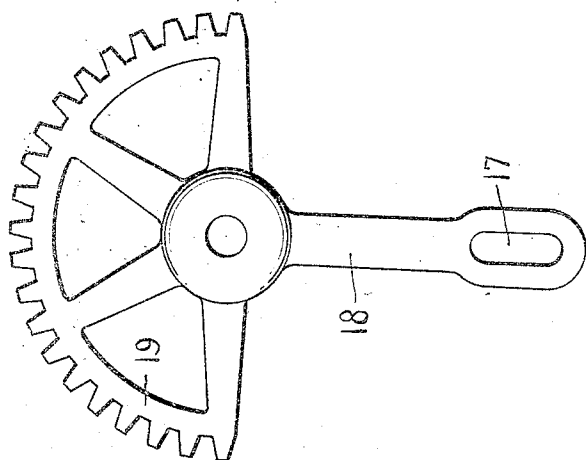


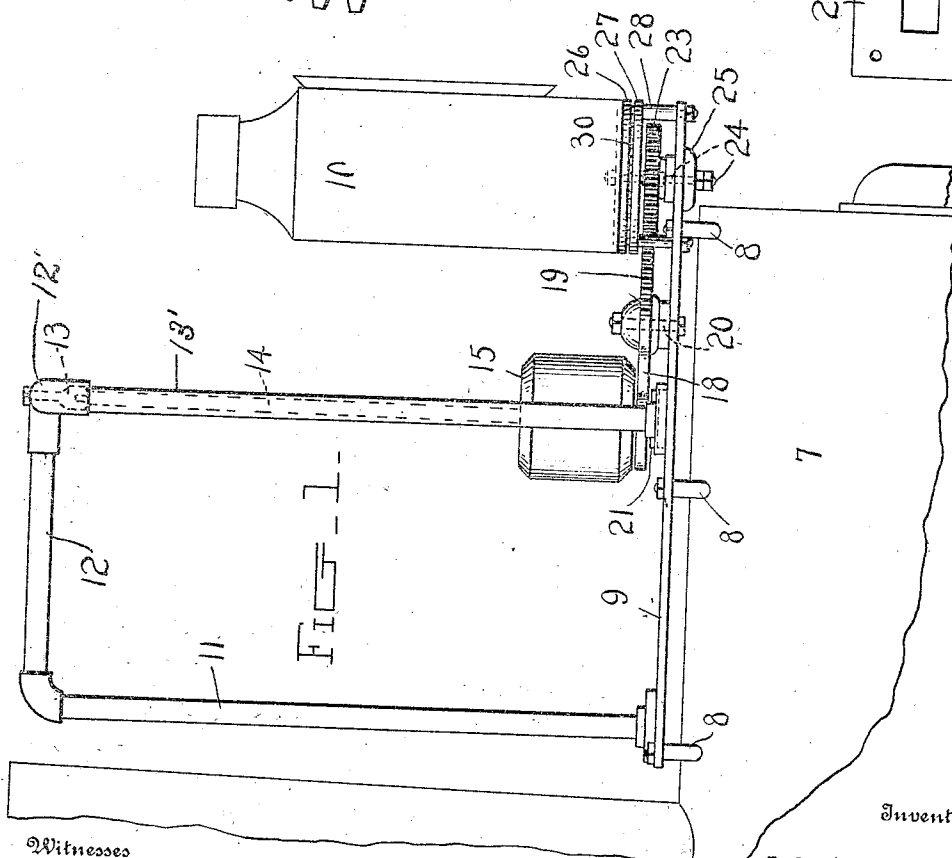
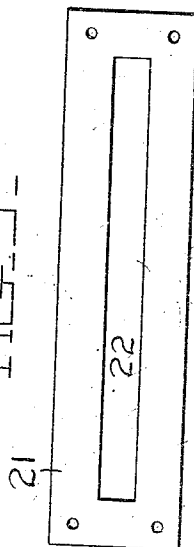
APPLICATION FILED DEC. 19, 1907.

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Witnesses

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939,832.

J. A. HAMBY & S. S. BUTCHER.  
LOCOMOTIVE HEADLIGHT.  
APPLICATION FILED DEC. 19, 1907.

Patented Nov. 9, 1909.  
2 SHEETS—SHEET 2.

