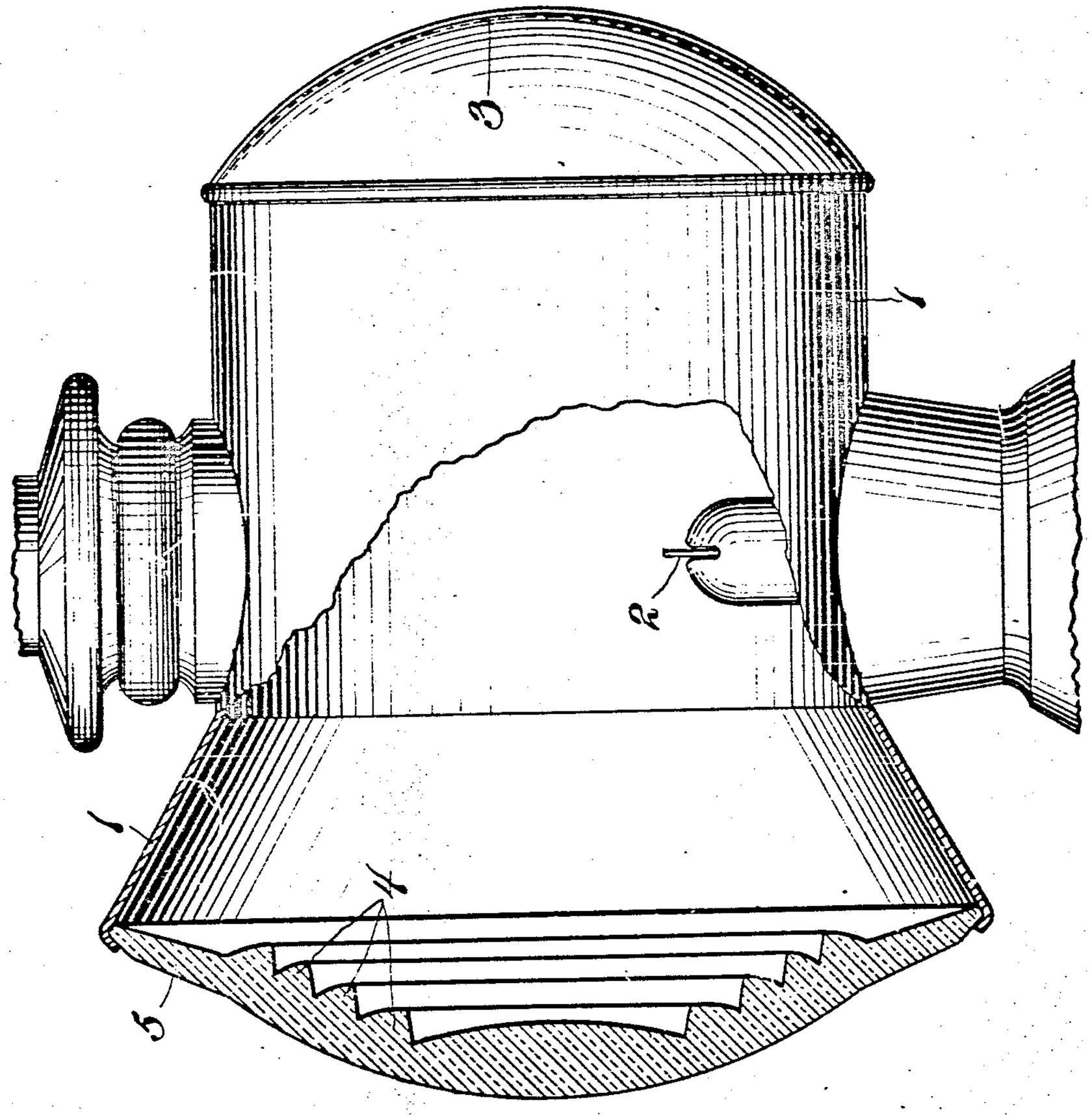
G. A. MACBETH.

