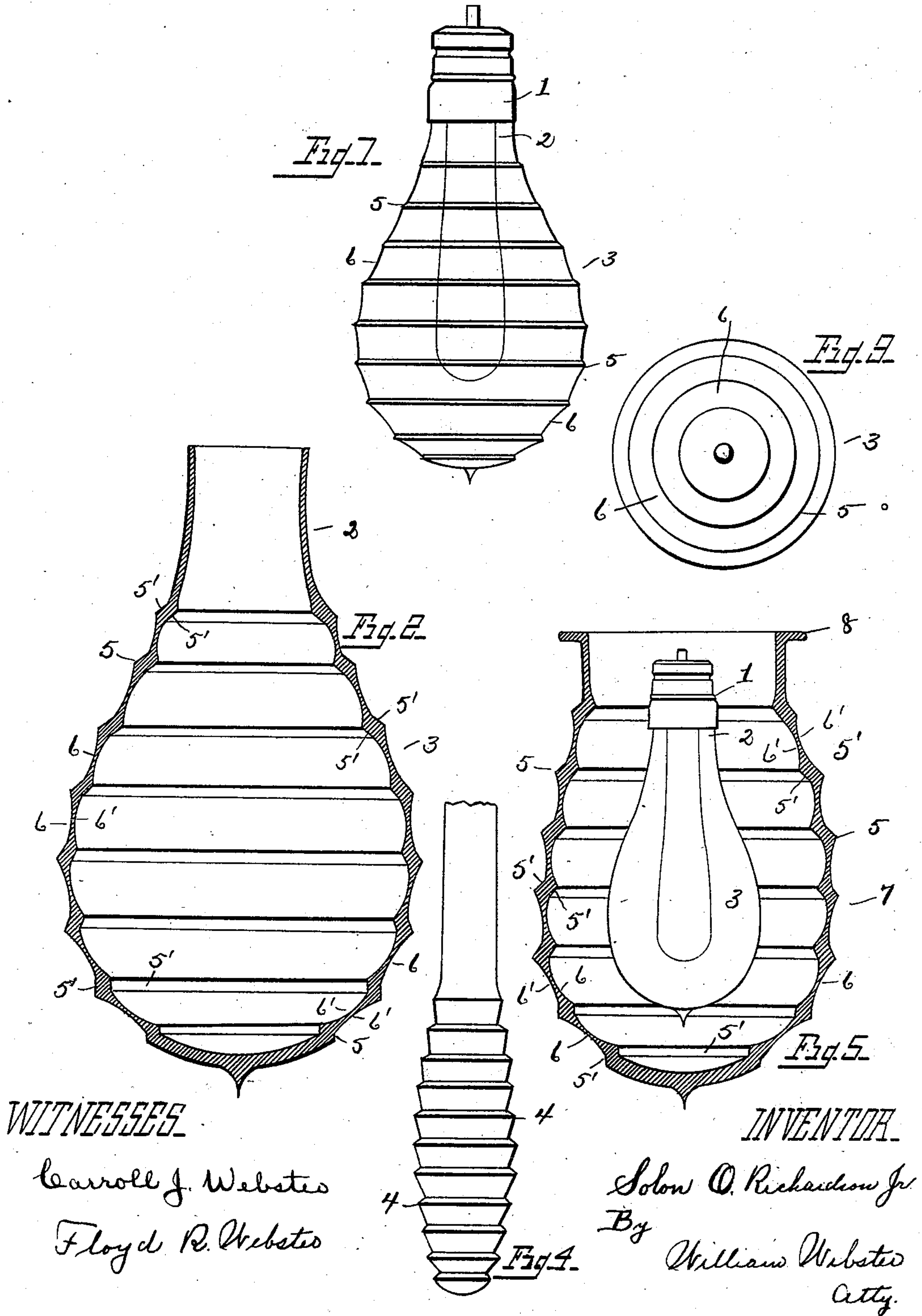


(No Model.)

S. O. RICHARDSON, Jr.  
SHADE FOR INCANDESCENT ELECTRIC LAMPS.

No. 557,342.

Patented Mar. 31, 1896.



# UNITED STATES PATENT OFFICE.

SOLON O. RICHARDSON, JR., OF TOLEDO, OHIO.

## SHADE FOR INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 557,342, dated March 31, 1896.

Application filed November 1, 1892. Serial No. 450,657. (No model.)

*To all whom it may concern:*

Be it known that I, SOLON O. RICHARDSON, Jr., of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in a Bulb or Shade for Incandescent Electric Lamps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to an improvement in bulbs or shades for incandescent electric lamps, and has for its object to provide a globe that shall diffuse the rays of light now given by the ordinary lamp.

It is the object of this invention to produce in the bulb or shade a series of lenses comprising a series of uneven thicknesses in the glass, whereby as the rays of light pass there-through they are refracted and produce a multiplicity of rays, thus modifying the lighting capacity of the lamp.

With these objects in view the invention consists in the parts shown in the drawings, described in the specification, and pointed out in the claim.

In the drawings, Figure 1 is an elevation of an incandescent electric lamp, the bulb of the same being formed in accordance with my invention. Fig. 2 is a vertical sectional elevation in full lines of the bulb constructed in accordance with my invention. Fig. 3 is a bottom plan view of the bulb. Fig. 4 is an elevation of the product as it comes from the impression-mold. Fig. 5 is a sectional elevation of the shade, a plain bulb being shown in position in the same.

1 designates the cap for the bulb, which may be of any construction, and as no claim is laid thereto it is not described in detail, and in which cap is secured in any preferred manner the neck 2 of the bulb 3.

In forming the bulb the molten glass is

first blown into an impression-mold, which gives the bulb the form shown in Fig. 4, the lenses or thickened portion of the glass being very prominent. The bulb is either blown in a forming-mold or is blown by hand, which operation elongates the thickened portions of the bulb made by the impression and leaves the bulb with a thickened portion 5, comprising parallel sides 5' and a thin portion at 6', due to the outside and inside surfaces of the glass between each enlargement 5 being curved inwardly and outwardly, respectively, as shown, forming practically alternate double concave and convex lenses horizontally around the bulb.

In Fig. 5 I have shown a plain bulb 3 and a shade 7 having alternate lenses, as described, there being a lip 8 upon the shade by which the same is secured to the lamp, it being understood that the shade is employed on lamps already in use, the same result being attained in either case.

In operation it will be readily understood that the light-rays in passing through the bulb or shade instead of passing through the glass direct to the room or space to be lighted pass through the lenses and are refracted and diffused in all directions, thus greatly modifying the light of an ordinary incandescent lamp.

What I claim is—

A shade for incandescent electric lamps, comprising a bulb formed of alternate series of horizontal thick and thin portions, the outer and inner surfaces of the said thick portions being parallel, and the thin portions connecting the thick portions with the outer and inner surfaces thereof curved inwardly and outwardly respectively.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

SOLON O. RICHARDSON, JR.

Witnesses:

SHERMAN W. LOTT,

CARROLL J. WEBSTER.