

(No Model.)

R. HACKING & G. BRAND.  
ELECTRIC LAMP.

No. 559,282.

Patented Apr. 28, 1896.

Fig. 1.

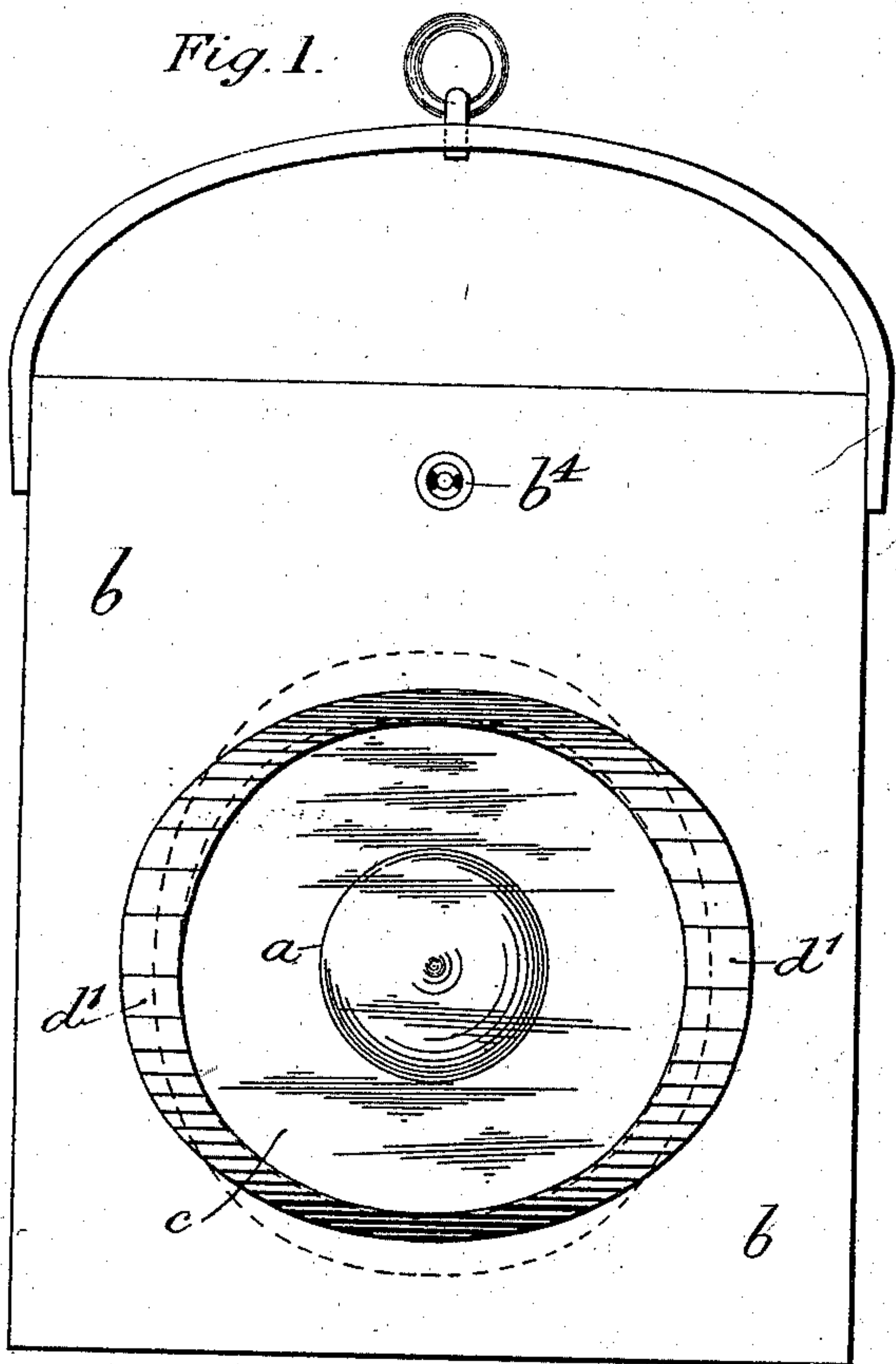


Fig. 2.

