

No. 712,517.

Patented Nov. 4, 1902.

R. D. GATES.  
GAS OR ELECTRIC REFLECTOR.

(Application filed Mar. 12, 1902.)

(No Model.)

Fig. 1.

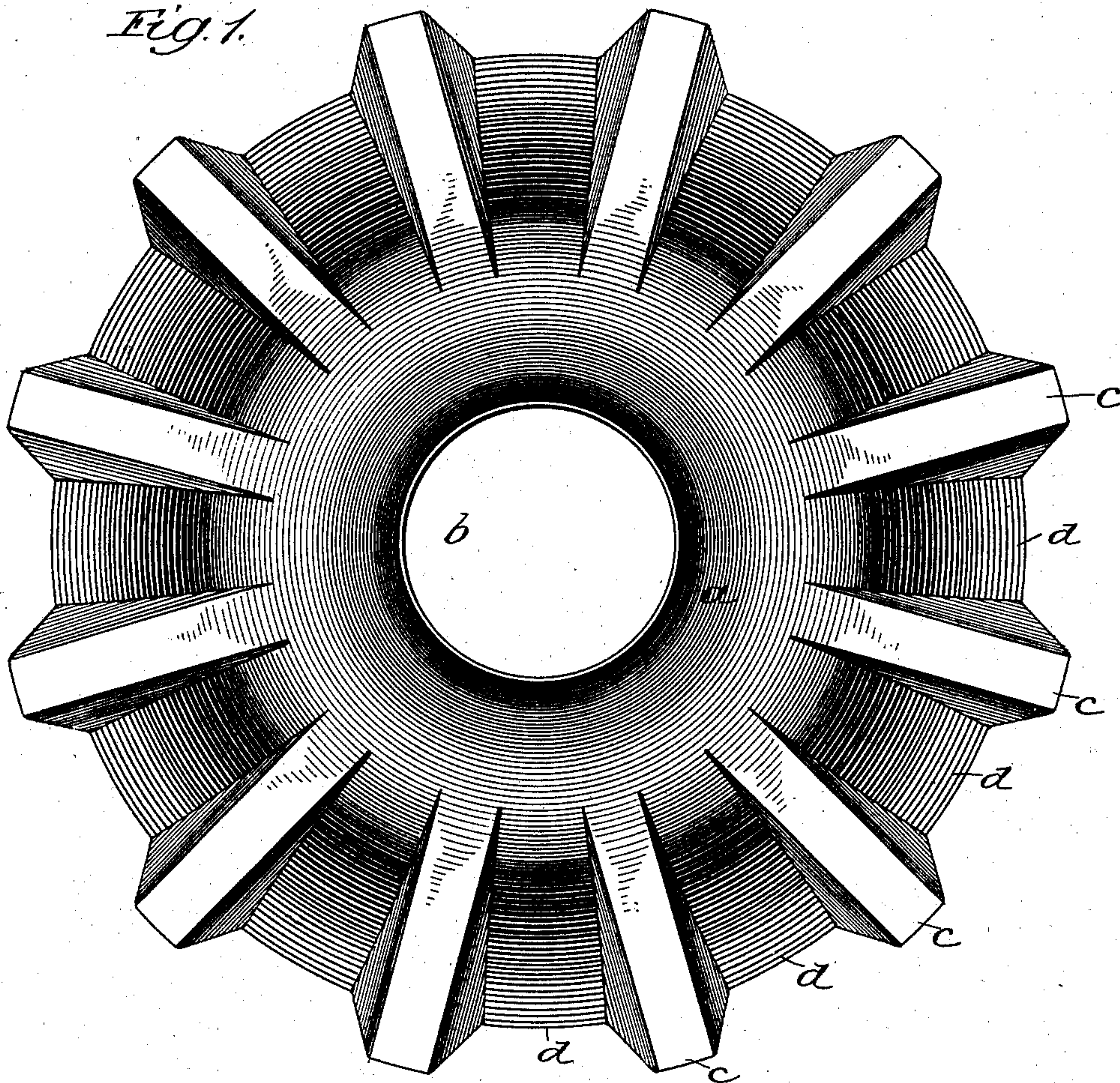
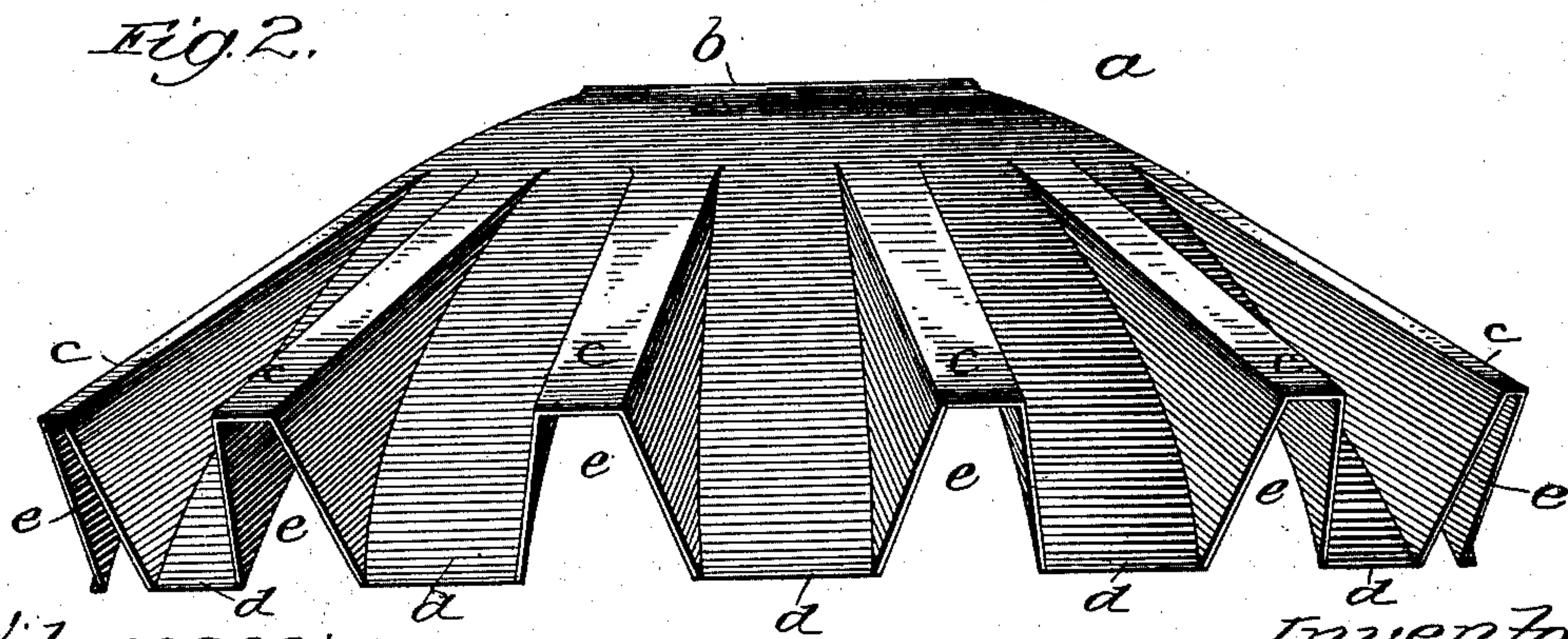


