

No. 885,679.

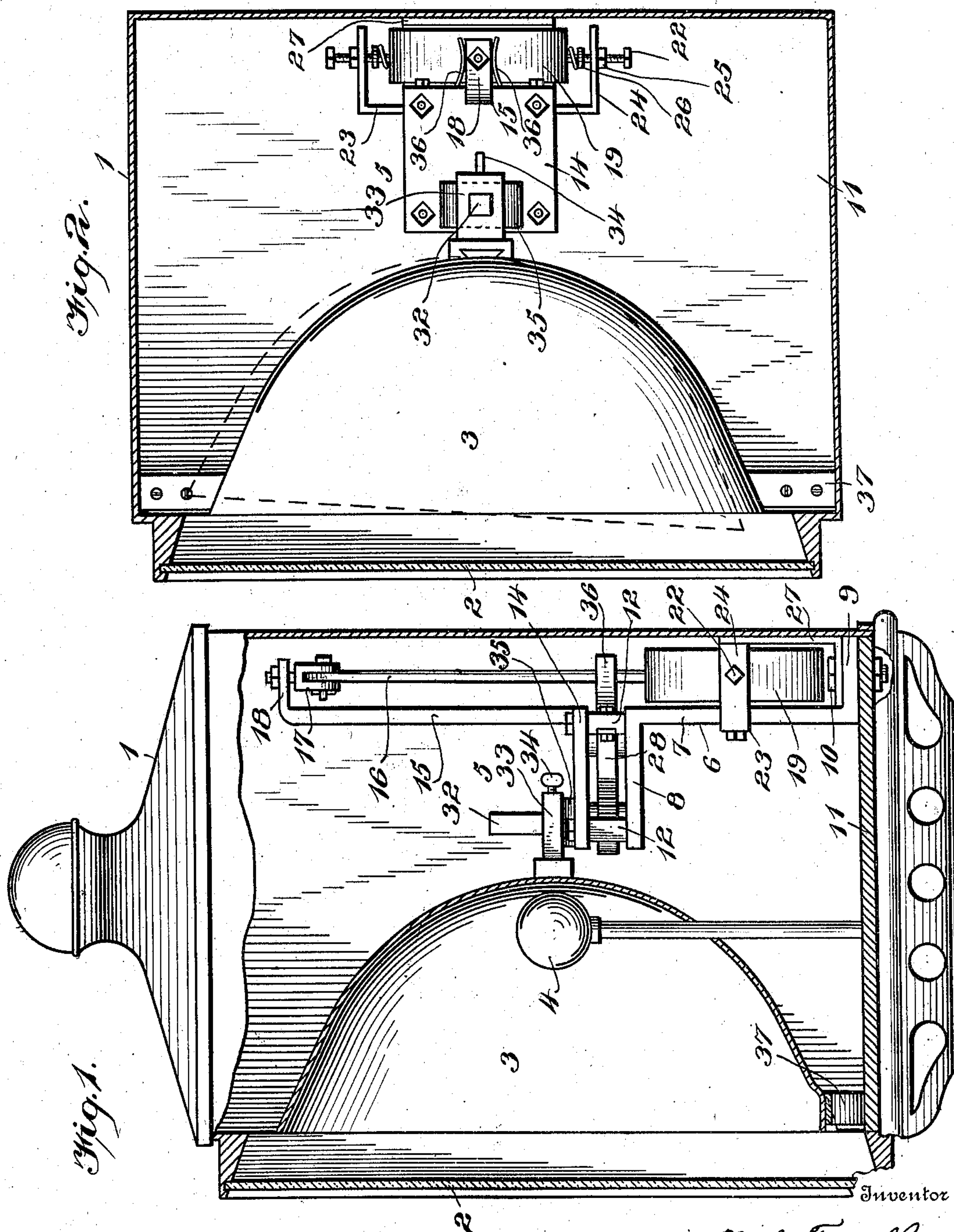
PATENTED APR. 21, 1908.

N. A. TERRELL.

AUTOMATIC REFLECTOR FOR LOCOMOTIVES.

APPLICATION FILED MAY 14, 1907.