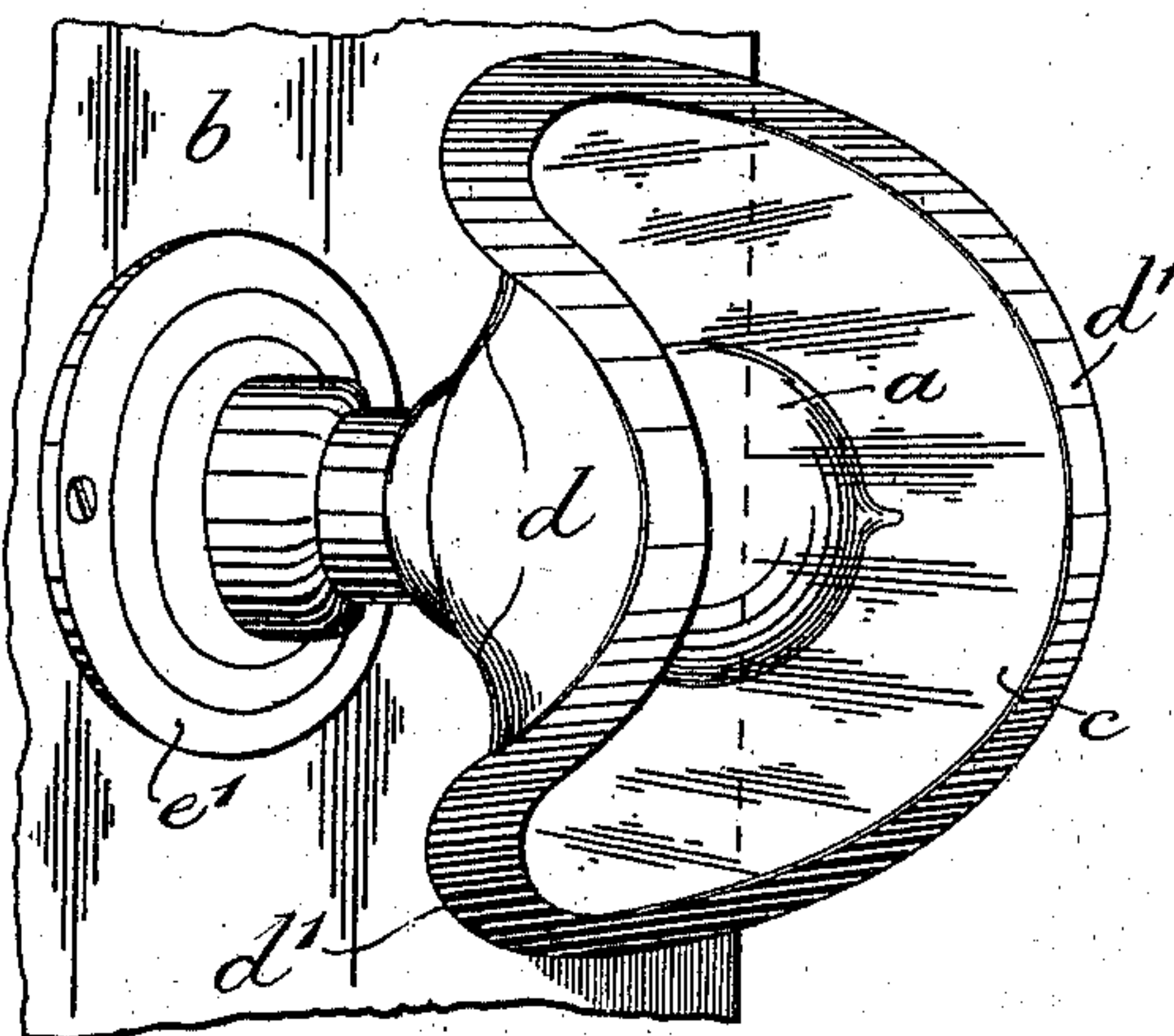


Fig. 3.