FIG 4—

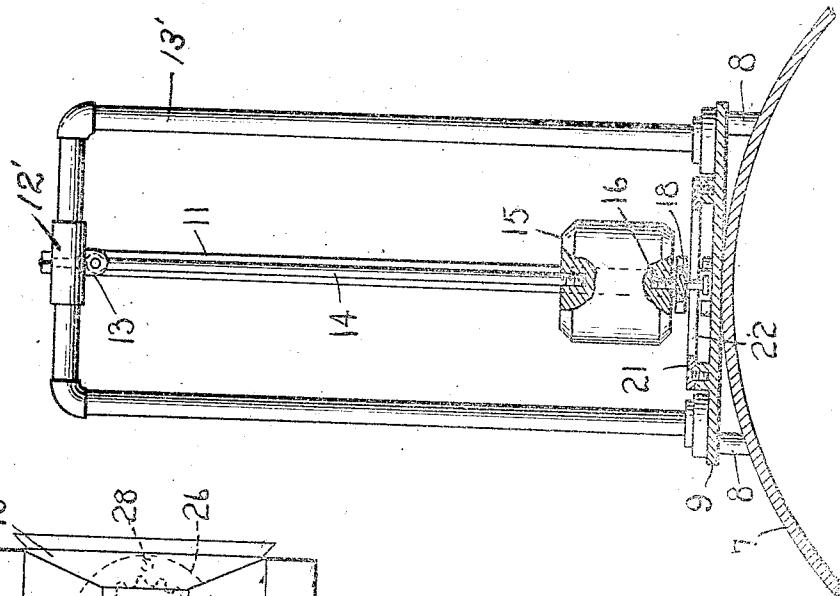
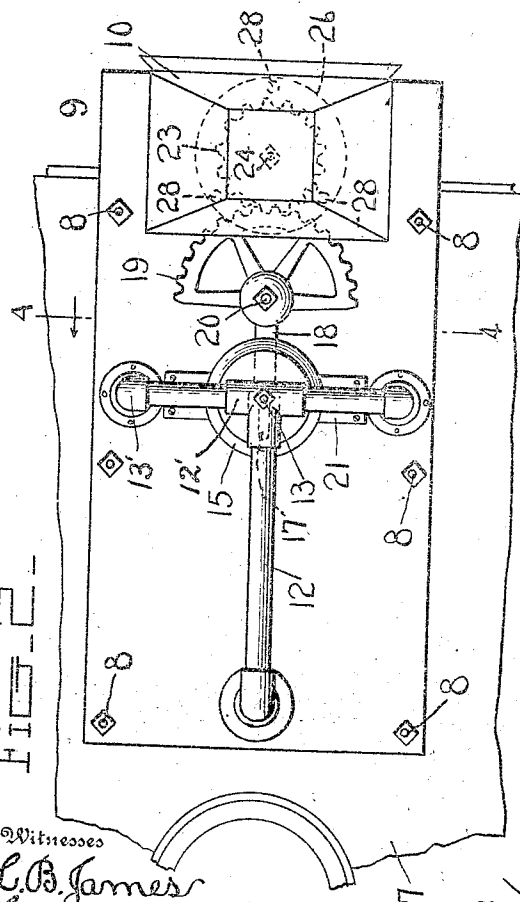


FIG 2—

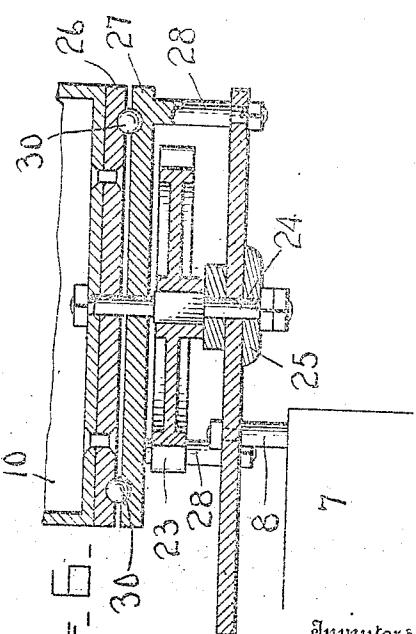


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FIG 5—



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# UNITED STATES PATENT OFFICE.

JOSEPH A. HAMBY AND SAMUEL S. BUTCHER, OF COLUMBUS, GEORGIA.

