April 26, 1927.

1,625,948

N. LANG

LAMP REFLECTOR

Original Filed May 14, 1923 2 Sheets-Sheet 1

Fig. 2.

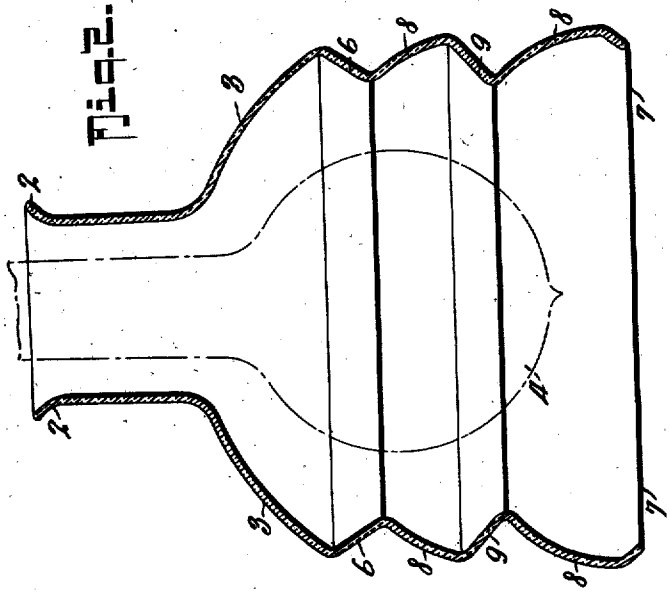


Fig. 3.

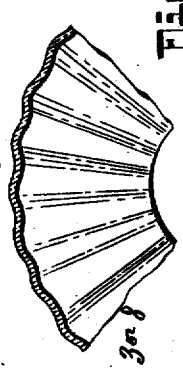
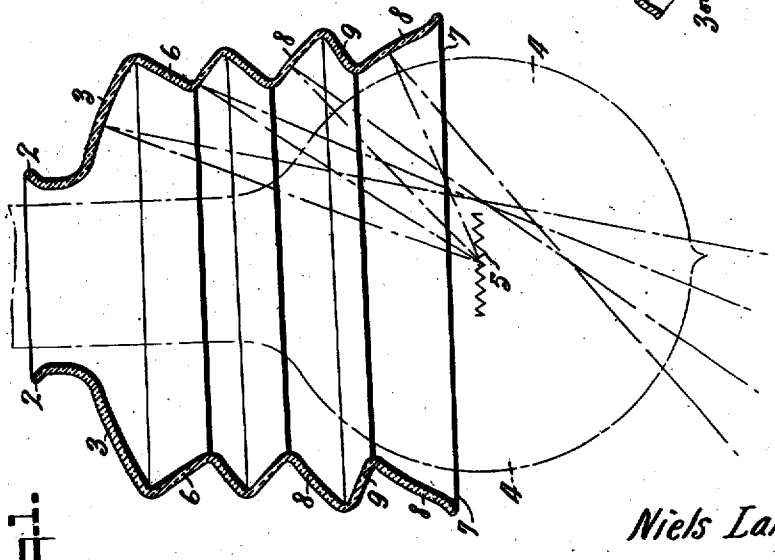


Fig. 1.



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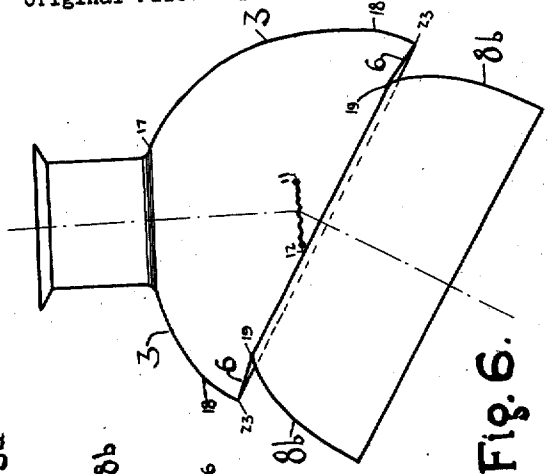


Fig. 6.

