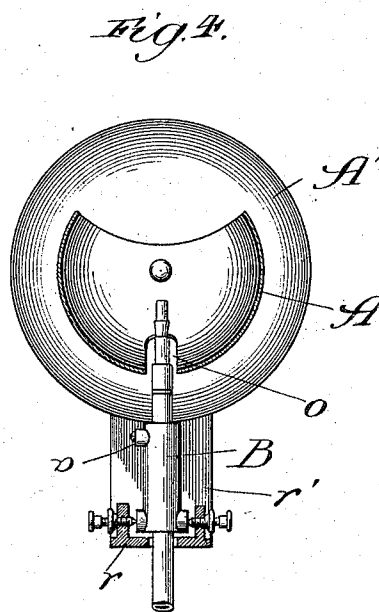
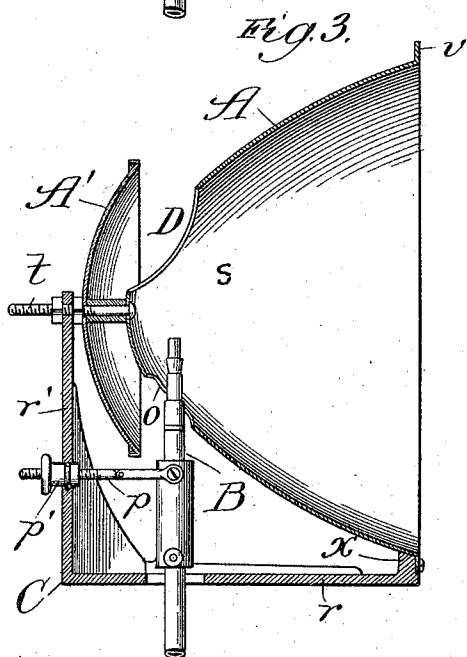
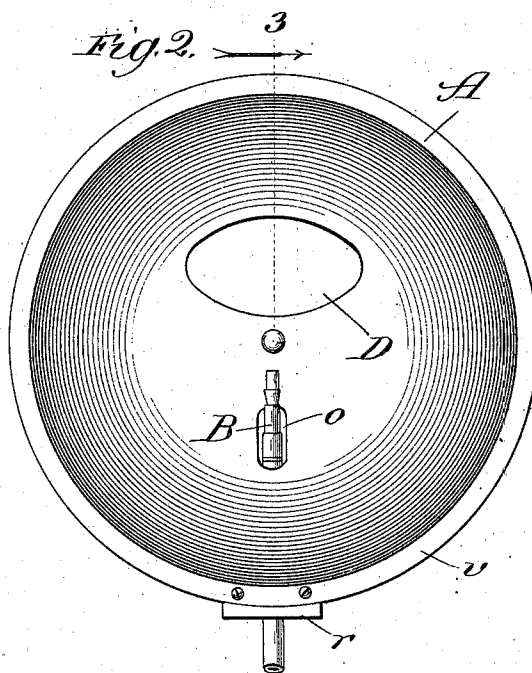
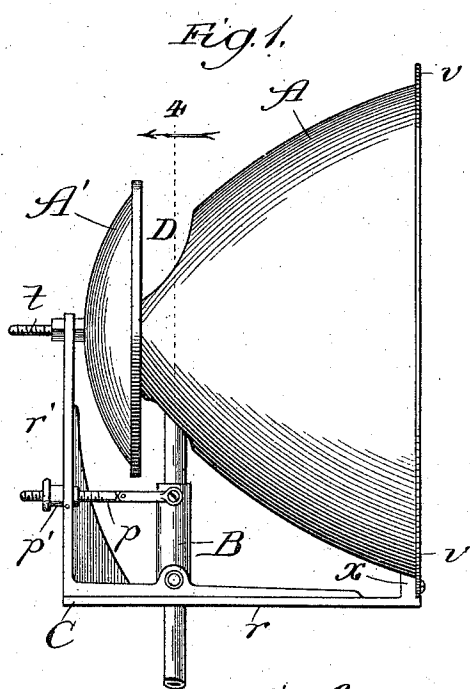


(No Model.)

H. F. FULLER.
REFLECTOR.

No. 575,473.

Patented Jan. 19, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY F. FULLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WALMSLEY,
FULLER & COMPANY, OF SAME PLACE.

REFLECTOR.

SPECIFICATION forming part of Letters Patent No. 575,473, dated January 19, 1897.

Application filed October 31, 1896. Serial No. 610,712. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. FULLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Reflectors, of which the following is a specification.

My invention relates to an improvement in the class of reflectors in which the reflecting-surface is afforded by the inside of a more or less flaring body. In every reflector of this class used for reflecting light from a flame an opening is necessarily provided to extend transversely through the reflector adjacent to its focal point for the twofold purpose of admitting the burner through the base portion and affording a chimney or ventilator for the escape of the gases, fumes, and smoke evolved by the combustion. For freely carrying off the products of combustion from the flame the opening should be comparatively large. Obviously, however, any size of section removed from the body of the reflector to afford the ventilator-opening reduces the extent of reflecting-surface accordingly, and the larger the section the greater the reduction.