## LOCOMOTIVE-HEADLIGHT.

939,832.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed December 19, 1907. Serial No. 407,225.

*To all whom it may concern:*

Be it known that we, JOSEPH A. HAMBY and SAMUEL S. BUTCHER, citizens of the United States, residing at Columbus, in the county of Muscogee, State of Georgia, have invented certain new and useful Improvements in Locomotive-Headlights; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in locomotive head-lights.

Owing to the fact that head-lights for locomotives, as now constructed, are stationary with respect to the engine boilers on which they are mounted, it has been found impossible to properly light up a curve before running on it, or while traveling over it, or to light up the straight track ahead while traveling around the curve, as the light beam is thrown only in one direction, in a straight line directly in front of the locomotive and in line with its longitudinal axis.

It is the object of the present invention, therefore to overcome this defect by providing a locomotive head-light which is so mounted on its supporting-plate as to follow the track at all times, to cast its light in the desired direction.

A further object consists in the provision of a head-light so constructed as to turn automatically on its axis with the track, to properly light up the same at all times and to be entirely independent of the engine truck and the movements thereof.

With the above and other ends in view, the invention consists in the construction, combination, and arrangement of parts, all as hereinafter fully set forth, specifically claimed, and illustrated in the accompanying drawings, in which like parts are designated by corresponding reference numerals in the several views.

Of the said drawings:—Figure 1 is a fragmental side elevation of a locomotive provided with the improved head-light. Fig. 2 is a top plan view of the operating mechanism for the head-light. Fig. 3 is a detail view of the gear segment. Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2. Fig. 5 is a plan view of the guide. Fig. 6

is an enlarged detail sectional view illustrating the manner of mounting the head-light.

Referring more particularly to the drawings, 7 designates, generally, the boiler of a locomotive, upon which is mounted by means of brackets 8 a longitudinally-disposed supporting-plate 9 for the head-light 10 and its operating mechanism. Bolted or otherwise secured to this plate adjacent the rear end thereof is an upstanding L-shaped bracket 11 whose forwardly-projecting horizontal arm 12 extends directly over said plate and is connected at its forward end by a T joint 12' with the top member of an inverted U-shaped bracket 13', whose arms are secured at their lower ends to the plate 9. The forward arm of the T joint and the top member of the bracket 13' carry a depending bifurcated hanger 13, whose threaded stem passes through alining perforations formed therein. To said hanger is pivoted the rod 14 of a pendulum whose weight 15 has formed in its lower face a threaded socket into which the upper end of a pin 16 is removably fitted, the lower end of the pin extending through slot 17 formed in the arm 18 of a gear segment 19 loosely mounted upon a stub-shaft 20 set into the plate 9. Directly beneath the arm of said segment is secured a transversely-disposed guide plate 21 which is supported slightly above the plate 9 and has formed therein a longitudinal slot 22 into which the pin 16 likewise extends, being adapted to travel therein during the swinging movement of the pendulum.

The gear-segment above referred to meshes with a gear 23 secured to a stub-shaft 24 whose lower end extends loosely through a perforation in the supporting plate and is fitted in a bearing-cup 25 secured to the under face of said plate, while its upper portion, in like manner, extends through registering perforations formed axially in a pair of bearing-plates 26 and 27 the upper plate 26 being secured to the bottom of the head-light, as shown in Fig. 6, the upper end of said stub-shaft being likewise fastened in any preferred manner to the head-light bottom. The plate 27, which is disposed between the plate 26 and the gear 24, is stationary and is supported upon a series of feet 28 secured to the plate 9. The

mutually-adjacent inner faces of the plates 26 and 27 are provided with race-grooves in which a series of antifriction bearings 30 are disposed.

5 It will be understood, obviously, that where it is intended that the train "take" the curves without appreciably decreasing its speed, the outer rails of the curves must be slightly superelevated. On the other  
10 hand, where speed is not an essential, the train may travel more slowly at such times, and the rails need not be superelevated. The invention will operate with equal efficiency under both conditions, but one or the other  
15 must of necessity be present.