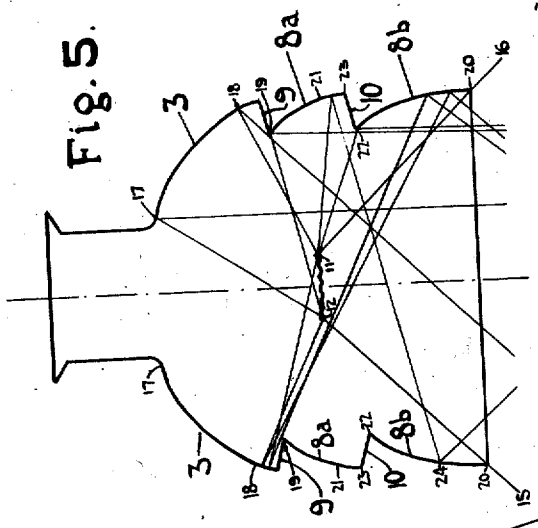


Fig. 5.

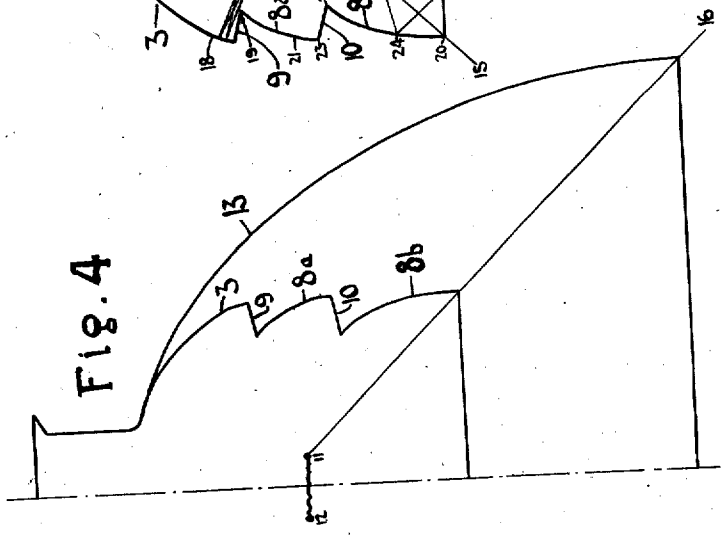


Fig. 4.

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Patented Apr. 26, 1927. 1,625,948

UNITED STATES PATENT OFFICE.

NIELS LANG, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR TO LANG'S DAYLIGHT LIMITED, OF VANCOUVER, CANADA.

LAMP REFLECTOR.

Application filed May 14, 1923, Serial No. 638,874. Renewed October 21, 1926.

This invention relates to a light reflector for an incandescent lamp and is designed to obtain an effective reflection of the light rays in one direction without the requirement of a reflector of large diameter.

In the usual reflector the required area of reflecting surface is generally obtained by a concave reflecting surface of considerable diameter.

In the device, which is the subject of this application, the reflecting surface, instead of being extended laterally outward, is projected forward around the axis of the lamp in a succession of annular surfaces which are alternately reversely coned, or preferably alternately concave and conical.

With this arrangement the backwardly directed rays from the lamp are projected forward from the forwardly directed conical or concave surfaces, and such of the forwardly directed rays as are intercepted by the reflector are projected backward from the backwardly directed conical surfaces on to the forwardly directed conical or concave surfaces to be projected forward by them.

The curvature of the annular concave surfaces is such as will reflect the rays forward clear of the lamp filament, whereby the shadow of the filament is avoided and a fairly uniform distribution of the light over the desired area is attained.

The invention is particularly described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Fig. 1 is a vertical longitudinal section of the reflector in the plane of the axis of the lamp bulb.

Fig. 2 is a modification to suit a different position of the lamp bulb, and

Fig. 3 is a development showing how the concave reflecting surfaces may have wave-like corrugations.

In these drawings 2 represents the bead by which the reflector is connected to its support. From this bead 2 a concave, annular surface 3 extends laterally outward for a short distance, dependent on the space desired or available.

From the outer edge of the annular concave surface 3, the reflecting surface converges in an annular conical frustrum 6, the width of which is approximately one-sixth the diameter of the outer edge of the surface 3, and the apex of the cone of which this surface is a frustrum is approximately at the centre of the outer edge 7 of the reflector.