The primary object of my invention is to provide means for compensating for the loss of reflecting-surface which ensues from the provision of the ventilator-opening, and this I accomplish through the medium of a supplemental reflector supported back of the opening to cover it and of a shape adapting it to be struck by the rays or most of the rays of light from the flame which would otherwise be lost to reflection owing to the provision of the opening. A perfect parabolic reflecting-surface would be one having no openings either for the passage of the burner or for ventilation; but as openings for these purposes are unavoidable in the forms wherein the burner extends through the wall of the reflector the best that can be done is to make them as small as the requirements will allow, thus leaving unimpaired as much of the reflecting-surface as possible and compensate for the loss due to the openings by means of a supplemental reflector properly disposed. It is especially desirable that the apex of the reflector be left intact, and it is also desirable

that the reflecting-surface adjacent to the apex shall have the greatest practicable area. These results are accomplished by my invention. Moreover, I prefer to render this supplemental reflector pivotally adjustable on a center which should coincide with the focal center or point in the main reflector, thereby to adapt it to be turned to bring a bright section of its reflecting-surface back of the opening when the section thereof previously used there shall have become blurred or smoked. This enables the reflector to be used without interruption for cleaning, as the blurred or smoked portion of the supplemental reflector may be conveniently cleaned when cool after having been turned away from backing the ventilator-opening. The construction thus generally described enables the attainment of a short focus and deep reflector, with the latter of comparatively small diameter, thereby saving in expense of manufacture and increasing the light in proportion to the diameter of the reflector.

Another feature of my improvement relates to the provision of mechanism for readily changing the optical focus by moving the burner back and forth with relation to the focal point in the reflector.

Referring to the accompanying drawings, Figure 1 shows my improved reflector by a view in side elevation. Fig. 2 is a face view of the same; Fig. 3, a section taken at the line 3 on Fig. 2 and viewed in the direction of the arrow, and Fig. 4 a section taken at the line 4 on Fig. 1 and viewed in the direction of the arrow.

A is the flaring hollow metal body provided, as usual, with a bright inner surface for reflecting light, and of any desired general form and construction adapting it for its purpose as the main reflector, in contradistinction to the supplemental reflector hereinafter described. The body A is shown to be supported on a frame C of flat metal, represented in the form of a rectangle, to the forward end of the horizontal arm r of which, at a lug x thereon, is fastened the body A, through the flange v about its mouth, and at its smaller end it is fastened by a screw-bolt t to the upright rear arm r' of the frame C. In the base of the reflector and near its narrower end is

formed an opening *o*, which should be elongated, as shown, for the introduction of the burner B, which I prefer to support adjustably on the frame, as by pivoting it to the arm *r* in the manner most clearly shown in Fig. 4; and the burner carries pivotally a jointed link *p*, threaded toward its outer extremity, where it passes through a tubular thumb-nut *p'*, confined in its bearing in the arm *r'*.

Obviously by manipulating the nut *p'* the burner may be adjusted back and forth, as desired, with relation to the focal point in the reflector A, which may be at *s*, to change accordingly the optical focus, or that beyond the instrument.

D is the chimney or ventilator opening, formed directly opposite the opening *o* in the upper side of the reflector A and as large as properly possible. Behind the reflector A, and centrally supported pivotally, and confined on the bolt or pin *t*, is the supplemental reflector A' of the internally-convex shape illustrated, the radius of which should bear such relation to that of the opening D as to cover it sufficiently to be struck by most if not all of the rays from the flame from the burner, which would otherwise be lost through the opening. By this arrangement of the supplemental reflector no appreciable amount of the rays of light is lost to reflection, and its adjustability greatly enhances the convenience of its use by obviating the necessity for any interruption in the working of the apparatus for the purpose of cleaning the supplemental reflector.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a parabolic reflector having an upper ventilating-opening near its apex and a supplemental reflector adjacent to and behind the said apex to complete the reflecting-surface, substantially as described.

2. In combination, a reflector having a lower opening for the burner, and an upper ventilating-opening, said openings being located near the apex of the reflector, and a supplemental reflector located behind said apex, and having a diameter in excess of that of the reflector at the forward ends of said openings, thereby extending beyond the confines thereof, substantially as and for the purpose set forth.

3. In combination with a supporting-frame, a reflector A secured on said frame and having a base-opening *o* for the burner and an upper ventilator-opening D, and a supplemental reflector A' rotatably supported behind said ventilator-opening, substantially as and for the purpose set forth.

4. In combination, a reflector having an upper ventilating-opening near its apex, and a supplemental reflector adjacent to and behind the said apex, provided with a reflecting-surface the area of which is in excess of that of the ventilating-opening and mounted to be shifted to present different portions thereof to the said opening, substantially as described.

5. In combination with a reflector provided with an opening in its wall, a pivotally-supported burner extending through said opening, and means for adjusting the burner on its pivotal support to vary the focus, substantially as described.

6. In combination with a supporting-frame, a reflector A secured on said frame, and having an opening in its wall, a pivotally-supported burner B extending through the opening into said reflector, and a rod connection *p* between the burner and frame, provided with an operating-nut *p'*, substantially as and for the purpose set forth.

HENRY F. FULLER.

In presence of—

J. W. DYRENFORTH,
R. T. SPENCER.