

Feb. 11, 1941.

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2,231,074

LIGHT REFLECTING SHADE

Filed April 26, 1937

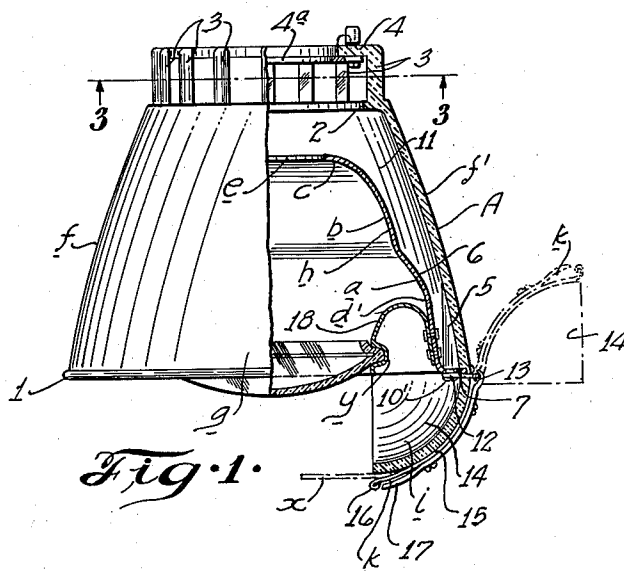


Fig. 1.

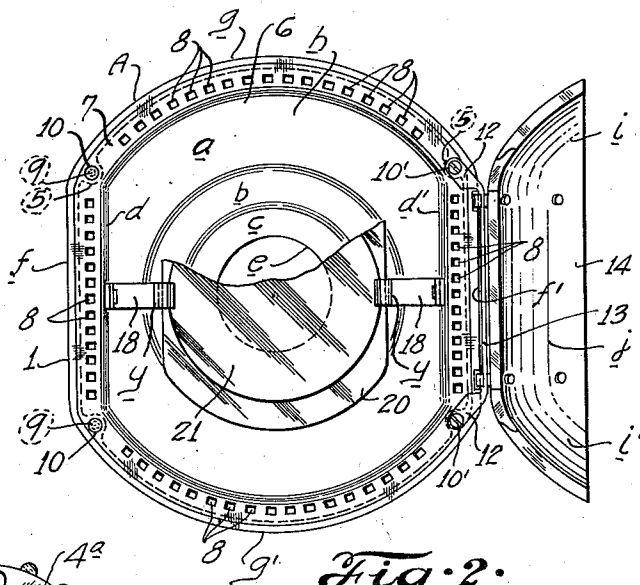


Fig. 2.

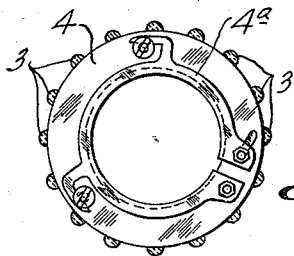


Fig. 3.

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2,231,074

LIGHT REFLECTING SHADE

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Application April 26, 1937, Serial No. 138,969

6 Claims. (Cl. 240—41.15)

My invention has for its primary objects the provision of a light reflecting shade of the type stated, which is exceptionally light in weight and economical in construction, from which may be made to emanate light composed of indirect and diffused rays, thereby producing unusually effective illumination without eye-strain or glare, which uniquely intercepts straight light rays which might otherwise reach the eyes of the operator, which provides means for convenient, facile viewing of X-ray photographs and the like, which is air-cooled, thereby materially preventing burning of the face, neck, and arms or other discomfiture of the operator, and which is highly efficient in the performance of its intended functions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing,

Figure 1 is a side elevational view, partly broken away and in section, of a lamp-shade constructed in accordance with and embodying my present invention;

Figure 2 is an inverted plan view of the shade; and

Figure 3 is a cross-sectional view of the shade, taken approximately along the line 3—3, Figure 1.

Referring now in more detail and by reference characters to the drawing, which illustrates a preferred embodiment of my present invention, the lamp-shade comprises a main or outer shell A constructed preferably of a synthetic plastic material, such, for instance, as molded Bakelite or the like, and having the form or contour substantially of a truncated paraboloid, two diametrically opposed portions of which are flattened and thereby provide substantially plane-surfaced front and rear faces *f*, *f'*, the lower perimetrical margins of which are substantially parallel.

Along its lower margin, the shell A is formed with a narrow diametrically enlarged rim 1 and around its upper peripheral margin with a radially inwardly presented flat annular flange 2 provided preferably integrally with an annular series of suitably spaced hemi-cylindrical upstanding posts 3 integrally provided at their upper extremities with a radially inwardly extending annular flat collar 4 provided upon its under face, as best seen in Figure 3, with a spring steel, split collar 4^a of conventional design and internally diametrically sized for embracingly engaging any

conventional type of lamp socket or mounting, not shown.