2 SHEETS—SHEET 1.



Witnesses

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334

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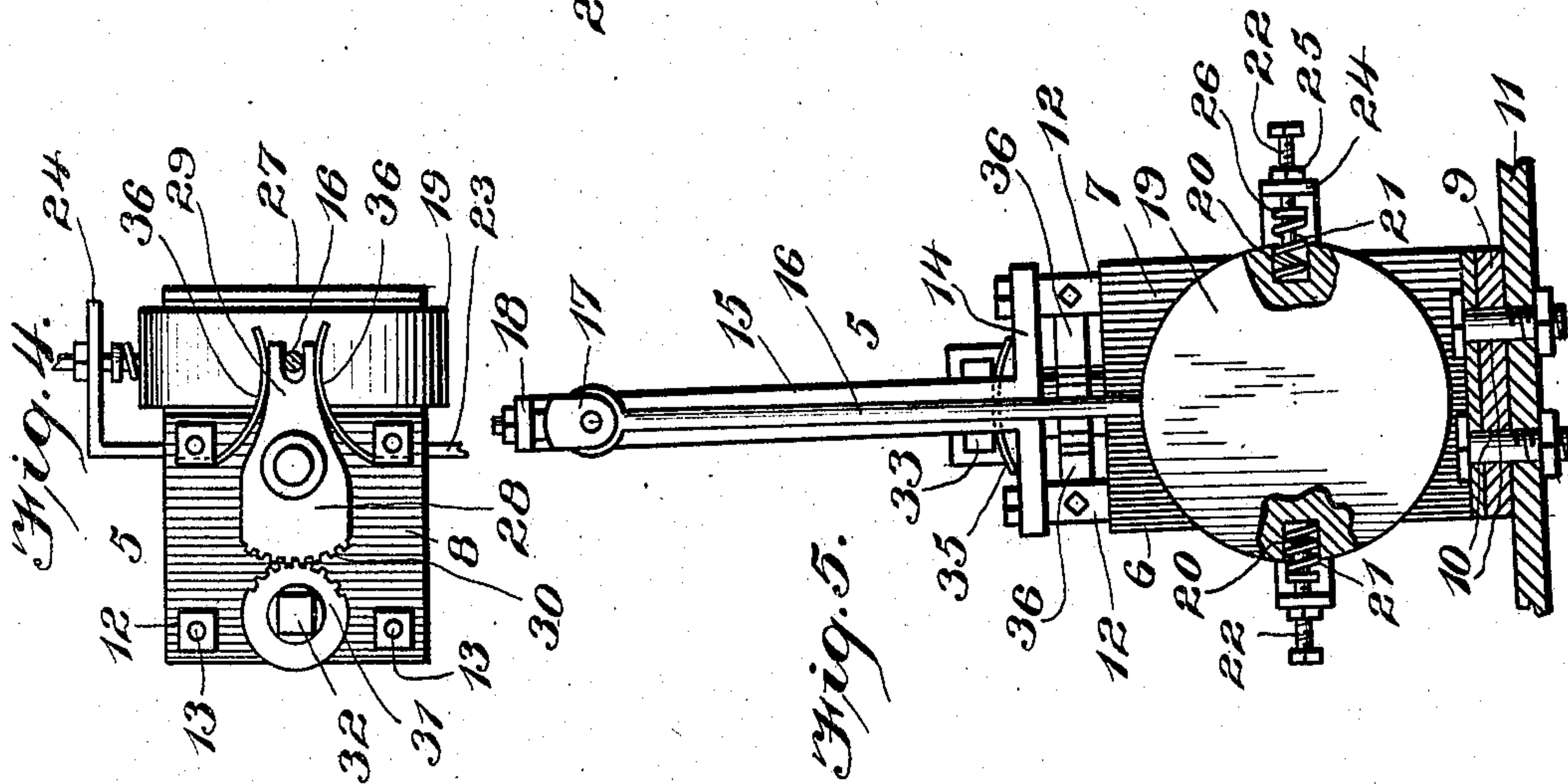
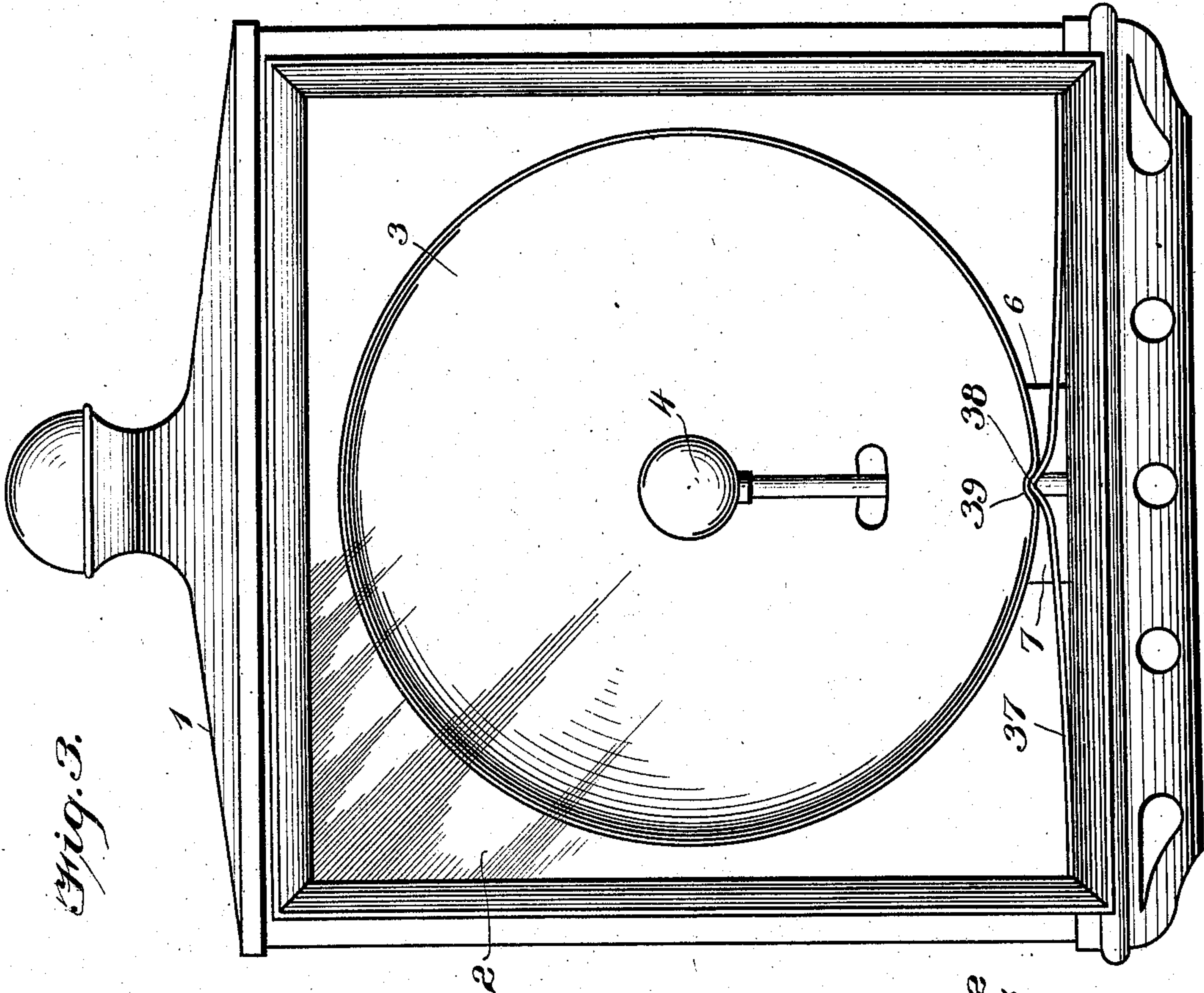


