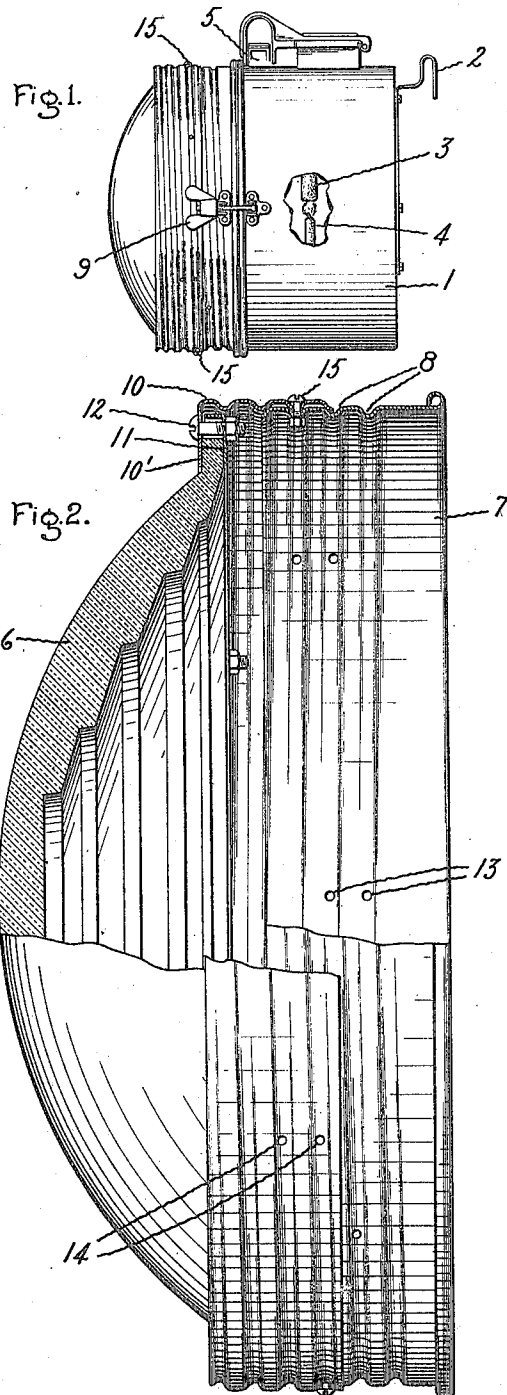


L. O. INGALLS.
HEADLIGHT.
APPLICATION FILED SEPT. 17, 1912.

1,160,718.

Patented Nov. 16, 1915.



Witnesses:

J. Ellis Glen
Anthony Mart

Inventor:
Lloyd O. Ingalls

by *Alfred B. Davis*
Att'y

UNITED STATES PATENT OFFICE.

LLOYD O. INGALLS, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

HEADLIGHT.

1,160,718.

Specification of Letters Patent.

Patented Nov. 16, 1915.

Application filed September 17, 1912. Serial No. 720,730.

To all whom it may concern:

Be it known that I, LLOYD O. INGALLS, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Headlights, of which the following is a specification.

My invention has reference to a headlight, and more particularly to a novel form of mechanism for adjusting the lens of the headlight relative to the casing on which it is supported.

With headlights in which no reflector is used all of the light emerging from the headlight passes directly from the light source without reflection, and in order to form a pencil of parallel rays, it becomes necessary to place a lens at the front of the headlight which should be so formed and positioned that the light source will be at a focus. But because of variations of the quality and density of the glass and because of mechanical imperfections in the lens, such as variations in its curvature, it becomes impossible to fix upon the focal distance in advance which will be correct for all lenses, and when the lens is placed in every case at a predetermined distance from the light source, as has heretofore been the practice in the majority of cases, the lens is out of focus with the consequence that the rays emerging from the headlight are not parallel and the light is unsatisfactory.

My invention has for its principal object the provision of means for adjusting the lens relatively to the light source, thereby making it possible to so place the lens that the light source coincides with the principal focus of the lens and to produce a pencil of light in which the rays are parallel.

My invention is illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of a headlight embodying my invention, and Fig. 2 is a sectional view, partially in elevation of the supporting members for the lens.

In the drawings, 1 indicates the casing of the headlight which is provided with the usual brackets 2 for supporting the headlight from the front of the car. The means for producing the source of light which I have here shown comprises a pair of electrodes 3 and 4, of which the upper electrode may be made of copper and the lower elec-

trode of a magnetite mixture, such as is now well known in the art. The outlet of the chimney which is provided for the fumes evolved from the arc is indicated at 5. The lens 6, which I have here shown as of the well known semaphore type, is supported from the casing of the headlight by a male member 7 and a cooperating female member 10. The member 7 which may conveniently be made of a spinning or by casting, is threaded at 8, and is secured to the casing of the headlight by a fastening member 9, it being understood that the opposite side of the member 7 is provided with a hinge. The member 10 is threaded to correspond to the member 7 and is provided at its outer edge with a flange 10'. The lens 6 is clamped against the flange 10' of the member 10 by means of a flanged annular ring 11 and bolts 12 which pass through both the flange 10' and the ring 11.

The member 7 is provided with a series of openings 13 which are equally spaced with reference to a given turn of thread, while the member 10 is provided with a series of openings 14, also equally spaced with reference to a turn of thread, but differing in number from the series in the member 7, preferably by two, and in such a position that they may be successively brought into registry with the openings of the member 7. In practice I find that I secure a satisfactory adjustment of the lens by providing the male member 7 with eight openings in one turn of thread and the female member 10 with six such openings. With the openings thus arranged, any two diametrically opposite openings in the member 10 may be brought in registry with any two diametrically opposite openings in the member 7, and the two members secured together by bolts 15 passing through the given registering openings. With the openings thus arranged, an adjustment of 1/24 of a turn is provided, and with threads of 1/2 of an inch I am thus enabled to secure a longitudinal adjustment of the lens of 1/48 of an inch, which is sufficiently fine for most purposes. In case a greater range of adjustment is desired, the series of openings in the two members may be continued further, and I have illustrated them extending through 1-1/2 turns of thread, that is, the member 7 is provided with twelve openings and the

member 10 with nine openings. While I have illustrated and described a definite number of openings for each turn of thread which will usually be found satisfactory, it will, of course, be understood that the number may be varied as desired, and it will also be understood that while I have shown the number of openings in the two members differing by two for a single turn of thread, that they may be made to differ by one and the two members secured together by a single bolt. It will further be understood that the openings may be carried through any number of turns desired.

It will be seen that my invention enables me to secure any desired adjustment of the lens along its axis and that when such adjustment has once been made, the entire structure shown in Fig. 2 comprising the two members 7 and 10 and the lens may be opened as a door and entirely removed from the headlight without disturbing the adjustment.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

In combination, a headlight, a casing therefor, means for producing a source of light within said casing, a lens, and means for adjusting said lens relative to said casing, comprising threaded male and female members secured to the casing and to the lens respectively, the male member being provided with a series of equally spaced openings per turn of thread and the female member with a series of openings per turn of thread differing from those of the male member and adapted to successively register with those of the female member, and means adapted to pass through registering openings and secure said members together.

In witness whereof, I have hereunto set my hand this 12th day of September, 1912.

LLOYD O. INGALLS.

Witnesses:

JOHN A. McMANUS, Jr.,
FRANK H. JOHNSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."