Owing to the pivotal mounting of the pendulum, it will be apparent that when the locomotive travels upon a right-hand curve the pendulum will swing in one direction,  
20 and will swing in the other direction when the locomotive travels in a left-hand curve. Such movement of the pendulum, by reason of the extension of its pin 16 through the slot in the arm of the gear segment, will  
25 cause the latter to rotate in a corresponding direction, such rotation being transmitted to the front gear 23, to whose shaft the plate 26 and with it the head-light 10, is secured, so that it will be evident that any rotation of  
30 said segment will directly effect the corresponding movement of the head-light in the same direction, the extent of the movement of the head-light being directly proportionate to the length of the arc described by  
35 the pendulum. It will thus be apparent that the beam of light thrown by the head-light will fall at all times directly upon the track traveled by the locomotive and that such beams will follow any deviations and curves  
40 in the track.

The provision of anti-friction bearings between the plates 26 and 27 allows the head-light to move with freedom upon the plate 27 which serves to support its weight  
45 in a great measure, while the pivotal mounting of the pendulum permits an easy movement of the latter.

The supporting-plate 9 is spaced sufficiently above the boiler to allow the pendulum free movement out of contact there-  
50 with.

We are aware that it has been proposed to pivotally mount a locomotive head-light and connect the same by levers with the front  
55 truck, so that movement of the truck in one direction or the other will correspondingly rotate the head-light, but such construction is faulty since the connecting links or levers between the truck and head-light are apt to  
60 contact with the boiler and to be injured thereby. We have therefore devised the present construction in which the head-light and its actuating means are entirely independent of and unconnected with the loco-  
65 motive truck.

What is claimed is:—

1. The combination, with a supporting platform, and an upstanding bracket secured thereto and including a forwardly-projecting arm, of a gear segment rotatably mount-  
70 ed upon said platform and including a slotted arm; a slotted guide plate arranged transversely of the platform and in spaced relation thereto, said guide plate being dis-  
75 posed beneath said slotted arm; a member secured to the forward end of the bracket arm; a rod pivoted at its upper end to said member, and provided at its lower end with  
80 a weight; a depending pin secured to the weight, said pin extending through the slots in the segment arm and guide plate, to rotate the segment during the swinging  
85 movement of said rod; a gear mounted upon said platform in mesh with said segment; and a head-light connected with the last-mentioned gear.

2. The combination, with a supporting platform, and an upstanding bracket secured thereto and including a forwardly-projecting arm, of a gear segment rotatably  
90 mounted upon said platform and including a slotted arm; a slotted guide plate arranged transversely of the platform, and in spaced relation thereto, said guide plate being dis-  
95 posed beneath said slotted arm; a member secured to the forward end of the bracket arm; a pendulum pivoted at its upper end to said member, and having its lower end  
100 extending through the slots in the segment arm and guide plate, to rotate the segment during its swinging movement; a vertical pin rotatably mounted upon the platform in  
105 advance of the segment; a gear secured to said pin intermediate the ends thereof, said gear meshing with said segment; a head-light secured to the upper end of said pin; a  
110 plate disposed between the last-mentioned gear and the head-light and secured to said platform, said plate being provided with a central opening through which the pin  
115 loosely extends; and a series of anti-friction bearings interposed between said plate and the bottom of the head-light.

3. The combination, with a supporting platform, and an upstanding bracket secured  
115 thereto and including a forwardly-projecting arm, of a gear segment rotatably mounted upon said platform and including a  
120 slotted arm; a slotted guide plate arranged transversely of the platform, and in spaced relation thereto, said guide plate being dis-  
posed beneath said slotted arm; a member secured to the forward end of the bracket  
125 arm; a rod pivoted at its upper end to said member, and provided at its lower end with a weight; a depending pin secured to the weight, said pin extending through the slots  
130 in the segment arm and guide plate, to rotate the segment during the swinging movement of said rod, a vertical pin rota-

ably mounted upon the platform in advance  
of the segment; a gear secured to said pin  
intermediate the ends thereof, said gear  
meshing with said segment; a head-light  
5 secured to the upper end of said pin; a plate  
disposed between the last-mentioned gear  
and the head-light, and secured to said plat-  
form, said plate being provided with a cen-  
tral opening through which the pin loosely  
10 extends; and a series of anti-friction bear-

ings interposed between said plate and the  
bottom of the head-light.

In testimony whereof, we affix our signa-  
tures in presence of two witnesses.

JOSEPH A. HAMBY.  
SAMUEL S. BUTCHER.

Witnesses:-

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J. E. SLAUGHTER.