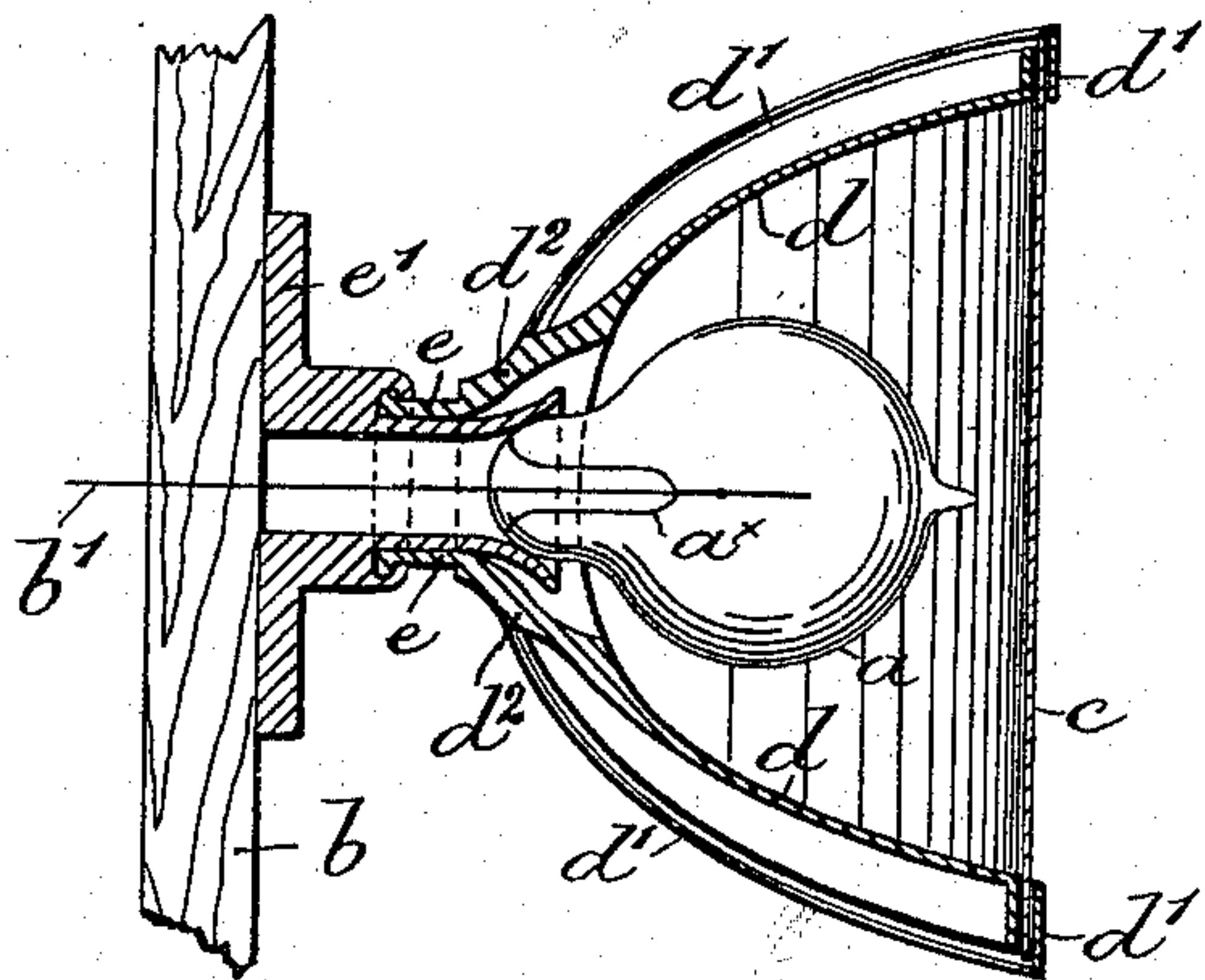
