April 4, 1950 W. P. OLINGER 2,502,880

COMBINED FOG LAMP AND HEAD LAMP

Filed July 11, 1947 2 Sheets-Sheet 1

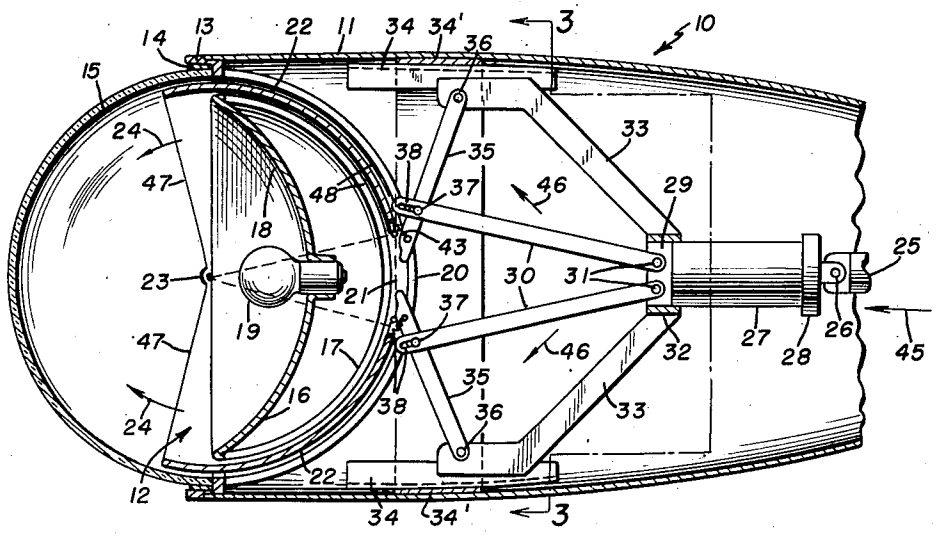


Fig. 1.

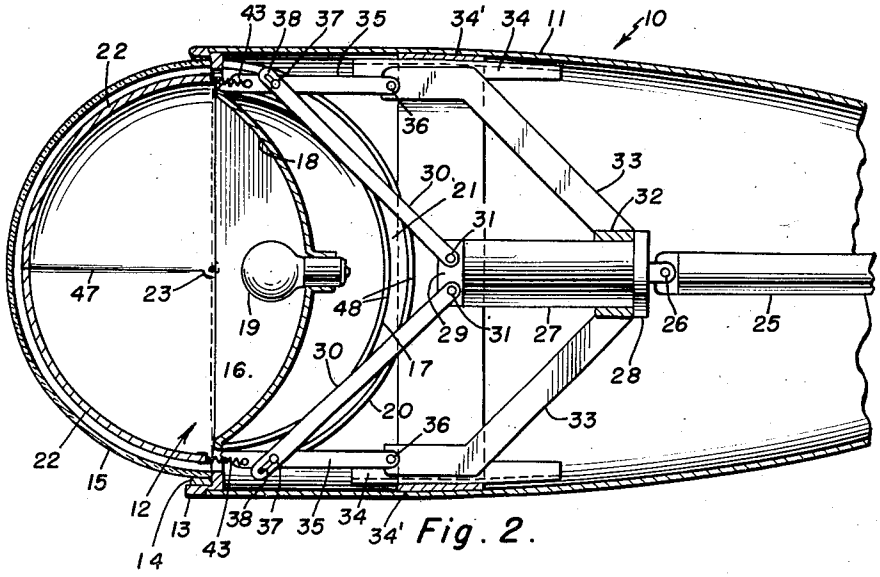


Fig. 2.

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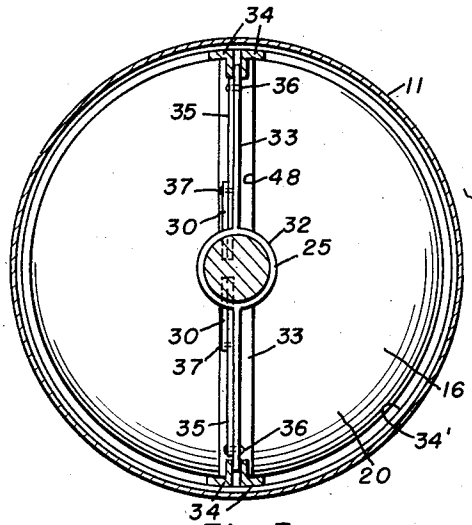


Fig. 3.

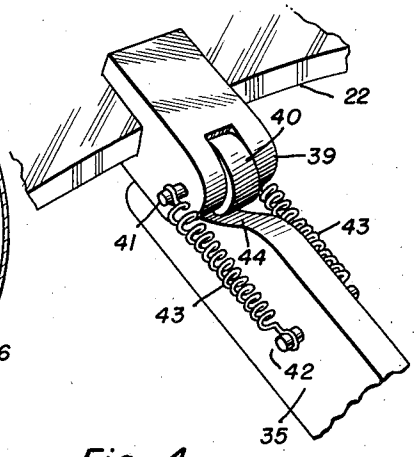


Fig. 4.