Fig. 2.



Witnesses:

Edw. O. Gaylord,  
John Enders Jr.

Inventor:

Ryerson D. Gates,  
By Thomas F. Sheridan,  
Att'y



# UNITED STATES PATENT OFFICE.

RYERSON D. GATES, OF OAKPARK, ILLINOIS, ASSIGNOR OF ONE-HALF TO  
PHILETUS W. GATES, OF CHICAGO, ILLINOIS.

## GAS OR ELECTRIC REFLECTOR.

SPECIFICATION forming part of Letters Patent No. 712,517, dated November 4, 1902.

Application filed March 12, 1902. Serial No. 97,829. (No model.)

*To all whom it may concern:*

Be it known that I, RYERSON D. GATES, a citizen of the United States, residing at Oakpark, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas or Electric Reflectors, of which the following is a specification.

This invention relates particularly to reflectors adapted for use in connection with gas-burners, and especially to a construction thereof by which the rays of light are so distributed or diffused as to break up the shadows or the larger portion thereof, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient reflector for gas-burners of the Welsbach type.

A further object of the invention is to provide a reflector for gas-burners with a multiplicity of reflecting-surfaces by which the rays of light may be distributed in such a manner as to break up the shadows.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in a reflector composed of a multiplicity of surfaces occupying different planes.

The invention consists, further, in a reflector in which there are combined two or more curved surfaces joined together by a multiplicity of angular surfaces.

The invention consists, further, in a reflector in which there are combined two or more curved surfaces tangentially connected each to the other and joined together in substantially radial lines by a multiplicity of angular surfaces.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a reflector constructed in accordance with these improvements looking at it from above, and Fig. 2 a side elevation of the same.

In the art to which this invention relates it is well known that the Welsbach burner when provided with the usual mantle casts a very intense light and that when used with an

ordinary reflector the light is so reflected that it casts more or less of a shadow immediately underneath the burner, thus partially destroying the efficiency of the light without the high lights—in other words, the reflected light is not uniform. This invention, therefore, is intended primarily to obviate this objection by providing a reflector of suitable construction with two main curved surfaces brought tangentially together and also joined together with radially-arranged angular pieces having reflecting-surfaces arranged to diffuse the light and break up the usual shadows incident to the use of the Welsbach light, all of which will more fully hereinafter appear.