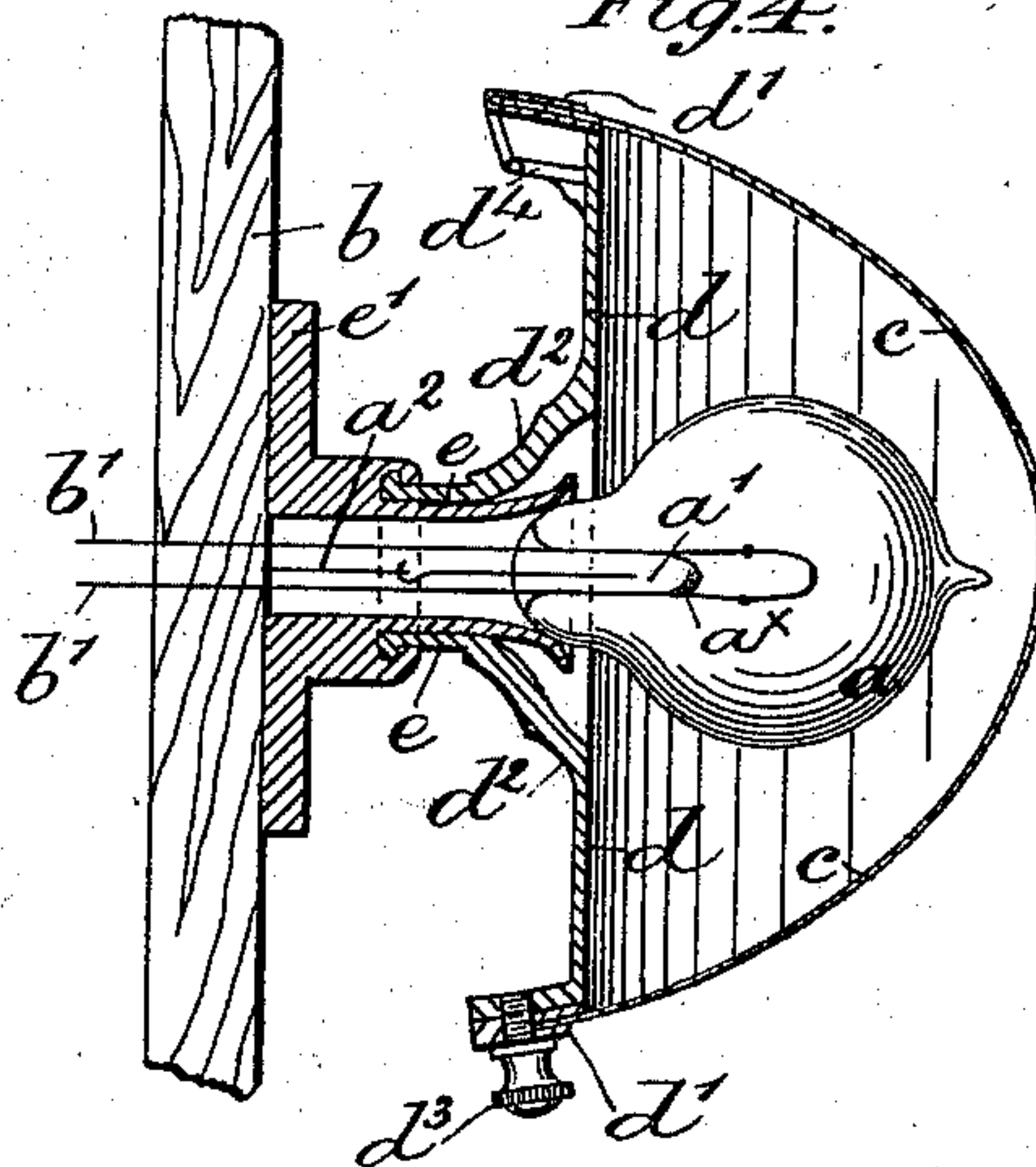


