July 12, 1927 1,635,393

A. E. AMANS

DIRIGIBLE HEADLIGHT

Filed March 11, 1925

Fig. 1

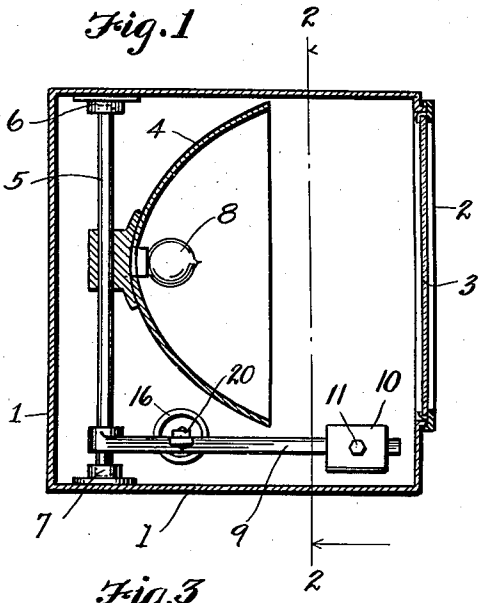


Fig. 2

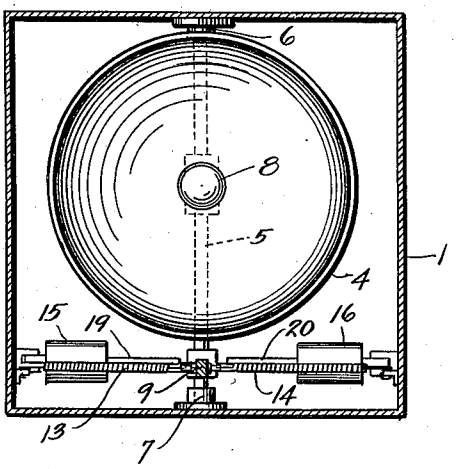


Fig. 3

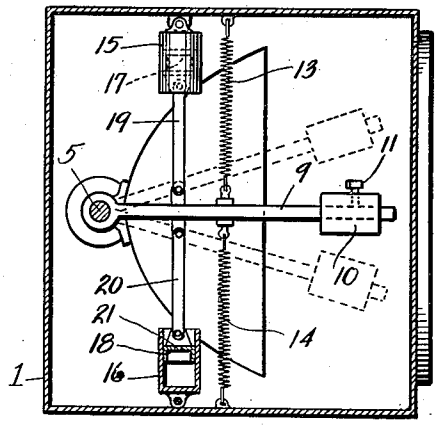
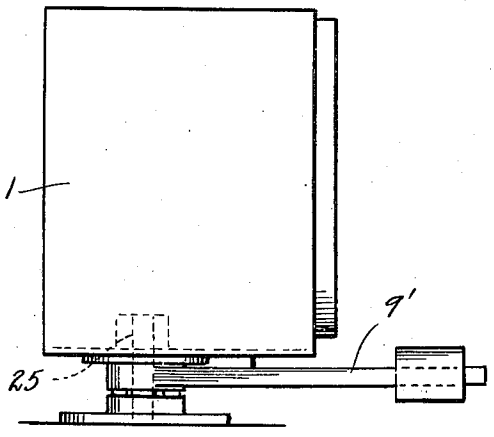


Fig. 4



INVENTOR
ALEXANDER E. AMANS

BY
Richard J. Cook
ATTORNEY

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UNITED STATES PATENT OFFICE.

ALEXANDER E. AMANS, OF LACEY, WASHINGTON.

DIRIGIBLE HEADLIGHT.

Application filed March 11, 1925. Serial No. 14,600.

This invention relates to improvements in headlights and particularly to headlights for use on railway locomotives, or the like; it being the principal object of this invention to provide a rotatably mounted headlight equipped with means whereby it will be automatically adjusted so as to cause the rays of light therefrom to follow a roadway around curves as well as on a straight line track.

More specifically stated, the object of the invention resides in the provision of a pivotally supported headlight and means which operates under the influence of and in accordance with the degree of inclination toward one side or the other of a locomotive, or car on which the headlight is mounted, to cause the headlight to be moved rotatably so as to automatically keep the light therefrom on the roadway while rounding curves and which will return the lamp to normal position after the curve has been rounded and while travelling on a straight track.

Other objects of the invention reside in the various details of construction of the headlight, the means for stabilizing its movement and for preventing vibration.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical section of a headlight embodied by the present invention, particularly illustrating the pivotal support of the headlight and reflector and the weighted arm whereby its movement is automatically controlled.