At the corners, as it may be said, between its relatively flat faces *f*, *f'*, and arcuate faces *g*, *g'*, the outer shell A is further integrally provided with a plurality of radially inwardly presented protuberances 5, which are flush at their lower extremity with the upper face of the rim 1, and which extend axially upwardly for a short distance along the inner face of the shell A, for purposes presently more fully appearing and as best seen in Figure 1.

Disposed within the main or outer shell A, is a preferably metal reflector member 6 having a light reflecting inner face *h* and provided along its lower peripheral margin with a radially outwardly presented annular flat flange 7 which fits within the shell-rim 1 and at its upper face engages the respective under faces of the several protuberances or enlargements 5. As best seen in Figure 2, the flange 7 is provided with an annular series of uniformly spaced preferably rectangular ventilation-apertures 8 and a plurality of circular apertures 9, the latter being aligned with the respective shell protuberances 5 for receiving flat-headed attachment screws 10, 10', which are threaded into the protuberances 5 for securing the reflector 6 rigidly within the shell A, all as best seen in Figures 1 and 2.

The side wall of the reflector 6 conforms in shape to the surface of revolution of a continuous composite curve including three successively adjoined parabolic sections of different slope, thus, in effect, forming three co-axial truncated paraboloids endwise adjoined or "superposed," as it may be said, one on top of the other, as indicated at *a*, *b*, *c*, respectively, in Figures 1 and 2, of respectively moderate, steep, and flat slopes, as best seen in section in Figure 1, the lower paraboloidal section *a* being somewhat flattened along two diametrically opposed sections thereof, as shown at *d*, *d'*, to conform to the flattened front and rear faces *f*, *f'*, of the outer shell A, and the upper paraboloidal section *c* of the reflector 6 terminating in a circular aperture *e* for loose embracing engagement about any conventional type of lamp socket upon which the shade may be mounted. The reflector 6 further is at all points from top to bottom of substantially smaller diametrical size than the correspondingly adjacent portion or portions of the shell A, and is also axially reduced relatively to the shell A, so as to provide a free space or air jacket, as at 11, between the inner face of the shell A and the

outer face of the reflector 6, which jacket or space freely, at its upper extremity through the spaces between the annularly spaced posts 3 and at its lower extremity through the rectangular ventilation openings 8 in the reflector flange 7, communicates with the surrounding atmosphere. It will further be apparent, by reference to the drawing, that the air jacket 11 increases in size and width from bottom to top, for purposes presently fully stated.

Mounted beneath and held rigidly flatwise against the under face of the rim 1 by means of the attachment screws 10', is a pair of outwardly extending companion ears 12 preferably integrally joined at their respective outer extremities by a transversely extending pivot-rod 13 spaced laterally from, and disposed in parallel relation to, the adjacent straight portion of the perimetrical margin of the rim 1.

Provided for edgewise conformation with a segment of the under face of the shell-rim 1 and for symmetrical disposition along and on opposite sides of the straight lower margin of the rear shell-face f' , is a so-called lip-member 14 molded preferably of the same material as the outer shell A and arcuate in form in transverse section, the member 14 comprising a pair of opposed substantially hemi-spherical end-segments i, i' , integrally joined by an axially extending cylindro-segmental intermediate portion j , all as best seen in Figures 1 and 2.

Secured, as by means of screws or other suitable attachment means, in arcuate conformation upon the outer face of the intermediate segmental lip-portion j in laterally spaced peripheral alignment, is a pair of ribbon-like leaf-spring members 15, each provided at its lower extremity with a curled finger-grip 16. Superposed flatwise upon the respective grips 16, is a heavy non-flexible ribbon-like member 17 provided at its upper extremity with an arcuately curved portion extending beyond the upper margin of the lip 14 for pivot-forming embracing engagement with the rod 13 and at its lower extremity bent outwardly away from the underlying leaf-spring member 15, as shown at k in Figure 1, so as to provide some freedom of movement for the free end-portion of the leaf-spring member 15 and yet function as a limiting stop therefor, all for purposes presently more fully set forth and as best seen in Figure 1.

Fixed at one leg, as by means of rivets or other suitable attaching means, upon and centrally of the inner faces of the flat portions d of the reflector shell 6, are diametrically opposed substantially inverted U-shaped spring clips 18, each formed or recessed, as at y , at the extremity of its free leg for embracing engagement with the rim-portion 20 of a convex diffusion lens 21 for removably supporting the lens 21 horizontally and concentrically within the confines of the reflector 6.

In installing the lamp-shade, the diffusion lens 21 is temporarily removed or detached, and the shade disposed embracingly about a suitable form of lamp socket, whereupon any selected lamp may be placed within the socket and the diffusion lens 21 restored to its original position. When the lamp is lighted, any downwardly directed emanated rays will pass through the diffusion lens 21, while all other emanated light-rays will impinge upon the reflector 6 and be suitably reflected down upon the object. By reason of the shape of the reflector 6, and particularly the posterior portion thereof, the rays of light

will be uniquely converged in the production of a sharply defined illuminated field or area, the rays being intensified or "piled," as it may be called, in the central portion of the field, and distributed with slowly and proportionately diminishing intensity outwardly toward the periphery of the field. If the object is such that the operator or user must bring his eye very close thereto, the lip 14 may be swung downwardly so as to shade the eyes of the operator. In the case of dental operations, the lip 14 may be used to protect the eyes of the patient. On the other hand, whenever the contingency arises, the lip 14 may be swung upwardly out of the operative zone, as shown in Figure 1. Not only does the present shade provide a uniquely diffused light, but also provides a somewhat elongated strip of light which is largely confined to a precise area without the creation of a shaded or penumbra zone.