Fig. 4.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

ROBERT HACKING AND GEORGE BRAND, OF NOTTINGHAM, ENGLAND.

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 559,282, dated April 28, 1896.

Application filed July 20, 1895. Serial No. 556,621. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT HACKING, joiner, and GEORGE BRAND, engineer, subjects of the Queen of Great Britain and Ireland, residing at Nottingham, England, have invented certain new and useful Improvements Relating to Electric Lamps, of which the following is a specification.

This invention has for its object to provide a new and improved protector and reflector for electric lamps designed for domestic use, but adapted for other purposes.

The invention consists in the features of construction and the combination or arrangement of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a front elevation of a hand-lamp and battery complete embodying our improvements and suitable for use as a domestic lamp or as a miner's lamp. Fig. 2 is a detail perspective view to a larger scale, showing our protector-reflector. Fig. 3 is a cross-section, and Fig. 4 is a sectional view taken on a line at right angles to the plane of section of Fig. 3.

In the drawings, *a* is the incandescent or glow lamp, and *b* is the casing in which is the battery for working the same.

*c* is the tough, transparent, or translucent protective material with which the casing or cover of the protector is provided, and *d* the U-shaped metal reflector forming the body of such protector. This reflector is provided with a frame or edge *d'*, constructed to receive and retain a sheet of mica *c* or other tough, transparent, or translucent material. The frame or edge *d'* may, if desired, be hinged to the reflector, as indicated at *d<sup>4</sup>*, to permit of easy access to the interior of the protector. A fastening-screw *d<sup>3</sup>* may be provided to hold the frame or edge *d'* closed. The reflector is constructed with a socket *d<sup>2</sup>*, capable of swiveling upon a tubular extension or portion *e*, formed upon a supporting base-piece or mounting *e'*, secured to the battery-case. The socket *d<sup>2</sup>* is retained in place on *e* by the turned-over rim *e<sup>2</sup>* of the mounting *e'*. Through the center of this mounting pass the wires *b'* from the battery to the lamp,

and in order to take the strain or weight of the lamp off the platinum terminals a third wire *a'* is fused centrally into or otherwise secured to the lamp and hooks onto a central wire *a<sup>2</sup>*, secured in the battery-case. If this third wire be not of platinum, care should be taken that it does not pass right through the "beetle" *a<sup>x</sup>* of the lamp, so avoiding risk of the difference in contraction injuring the lamp and destroying the vacuum. Thus it will be seen that the protector-reflector can be turned or swiveled about the tubular portion *e*, which serves as an axis to bring it into any desired position between the vertical and the horizontal, without in any wise disturbing the lamp or its connections. It will also be seen that the beam of light thrown by this arrangement of combined protector and reflector will be wider in one direction than in the other, because the body *d* which constitutes the reflector is U-shaped, and the transparent or translucent protector *c* is also U-shaped, while the axes of curvature of said reflector and said protector are at right angles to each other, whereby the beam of light will be wider in one direction than the other, as before explained, and the axial rotation of the protector and reflector on the supporting base-piece renders it possible to project the broad part of the beam of light at different angles and to different points.

Although various materials have been mentioned to serve as the transparent or translucent material, yet we wish it to be understood that we prefer to use mica or toughened glass for this purpose, especially with lamps of considerable power and high tension, as celluloid and xylonite are only applicable to lamps of small power—such, for instance, as those known as "fairy lamps."

It will be obvious that although we have described and shown our invention as applied to an incandescent or glow lamp it can be applied to arc-lamps; also that the beaded edge *d'* for holding the transparent or translucent material *c* may be hinged to the reflector, and that the said reflector may be secured to the casing by a bayonet-joint or other suitable device to permit of its ready removal when required.



Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with a base-piece, of a  
5 combined protector and reflector axially rotatable upon the base-piece and composed of a U-shaped reflector and a correspondingly U-shaped transparent or translucent protector having its axis of curvature arranged  
10 substantially at right angles to the axis of curvature of the reflector and secured to and rotating therewith, whereby the reflector and protector can be rotated in either direction to project the broad part of the beam of light  
15 at different angles and to different points, substantially as described.

2. The combination with a base-piece, of a combined reflector and protector journaled upon the base-piece and composed of an approximately U-shaped reflector-body, and a  
20 correspondingly U-shaped transparent or translucent protector secured to the edges of and rotatable with the reflector, the axes of curvature of said reflector and said protector  
25 being arranged substantially at right angles to each other, whereby the reflector and protector can be axially rotated in either direc-

tion to project the broad part of the beam of light at different angles and to different points, substantially as described.

3. The combination with a base-piece having a tubular extension, of a combined protector and reflector composed of a U-shaped reflector-body having a socket journaled upon said tubular extension, and a correspondingly U-shaped transparent or translucent protector having its edges secured to the edges of the reflector and rotatable therewith, said protector and reflector having their axes of curvature arranged at right angles to each other, and said base-piece and tubular extensions serving for the passage of electric wires to an electric lamp arranged in the protector and reflector, substantially as described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

ROBERT HACKING.  
GEORGE BRAND.

Witnesses:

H. W. BULL,  
EDWARD D. HEARN, Jr.