Therefrom the reflecting surface is continued in a succession of alternate, annular, concave surfaces 8 and conical surfaces 9 forming circumferential ridges surrounding the lamp for a distance measured along the axis of the reflector approximately that of the major diameter of the ridges, the circles formed by the inner angles of the connected ridges being substantially equal.

The concavity of the surfaces 3, 8 is designed to reflect the rays of light which fall upon it from the lamp 4 outward at an angle that will avoid interference with the filament 5 of the lamp, so that the shadow of the filament will not be reflected on the bowl of the lamp where such is used or on the surface to be illuminated.

The required reflecting area is thus obtained by producing the reflector in a series of circumferential ridges surrounding the axis of the lamp, instead of it being extended laterally therefrom.

Where, as shown in Fig. 2, the bulb of the lamp is placed further within the reflector, the angle which the annular concave surfaces make with the annular conical surfaces is more obtuse, that is, the curvature of the concave surfaces is of smaller radius and the conical surfaces as such are more acute.

In order to more effectively disperse the light rays, the concave reflecting surfaces 3, 8 may be corrugated or waved, as shown in Fig. 3, without departing from the spirit of the invention.

The reflector is particularly effective and may be applied to many purposes other than that for which it was originally designed, viz, to pass within the restricted aperture of the semi-opaque glass bowls which are in common use for lighting purposes, and where a reflector of the ordinary form cannot be applied.

Further, the reflection may be from a polished inner surface or may be of clear or colour-tinted glass with the silvering applied to the outer side, that the light from the lamp may be modified in passing through the glass to and from the reflecting surface of the outer side. Where silvered glass on the outside is used, the refraction of the light rays in passing through the glass to and from the reflecting surface, must be

allowed for in considering the curvatures of the surfaces 3 and 8 and the angle which the conical surfaces make with them.

It will be noticed from the drawing that the rays of light which strike the reflecting surfaces on one side of the reflector are reflected outward on the opposite side of the lamp axis, and with care in selecting the curvature of the reflecting surfaces 3 and 8 a substantially uniform distribution of the light may be obtained at any desired distance from the reflector.

It will be observed from the drawings that the centers of curvature of the frusto-conical surfaces 3 and 8 are on different centers along the direction of the longitudinal axis of the reflector and are not all struck from the same center.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. A tubular shaped light reflector, comprising a body having a neck and a plurality of co-axially arranged annular frusto-spherical reflecting surfaces having their centers of curvature arranged at different poinsts along the direction of the longitudinal axis of the reflector, said reflecting surfaces being connected by annular co-axially arranged reversely disposed reflecting surfaces.

2. A light reflector comprising a body having a neck and having an interior surface of reflecting color-tinted glass and having a plurality of co-axially arranged frusto-spherical reflectors having their centers of curvature arranged spaced along the direction of the longitudinal axis of said reflector and co-axially arranged frusto-conical reflectors connecting said frusto-spherical reflectors and intercepting and reflecting certain rays of light against said frusto-spherical reflectors for reprojection by the latter out of said light reflectors.

3. A reflector comprising a body provided with a neck and terminating in a plurality of co-axially arranged superposed frusto-spherical reflectors struck from different centers arranged along the direction of the longitudinal axis of the reflector and connected by inwardly inclined reversely disposed annular reflecting surfaces adapted to intercept and reflect the light rays upwardly and inwardly against said frusto-spherical reflectors, the perimeters of said reflectors being of substantially uniform diameter substantially as specified.

In testimony whereof I affix my signature.

NIELS LANG.

allowed for in considering the curvatures of the surfaces 3 and 8 and the angle which the conical surfaces make with them.

It will be noticed from the drawing that the rays of light which strike the reflecting surfaces on one side of the reflector are reflected outward on the opposite side of the lamp axis, and with care in selecting the curvature of the reflecting surfaces 3 and 8 a substantially uniform distribution of the light may be obtained at any desired distance from the reflector.

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NIELS LANG.

CERTIFICATE OF CORRECTION.

Patent No. 1,625,948. **Granted April 26, 1927, to**

NIELS LANG.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the heading to the drawing, line 3, strike out the words "2 Sheets-Sheet 1"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of May, A. D. 1927.

M. J. Moore,
Acting Commissioner of Patents.

Seal.

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