If desired, the present shade may also be employed to exhibit photographs, such as dental X-ray pictures, to the patient by inserting the marginal edge of the photograph x flatwise beneath the free-end portion of the leaf-spring members 15, as best seen in Figure 1.

After the light has been used for a few minutes, the heat generated thereby will produce expansion of the air within the air jacket 11. Both by reason of greater proximity and also because of the general characteristics of heat, the upper portions of the lamp shade will become hotter than the lower portion, causing a greater and more rapid expansion of the air at this portion of the air jacket. Since the air jacket, as has been above pointed out, increases in size from bottom to top, this increasing expansion will set up rather rapidly moving convection currents directed toward the top of the lamp-shade and out through the openings between the collar-supporting posts 3, simultaneously drawing in cooler air through the ventilation openings 8 in the rim 7 of the reflector 6. It has been found that this automatic air circulation is highly effective in cooling the lamp-shade, thereby not only making for greater safety and comfort of the user, but also rendering safe and practical a number of light-weight highly desirable materials of construction, such as synthetic plastics, which normally may not be exposed to substantially elevated temperatures.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the lamp-shade may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A lamp-shade comprising an outer shell, a reflector-member mounted within, and spaced from, the shell for the provision of an annular air-space intermediate the reflector and the shell, a depending segmental lip member having a transverse cross-sectional shape conforming substantially to a 90° circular arc and being at one of its lengthwise extending margins hingedly mounted along the lower margin of the shell, and spring-clip means mounted rigidly on and conforming to the outer face of the lip-member and terminating at the free lengthwise extending margin thereof for holding a sheet in front of the light emanating from the reflector.

2. In a lamp-shade having an outer bowl-shaped shell and a reflector member mounted therein, a depending segmental lip member hav-

ing a transverse cross-sectional shape conforming substantially to a 90° circular arc and being at one of its lengthwise extending margins hingedly mounted along the lower margin of the shell, and spring-clip means mounted rigidly on and conforming to the outer face of the lip-member and terminating at the free lengthwise extending margin thereof for holding a sheet in front of the light emanating from the reflector.

3. A lamp-shade comprising an outer shell and a reflector member operatively mounted therein, said reflector member being shaped in the form of three superposed truncated paraboloids, the outer paraboloid being of relatively large diameter and moderate slope, the intermediate paraboloid being of smaller diameter and relatively steep slope, and the innermost paraboloid being of smallest diameter and relatively flat slope, said outer paraboloid being flattened along its sides so as to present a cross-sectional shape having the form of two circular arcs connected by opposed straight lines.

4. A lamp-shade comprising an outer shell and a reflector member mounted therein, said reflector member having a side wall conforming in shape to the surface of revolution of a composite curve formed by three successively adjoined parabolic sections, said side wall accordingly including three endwise adjoining truncated paraboloids, the outer paraboloid being of relatively large diameter and moderate slope and being provided on its side faces with a pair of diametrically opposed flattened surfaces, the intermediate paraboloid being of smaller diameter and relatively steep slope, and the innermost paraboloid being of smallest diameter and relatively flat slope, said outer paraboloid being flattened along its sides so as to present a cross-sectional shape having the form of two arcs con-

nected by opposed straight lines whereby to provide a straight margin for receiving a hingedly attached auxiliary shade member.

5. A lamp-shade including a reflector member having a side wall conforming in shape to the surface of revolution of a composite parabolic curve and accordingly including three superposed truncated paraboloids, the outer paraboloid being of relatively large diameter and moderate slope, the intermediate paraboloid being of smaller diameter and relatively steep slope, and the innermost paraboloid being of smallest diameter and relatively flat slope, said outer paraboloid being flattened along its sides so as to present a cross-sectional shape having the form of two circular arcs connected by opposed straight lines whereby to provide a straight margin for receiving a hingedly attached auxiliary shade member.

6. A lamp-shade including a reflector member having a side wall conforming in shape to the surface of revolution of a composite curve formed by three successively adjoined parabolic sections, said side wall accordingly including three endwise adjoining truncated paraboloids, the outer paraboloid being of relatively large diameter and moderate slope and being provided on its side faces with a pair of diametrically opposed flattened surfaces, the intermediate paraboloid being of smaller diameter and relatively steep slope, and the innermost paraboloid being of smallest diameter and relatively flat slope, said outer paraboloid being flattened along its sides so as to present a cross-sectional shape having the form of two arcs connected by opposed straight lines for the provision of straight margins, and an auxiliary member having a straight edge parallel to the straight margins of the reflector.

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