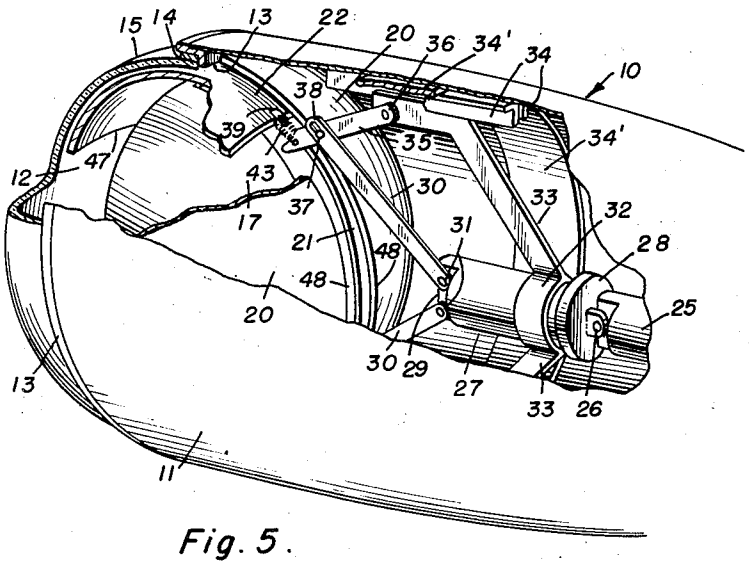


Fig. 5.

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UNITED STATES PATENT OFFICE

2,502,880

COMBINED FOG LAMP AND HEAD LAMP

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Application July 11, 1947, Serial No. 760,184

4 Claims. (Cl. 240—46.03)

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This invention relates to new and useful improvements and structural refinements in driving lamps for automotive vehicles, and the principal object of the invention is to provide a device of the character herein described, which may be employed selectively as an ordinary head lamp and as a fog lamp, the head lamp being adapted for use under normal driving conditions, while the fog lamp may be utilized during rain, snow, fog, and other adverse weather condition.

A further object of the invention is to provide a lamp which, by virtue of its character above outlined, will eliminate the use of the separate or accessory fog lamps which are now employed in addition to the standard head lamps.

Another object of the invention is to provide a combined fog lamp and head lamp which is simple in construction, which will not easily become damaged, and which may be conveniently manipulated.

An additional object of the invention is to provide a combined fog lamp and head lamp which will readily lend itself to economical manufacture and which is otherwise well adapted for the purposes for which it is intended.

With the above more important objects in view and such other objects as may become apparent as this specification proceeds, the invention consists essentially of the construction and arrangement of parts as shown in the accompanying drawings in which:

Figure 1 is a fragmentary cross sectional view of the invention, showing the same in readiness for use as a head lamp;

Figure 2 is a cross sectional view, similar to that shown in Figure 1, but illustrating the invention in readiness for use as a fog lamp;

Figure 3 is a cross sectional view, taken substantially in the plane of the line 3—3 in Figure 1;

Figure 4 is a fragmentary perspective view illustrating the attachment of a link to a lens section used in the invention, and;

Figure 5 is a perspective view of the invention, the same being partially broken away to reveal its construction.

Like characters of reference are used to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the invention consists of a combined fog lamp and head lamp designated generally by the reference character 10, the same embodying in its construction a suitable housing 11 which may simply assume the form of the conventional, elongated head lamp shell, and which is provided at the forward end thereof with a circular opening hereinafter called the light beam passage 12.

An annular retaining ring 13, including a sealing gasket 14, is mounted in the opening 12, the retainer 13 being employed for securing in position a substantially semi-spherical lens 15, as will be clearly apparent. This lens is preferably formed from clear glass, and will be hereinafter referred to as the primary lens 15.

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An incandescent lamp and reflector unit 16 is mounted in any suitable manner in the housing 11, the unit 16 including a substantially semi-spherical shell 17 provided in the concavity thereof with a reflector 18 which, in turn, is equipped with a suitable incandescent lamp 19.

One manner of mounting the unit 16 in the housing 11 is shown in the accompanying drawings, wherein the shell 17 is mounted in the concavity of a semi-spherical casing 20 which, in turn, is secured to the aforementioned retainer 13. It will be noted that the casing 20 is spaced from the shell 17 as at 21, and a pair of coacting, concavo-convex secondary lens sections 22 are movably positioned in the space 21, as will be presently described. In effect, each of the sections 22 assumes the form of a spherical quadrant, and the two quadrants are pivoted, in a diametrically opposed concentric relation as at 23, to the retainer 13. Furthermore, it should be noted that the aforementioned casing 20 constitutes what may be referred to as a spherical continuation of the primary lens 15, and that the casing 20, together with the shell 17, coact to provide a receptacle (in the form of the space 21) for the lens sections 22, as is best shown in Figure 1.

It should be also understood that the lens sections 22 are formed from colored, preferably amber glass, such as is commonly employed in fog lamps.

