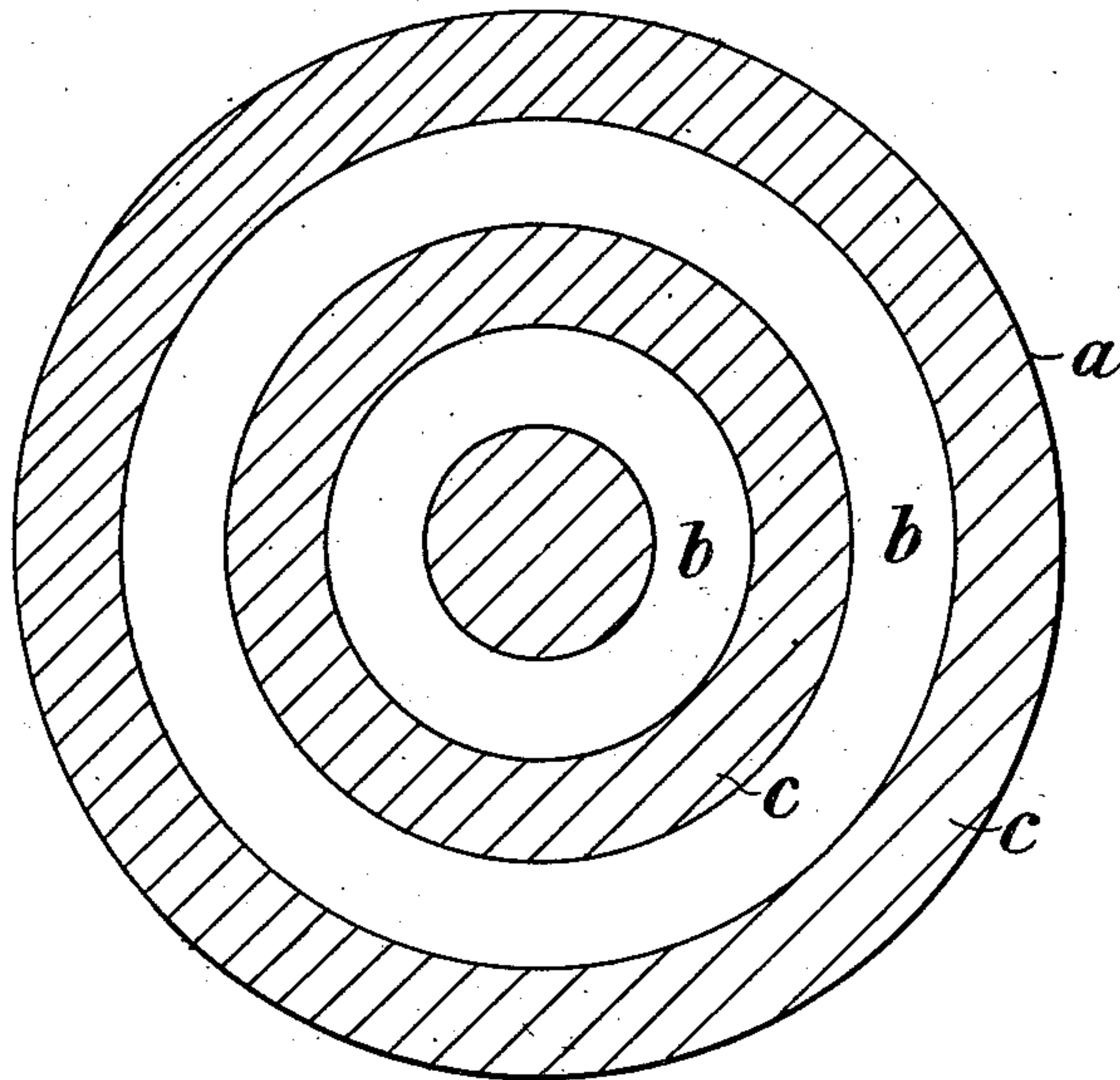


S. O. COWPER-COLES.  
MANUFACTURE OF REFLECTORS.  
APPLICATION FILED SEPT. 16, 1907.

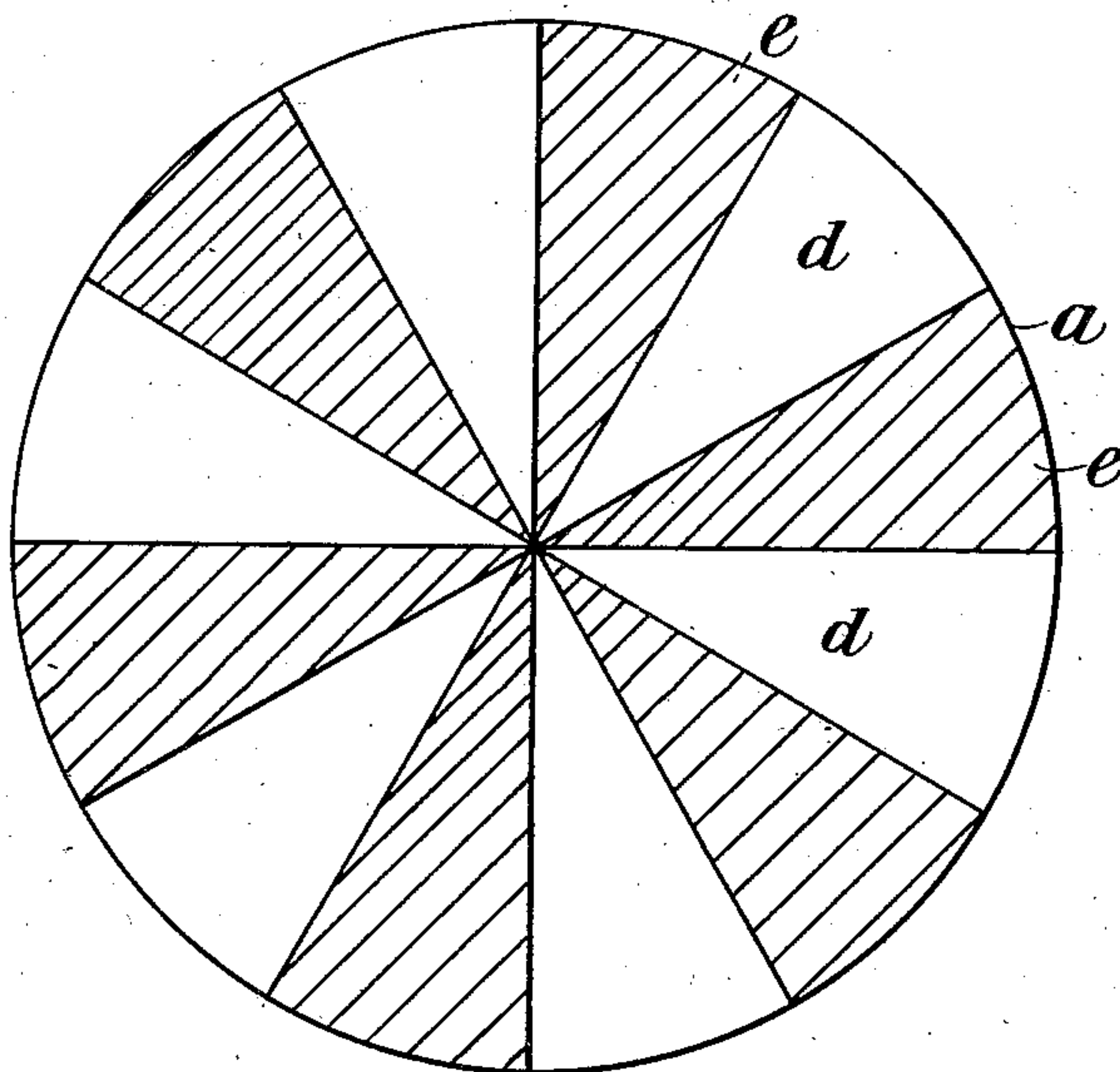
915,414.

Patented Mar. 16, 1909.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*  
*J. K. Moore*  
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*Sherard O. Cowper-Coles*  
By  
*Whitaker & Trew* attys.



# UNITED STATES PATENT OFFICE.

SHERARD OSBORN COWPER-COLES, OF WESTMINSTER, LONDON, ENGLAND.

## MANUFACTURE OF REFLECTORS.

No. 915,414.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed September 16, 1907. Serial No. 393,244.

*To all whom it may concern:*

Be it known that I, SHERARD OSBORN COWPER-COLES, a subject of the King of Great Britain, residing at Grosvenor Mansions, 82 Victoria street, Westminster, London, England, have invented new and useful Improvements in the Manufacture of Reflectors; 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.

My invention relates to the manufacture of reflectors and has for its object to provide an improved and speedy method of producing reflectors which are especially suitable for use in connection with search-lights.