In constructing a reflector in accordance with these improvements I provide a main central portion *a*, having a perforation *b* at the central part thereof, through which the chimney of the lamp passes. This main central portion is curved, as shown in Fig. 2, and radiating therefrom are two main curved surfaces *c* and *d* eccentric to one another, but becoming tangent and coincident with the centrally-disposed curved surface *a*. These curved surfaces are formed of a plurality of radially-extending curved pieces each having a concave under surface. For convenience the radially-extending portions which form what I term the "lower" curved surface may be said to constitute a lower set of projecting portions and those which constitute the upper curved surface may be designated as the "upper" set. These two sets of projections extend outward radially from the central portion and from the same plane downward to different planes. Each of the projecting portions of the lower set is provided with a concave under surface, which extends along and conforms to one and the same spherical angle common to all of that set, and as these pieces are separated they form an interrupted outline of such spherical angle. The radially-extending portions of the upper set may also have concave under surfaces which extend along and conform to one and the same spherical angle common to this set, but tangent to the angle of the lower set. It will thus be seen that each set describes the angle of a geodetic sphere, that



described by the lower set being smaller than that of the upper set, and that both spheres thus partially described have their centers in alinement with the axis and upon the concave side of the reflector. The radially-extending pieces of the lower set accordingly reflect the light more directly to the center than do those of the upper set. The two sets of reflecting-surfaces being on different spherical angles, as shown in the drawings, it will be seen that they reflect the light from the burner in different directions, so as to largely break up the shadows incident to shades having but one curved surface, and in order to further effect this advantageous result are joined together by radially-arranged angular pieces *e*. The pieces *c*, which form the upper curved surface, are preferably narrower than the pieces *d*, which form the lower curved surfaces, so that in connecting the surfaces together the pieces *e* must occupy an angular as well as a radial position, and thereby act to reflect a certain portion of light and tend to break up the shadows, all of which will be understood and appreciated by those skilled in the art.

I claim—

1. As a new article of manufacture, a reflector provided with two eccentric curved surfaces each formed of a plurality of curved pieces the lower set having concave under surfaces and the upper set extending outward above the lower set, all joined together in substantially radial lines by a multiplicity of angular pieces all having reflecting-surfaces, substantially as described.

2. As a new article of manufacture, a reflector provided with a curved central portion, two eccentric concave surfaces each formed by a set of curved pieces extending out radially from the curved central portion and coincident at their inner ends with each other and the central curved portion, each of the radial pieces of the lower set having a concave lower surface extending along and in conformity with one and the same spherical angle, and a plurality of radially-arranged angular pieces both sets of radially-projecting portions having reflecting-surfaces, substantially as described.

3. As a new article of manufacture, a reflector provided with a curved central portion, an upper curved surface the inner portion of which is substantially coincident therewith composed of a plurality of radially-arranged

curved pieces, a lower curved surface eccentric with the upper one, the inner portion of which is connected with the central curved portion and tangent with the inner ends of the upper curved portion formed of a plurality of radially-arranged curved strips substantially wider than the strips of the upper portion, all extending along and having a lower concave surface in conformity with one and the same spherical angle, and a plurality of radially-arranged angular pieces connecting the curved pieces of the eccentric surfaces together—all having reflecting-surfaces, substantially as described.

4. As a new article of manufacture a reflector consisting of a central portion, two sets of integral projecting portions extending outward from such central portion and from the same plane downward to different planes, the members of the lower set all having concave lower surfaces, and integral connecting portions arranged at an angle to and in connection with both sets of projecting portions, substantially as described.

5. As a new article of manufacture a reflector consisting of a central portion, two sets of integral projecting portions extending outward from the central portion and from the same plane downward to different planes, the members of the lower set all having concave lower surfaces extending along and in conformity with one and the same spherical angle, and integral connecting portions arranged at an angle to and in connection with both sets of projecting portions, substantially as described.

6. As a new article of manufacture a reflector consisting of a central portion, two sets of integral projecting portions extending outward from the central portion and from the same plane downward to different planes, the members of the lower set all having concave lower surfaces extending along and in conformity with the spherical angle of a sphere having its center at the axial center and upon the convex side of such reflector, and integral connecting portions arranged at an angle to and in connection with both sets of the radially-projecting portions, substantially as described.

RYERSON D. GATES.

Witnesses:

THOMAS F. SHERIDAN,  
HARRY IRWIN CROMER.