LENS.

APPLICATION FILED MAY 21, 1908.

898,665.

Patented Sept. 15, 1908



WITNESSES

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UNITED STATES PATENT OFFICE.

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LENS.

No. 898,665. Specification of Letters Patent. Patented Sept. 15, 1908.

Application filed May 21, 1908. Serial No. 434,076.

To all whom it may concern:

Be it known that I, GEORGE A. MACBETH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Lenses, of which the following is a specification.

The invention relates to lenses for lamps of the general type shown in my Patent Number 832,916, of October 9th, 1906, and has for its objects: the provision of certain improvements in the structure of the patent including certain modifications of the observation annulus, rendering the lens more serviceable and efficient, which improvements will be hereinafter particularly pointed out. One embodiment of the invention is illustrated in the accompanying drawing, wherein:—

The figure is a side elevation, partially in section showing the lens embodying the invention as applied in a lamp.

As shown in the drawing, the lens is applied to a vehicle lamp 1 of ordinary construction provided with illuminating means 2 of any preferred construction, and the reflector 3 which may also be of any desired type. The refracting portion of the lens is of the concave convex type, and is provided with the corrugations 4, whereby the rays from the light may be brought into substantial parallelism. The portion 5 constitutes an observation annulus, whereby the flame may be inspected from the front without opening the lamp. It will be noted that this annulus constitutes in its construction a departure from that of my prior patent referred to, in that, the thickness of the annulus is greatest at its inner edge, and gradually decreases from this point to its outer edge, while in the construction of the prior patent, the thickness of the annulus was uniform throughout. This modified construction serves two purposes. In the first place it gives greater stability to the lens, in that the abrupt departure from the thick outermost refracting ring to the comparatively thin annulus is relieved, and strain involved in casting the lens reduced, and in the second place, the rays of light passing through the annulus are bent slightly inwards, thereby reducing the field of the lens, but giving a stronger light for the field covered, which somewhat limited field has been shown by experience to be desirable. It will also be noted that the outer surface of the annulus and the convex portion of the refracting portion do not lie on the same curved surface as in my prior patent, but that the curve of the outer surface of the annulus is inclined somewhat forwardly from the curve of the convex portion of the lens. This arrangement gives a better angle of observation, and reduces the distance which the convex refracting portion projects to the front of the lamp casing. The angle of the annulus 5 may be slightly varied, but the angle shown has been found by experimen to be most desirable. If the general plane of this annulus is made to approach too nearly to a right angle with the axis of the lens, difficulty in observing the flame from the front is experienced, due to the fact that the operator has to stoop over too far, and bring his eye too near to the glass in order to obtain a view of the flame. Various other advantages incident to the construction will be apparent to those skilled in the art.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. A lens comprising a concave convex ringed refracting portion and an integral surrounding plain annulus of greatest thickness at its inner edge and tapering therefrom to the outer edge.

2. A lens comprising a concave convex refracting portion ringed on its concave side, and an integral surrounding plain annulus decreasing in thickness from its inner to its outer edge and having its outer surface inclined forwardly from the line of curvature of the convex surface of the refracting portion.

3. A lens comprising an outer plain annulus inclined forwardly with respect to the axis of the lens, and an inner integral refracting portion of concave convex form ringed on its concave face and having its convex face curved out past the line of curvature of the outer surface of the annulus.

4. A lens comprising a thickened central refracting portion and an integral surrounding plain annulus of greatest thickness at its inner edge and tapering therefrom to the outer edge.

5. A lens comprising a concave-convex ringed refracting portion and an integral plain annulus, said refracting portion having its convex face curved forwardly past the line of curvature of the front face of the annulus, and said annulus tapering from said refracting portion to its outer edge.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

GEORGE A. MACBETH.

Witnesses:

HARVEY L. LECHNER,

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