Figure 2 is a vertical sectional view, taken on the line 2—2 in Figure 1.

Figure 3 is an under side plan view of the lamp control mechanism, illustrating the means for stabilizing its movement and for yieldably retaining it in normal position.

Figure 4 is a view illustrating an alternative construction wherein the headlight housing is rotatably mounted.

Referring more in detail to the drawings—

1 designates the housing of a headlight which, as shown in Figures 1, 2 and 3, may be rigidly mounted in any suitable manner on a locomotive or car, which is equipped at the front with a door 2 provided with a transparent lens 3.

Located within the housing is a reflector 4 which may be of the parabolic or other suitable type and which is rigidly fixed to a vertical supporting rod 5, which, in turn, is rotatably supported at its upper and lower ends in bearings 6 and 7, respectively. Disposed within the reflector is a lamp 8 which may be electrically, or otherwise lighted, and which is mounted in a fixed relation relative to the reflector 4.

Fixed to the lower end of the rod 5 and extending forwardly therefrom is a horizontally disposed lever 9 on which a weight 10 is slidably adjustable and which is adapted to be locked at different positions of adjustment by a set screw 11.

Due to the fact that in railway construction, the track is always inclined toward the inner side of a curve and the degree of inclination is proportional to the sharpness of the curve, the weighted lever 9 will swing toward one side or the other in accordance with the degree of inclination of the supporting shaft 5 and in this way will cause the reflector and lamp to be automatically adjusted to retain the light on the track while rounding the curves.

Attached to the lever 9, at opposite sides, and extended to the opposite side walls of the housing, are coiled springs 13 and 14 which serve the purpose of yieldably holding the lever 9 normally at a neutral position, that is, in a position which will retain the reflector so as to direct the rays of light straight forwardly with respect to the locomotive on which the headlight is mounted, but which will yield to permit the lever to swing to one side or the other in accordance with the inclination of the locomotive as it moves along a curved track.

In order to stabilize the movement of the lever and to prevent vibration of the lamp and reflector incidental to travel over rough or uneven roadways, I have pivotally mounted air cylinders 15 and 16 at opposite sides of the lever 9 in which pistons 17 and 18, respectively, are contained and which are pivotally connected by rods 19 and 20 with the opposite sides of the lever. The pistons are provided in the base with small openings 21 which permit the intaking or exhausting of air from the cylinders as the pistons move inwardly or outwardly, but which are small enough to prevent a rapid passage of the air so that in this way, vibration is prevented.

In Figure 4 I have illustrated an alterna-

tive construction in which the lamp housing 1 is rotatably mounted on a pivot pin 25 and the lever arm 9′ is rigidly fixed to the housing to extend forwardly thereof. In this construction, the entire housing will be rotated and the same result will be accomplished as is accomplished by the form shown in Figure 1 in which only the reflector and light are moved.

Assuming that the device is constructed as illustrated, it is apparent that, after the parts have been properly adjusted, the springs 13 and 14 will normally retain the reflector in a straight forward position so that the light therefrom will be directed straight ahead of the locomotive on which it is mounted. It is further apparent that when the locomotive moves onto a track that is inclined toward one side or the other as is common practice in the construction of railways at curves, the weighted lever 9 will swing toward the lower side and move the light and reflector accordingly to retain the light on the track and to regulate, or to effect the proper movement of the lever, the weight 10 may be adjusted to different positions along the lever arm and locked when at the proper position by tightening the set screw 11.

It is also apparent that vibration that otherwise might occur due to travel over rough tracks, will be prevented by the action of the pistons against the air cushions formed within the cylinders located at opposite sides of the lever.

While I have described the headlight as used on railway locomotives, it is to be understood that it can readily be adapted to automobiles or other type of wheeled vehicles and means provided otherwise than is herein shown whereby the force of gravity may be utilized to retain the light in the direction of the roadway.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent, is:

In a headlight, a housing, a vertical shaft rotatably mounted in said housing, a reflector fixed to said shaft, a lamp within the reflector, an arm fixed to the shaft and extending horizontally in the axial direction of the reflector, a weight adjustable on said arm, and springs fixed to the arm and to the housing to yieldably retain the arm at a neutral position but yieldable to permit the arm to swing to one side or the other in accordance with the inclination of the said shaft toward one side or the other, air cylinders mounted in said housing at opposite sides of the arm, pistons operable in said cylinders and links connecting the pistons with the arm.

Signed at Olympia, Thurston County, Washington, this 10th day of December, 1924.

ALEXANDER E. AMANS.