Accordingly, when the lens sections 22 are disposed in the space 21, the beam of light emanating from the lamp 19 will be transmitted through the clear primary lens 15, and the device may be employed in the manner of a conventional head lamp, as will be clearly understood. On the other hand, if the lens sections 22 are moved into an operative position in the direction of the arrow 24 as indicated in Figure 2, the beam of light will pass through the colored lens sections and the device may be effectively used as a fog lamp.

Means are provided for moving the lens sections 22 from one position to the other, said means consisting of an actuating rod 25 which is slidable longitudinally in the housing 11 and the sliding of which is controlled in any desired manner, such as for example, by air pressure, by hydraulic pressure, or electro-magnetically. In any event, the rod 25 is connected at one end thereof as at 26 to a cylindrical member 27 which is provided at one end thereof with an annular shoulder 28, while its remaining end portion is flattened as at 29 so that one end of each of a pair of links 30 may be pivotally connected thereto as at 31.

A collar 32 is slidably positioned on the member 27 and is formed integrally with a pair of forwardly and outwardly divergent arms 33, the free end portions of which are angulated and are slidably disposed in a pair of guides 34.

Each of the latter simply assumes the form of a pair of L-shaped members secured in spaced parallel relation to an annular support 34' mounted in the housing 11, and it will be noted that the guides 34 are disposed at the diametrically opposed sides of the support, as will be clearly understood. By virtue of the guides 34, rotation of the collar 32 upon the member 27 will be effectively prevented.

A lever 35 is pivoted as at 36 to each of the arms 33 and each of the levers is also provided medially of its length with a laterally projecting pin 37 which engages a slot 38 formed in the aforementioned links 30.

A suitable bracket 39 is rigidly secured to each of the lens sections 22, the bracket 39 carrying a roller 40 which is rotatably mounted on a transversely extending pin 41. A further transversely extending pin 42 is provided medially the length of each of the arms 35 and a pair of tension springs 43 extend between each of the pins 41, 42, whereby the arms 35 are resiliently connected to the lens sections. It will also be noted that the free end portions of the arms 35 are provided with inclined or curvelinear surfaces 44 which are adapted to engage the rollers 40.

Assuming the device to be in the position illustrated in the accompanying Figure 1, if the actuating rod 25 is moved in any suitable manner in the direction of the arrow 45, the collar 32 and the associated arms 33 will remain stationary while the member 27 will also move in the direction of the arrow 45. Simultaneously, the links 30 will move forwardly and outwardly as indicated at 46, and the lens sections 22 move forth into the operative position, as at 24.

However, it will be found that the movement of the links 30 will not be sufficient to bring the edges 47 of the sections 22 in contact and accordingly, in due course the shoulder 28 will engage the collar 32 and will force the collar, together with the arms 33, in the direction of the arrow 45. By this time, the rollers 40 which were previously out of engagement with the surfaces 44 on the arms 35 will now engage said surfaces and will be forced by the arms 35 forwardly, whereby complete moving of the lens sections 22, more specifically, a contact of the edges 47 of the lens sections, will be attained.

It will be noted that by virtue of the bracket 39 and the rollers 40, together with the associated springs 43, effective operative connection of the arms 35 to the lens sections is provided, so that the lens sections will not become damaged by the arms.

Furthermore, it should be also understood that in order to facilitate free and unobstructed movement of the links 30 and arms 35, the shell 17 as well as the casing 20 are formed with a pair of aligned, circumferentially extending slots 48 in which the components 30, 35 may be freely received while they are being actuated by means of the rod 25, as described.

It is believed that the advantages and use of the invention will be clearly understood from the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown

and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. In a lamp structure, the combination of a pair of coacting lens sections mounted for swinging from an open to a closed position, and means for swinging said lens sections comprising a pair of fulcrum pins disposed in spaced relation at the sides of the lamp structure and adapted to be simultaneously shifted toward and away from said lens sections, a pair of levers fulcrumed on said pins and operatively connected to said lens sections, a slidable actuating member, a pair of links pivoted at one end thereof to said member, said links being disposed in the space between said fulcrum pins and having their remaining ends pivoted to said levers whereby sliding of said member may swing said lens sections from an open to a partially closed position independently of shifting of said fulcrum pins, and means for subsequently shifting said fulcrum pins toward said lens sections whereby the latter may be fully closed through the medium of said levers.

2. The device as defined in claim 1, wherein sliding of said actuating member for an initial portion of its travel partially closes said lens sections through the medium of said links, said means for shifting said fulcrum pins being responsive to the sliding of said member for the ultimate portion of its travel.

3. In a lamp structure, the combination of a pair of coacting lens sections mounted for swinging between open and closed positions, and means for swinging said lens sections comprising a slidable actuating member provided with a shoulder, a collar slidable on said member and engageable by said shoulder, a pair of spaced arms provided on said collar, a pair of levers pivoted to said arms and operatively connected to said lens sections, and a pair of links pivoted to said member and to said levers.

4. The device as defined in claim 3 together with means for operatively connecting said levers to said lens sections, comprising brackets mounted on said lens sections, rotatable rollers in said brackets said levers having end portions formed with cam surfaces engageable by said rollers, and tensioning elements connecting said levers to said brackets.

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