As is well known a yellow beam of light is more penetrating in a foggy atmosphere than is a white light although the latter is visible at a greater distance under certain atmospheric conditions. According to my invention I make use of this characteristic in the manufacture of reflectors, that is to say, I produce a mirror the reflecting surface of which is composed partly of a white metal and partly of a yellow metal, the white and yellow portions being deposited in any convenient manner, such as in concentric rings or alternating radial bands.

In one way of carrying out my invention I construct metallic reflectors as follows, that is to say, I first produce a reflector, say by the electrodeposition of copper preferably by a process such as that described in the specification of my British Patent No. 26,616 of 1896, and I then form upon the face of the said reflector by electrodeposition concentric rings or radial bands alternately of a white metal such as silver, zinc, tin or their alloys and of a yellow metal such as gold, or gold alloys or brass. Or, I may proceed as follows, that is to say, I may subject a copper or brass mirror made by electrodeposition, spinning or casting, to the action of zinc vapor as is described in the specification of my British Patent No. 12,452 of 1906 or to any other suitable process so as to convert certain portions (if copper is employed) into a golden colored brass and the remaining portion into zinc. The surface of the mirror or reflector treated by either of the above described processes is subsequently highly polished by any of the usual methods employed for polishing large reflecting surfaces.

In another method of carrying out my invention I cast the mirror or reflector of any suitable metal such as iron, brass, gun-metal or German silver or I spin or stamp sheet metal to the desired curvature. The shaped metal body is then placed in an electrolytic cell where copper or any other suitable metal is deposited on the back thereof to give sufficient rigidity; it is then placed in a second electrolytic cell where a metal such as silver, nickel cobalt or a suitable alloy is deposited upon its surface. The surface of the mirror is then ground and polished. The above operations may be repeated any convenient number of times until a surface is obtained which corresponds to that of glass. I then deposit upon the surface so prepared annular, radial or like bands of gold or other suitable yellow metal.

In order that my invention may be understood, I have illustrated it in the accompanying drawing and described the same with reference thereto.

In the said drawing, Figure 1 is a front view of a reflector made according to the invention, and Fig. 2 is a similar view of a modified form of the reflector.

Referring first to Fig. 1, *a* is the body of the reflector, and *b, b* are the concentric rings of white metal, *c c* being rings of a yellow metal, so that the reflecting surface of the mirror shows alternate surfaces of yellow and white metal, thereby producing a beam of mixed yellow and white light.

In Fig. 2 the white portions *d* of the reflecting surface and the yellow portions *e* thereof are in the form of radial bands, the said white and yellow radial bands alternating with one another as clearly shown.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is;—

1. In the art of manufacturing metal reflectors, the herein described method of making a reflector having white and yellow reflecting surfaces which consists in first forming a basic portion of the shape desired having a metallic reflecting surface of one color, then providing the reflecting surface with separated portions of the other desired color.

2. In the art of manufacturing metal reflectors, the herein described method of making reflectors having white and yellow



reflecting surfaces which consists in first forming a basic metallic body of the shape desired having a reflecting surface of one of the colors desired, then providing this reflecting surface with separated bars or bands of the other desired color.

3. In the art of manufacturing reflectors the process of producing reflectors for reflecting different colored lights which consists in first forming a base of a shape desired having a reflecting surface of a gold colored metal, and in then electrodepositing a white metal upon portions of the said reflecting surface to produce a surface for reflecting white light, substantially as described.

4. In the art of manufacturing reflectors the process of making reflectors for reflecting different colored lights which consists in forming a base of a shape desired having a gold colored metal reflecting surface then electrodepositing a white metal upon separate bands or strips of such surface so as to produce white surfaces for reflecting white light, substantially as described.

5. As an article of manufacture, a reflector composed of opaque materials having its

reflecting surface composed of parts of different colors, each of said parts reflecting light of its own color, substantially as described.

6. As an article of manufacture, a reflector composed of opaque material having its reflecting surface composed of parts of different colors said parts reflecting light of different colors, from a source of light throwing light of the same color on all of the parts, substantially as and for the purpose set forth.

7. As an article of manufacture, a reflector composed of opaque material having its reflecting surface composed of parts of different colors, said parts reflecting white and yellow light from a source of light throwing light of the same color on all of the said parts, substantially as and for the purpose set forth.

8. As an article of manufacture, a reflector having its reflecting surface composed of alternate bands or strips of white and yellow metal to reflect white and yellow light, substantially as described.

SHERARD OSBORN COWPER-COLES.

Witnesses:

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