposed between the lip of the holder and the surface of the lamp bell. The sealing ring may advantageously be formed of asbestos fiber or rubber, such as for example, a silicone rubber, it being understood that other suitable materials having similar seating, sealing or cushioning characteristics may be employed for this purpose. In mounting the lamp within the lamp holder the screw base end of the lamp is inserted into a socket by turning the lamp and as the lamp is rotated and the surface thereof engages with seating ring 88 the socket is gradually drawn toward the mouth of the housing until electrical contact is made between the lamp and socket contacts. As the socket is thus axially moved while being screwed into the socket the spring vanes are deflected from the plane of the disc and the lamp bell is resiliently urged into engagement with the seating ring and maintained in contact with the seating ring by means of the spring biasing action of said vanes. Thus, the lamp is placed under tension and the desired pressure between the seating ring and the lamp bell is obtained when the lamp seats within the socket and makes electrical contact therewith, regardless of variations in the lamp configuration within tolerable limits. As may be more clearly seen from Figure 4, the spring disc arrangement permits the socket to be swivelled or angularly dis-

placed with respect to the access of the housing to compensate for any lack of concentricity between the lamp, the housing and the socket. The spring disc provides what may well be termed "a free floating mount" for the socket and the lamp disposed therein so that it may accommodate itself to variations in configuration of the lamp or the thickness or compressibility of the seating ring. The spring disc serves to maintain a constant and effective seal between the sealing ring and the lamp body by reason of its resilient biasing action while compensating for the variations hereinabove referred to.

By use of the spring disc a very simple and efficient mount for the socket and lamp carried thereby is achieved. Since the entire disc may be formed in a single stamping operation from sheet spring material, it is obvious that large economies in manufacture are readily achieved while assembly of the lamp holder is considerably simplified. The spring vane arrangement provides for an equal distribution of tension so that the socket is constantly urged to assume a position in axial alignment with the lamp holder housing and at a predetermined distance from the base wall of the lamp holder. Another significant advantage derived from the instant arrangement resides in the fact that the spring is located in back of the socket, as a result of which the space surrounding the socket and the lamp neck is free and unobstructed. The absence of any obstructions or projections in the socket and lamp neck region provides for a more equal heat distribution and dissipation in this region safeguarding these parts from hot spots or excessive heating and maintaining the spring in relatively cool condition.

I have here shown and described a preferred embodiment of my invention. It will be apparent, however, that this invention is not limited to this embodiment and that many changes, additions and modifications can be made in connection therewith without departing from the spirit and scope of the invention as herein disclosed and hereinafter claimed.

I claim:

1. A lamp holder comprising a cup shaped housing having a base portion and a mouth portion, said mouth portion being engageable with a portion of the envelope of a lamp to be mounted therein, a socket disposed within said housing for receiving the base portion of said lamp, means for mounting said socket within said housing for movement axially toward and away from the open mouth of said housing and for resiliently urging the envelope of a lamp so mounted into engagement with the mouth portion of said housing, said means comprising a disc spring secured to the base of said socket, arcuate vanes formed along the circumferential edge of said disc, said vanes being resiliently deflectible from the plane of said disc and being provided with free ends secured to the base portion of said housing, whereby upon engagement of said lamp with said socket as said lamp is being mounted within said holder, said socket is moved toward the mouth of said housing against the resilient biasing action of said vanes being deflected to thereby draw a portion of the envelope of said lamp into engagement with the lip portion of said housing mouth.

2. A lamp holder comprising a cup shaped housing having a base portion and an open mouth portion, a lamp seat disposed along said mouth opening, said lamp seat being engageable with a portion of the envelope of a lamp to be mounted therein, a screw type socket mounted in the interior of said housing provided with an open end and a base end, the base end of said socket being in juxtaposition with the base wall portion of said housing, said socket being adapted to receive the screw base portion of said lamp, means for mounting said socket within said housing for movement toward the open mouth of said housing and for resiliently urging said portion of said lamp envelope into engagement with said lamp seat, said

5

means comprising a disc formed of sheet spring material, said disc being provided with a substantially centrally disposed aperture extending therethrough, perforations provided in the body of said disc adjacent to said aperture, fastening means inserted through said perforations and in engagement with the base portion of said socket securing said disc to said socket, said aperture being adapted to permit the insertion of electrical conductors therethrough for connection with electrical contacts carried by the base of said socket, portions of said disc being partially severed therefrom to form arcuate vanes disposed along the circumferential edge of said disc, said vanes having root portions and free ends provided with perforations therethrough, fastening means passed through said vane perforations securing the free ends of said vanes to the base wall of said housing, said vanes being resiliently deflectible from the plane of said disc, whereby upon screw engagement of the base portion of said lamp with said socket the socket is moved toward the mouth of said housing against the resilient biasing action of said spring vanes in deflection to thereby draw said portion of said lamp envelope into engagement with said lamp seat and to urge said parts into constant spring biased contact.

3. The device according to claim 2, wherein said base is provided with apertures and the securing means securing the free ends of said vanes to said base wall pass through said perforations whereby said securing means may be manipulated externally of said housing.

4. A lamp holder comprising a cup shaped housing having a base portion and an open mouth portion, a lamp

6

seat disposed along the rim of said mouth opening, said lamp seat being engageable with a portion of the bell shaped envelope of a lamp to be mounted therein, said lamp being provided with a screw base, a screw type socket mounted in the interior of said housing and provided with an open end and a base end, the open end of said socket being adapted to engage said screw base and to make electrical contact therewith and said base end being positioned in confronting relation with respect to the base wall of said housing, means for mounting said socket within said housing for "free floating" resilient displacement therein and for axial displacement with respect thereto, said means comprising a disc formed of sheet spring material, said disc overlying the base of said socket and being secured thereto, vanes carried by said disc, said vanes being formed by severing a portion of the disc material along the circumferential edge thereof and being integrally connected with said disc along their root portions and having free ends, said free ends being secured to the rear wall of said lamp housing and being adapted to be resiliently displaced from the plane of said disc.

References Cited in the file of this patent

UNITED STATES PATENTS

1,788,945	Doane	Jan. 13, 1931
1,821,406	Sawin	Sept. 1, 1931
2,431,895	Tornblom	Dec. 2, 1947
2,511,937	Natale	June 20, 1950
2,699,491	Sternaman	Jan. 11, 1955