Fig. 5.

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UNITED STATES PATENT OFFICE.

NATHANIEL A. TERRELL, OF CHARLOTTESVILLE, VIRGINIA, ASSIGNOR OF ONE-HALF TO
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AUTOMATIC REFLECTOR FOR LOCOMOTIVES.

No. 885,679.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed May 14, 1907. Serial No. 373,598.

To all whom it may concern:

Be it known that I, NATHANIEL A. TERRELL, a citizen of Charlottesville, Virginia, residing at Charlottesville, in the county of Albemarle and State of Virginia, have invented certain new and useful Improvements in Automatic Reflectors for Locomotives; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to headlights for locomotives and has for its object to provide a headlight which will automatically follow the road-bed in front of the locomotive at curves or turns in the road, in such manner that the road-bed on turns and curves is at all times lighted to the same extent as a straight road-bed under usual existing conditions.

With the usual existing headlights now in universal use a strong beam of light is projected on the road-bed in front of the locomotive for a considerable distance ahead when the road-bed is straight. When, however, a locomotive takes a turn or curve the beam of light from the headlight is projected tangentially to the curve in such manner that the road-bed directly ahead is not lighted and obstructions or anything on the tracks directly in the course of the train cannot be seen by the engineer.

Several devices have been constructed for the purpose of lighting the road-bed in front of the locomotives at curves and turns, and it is my purpose to so construct an automatic headlight that it will be positive in its action and so arranged that the beam of light projected will be as steady as that projected by the usual stationary headlight as now in universal use.

My invention consists in the novel construction and arrangement of parts which provides for allowing the light coming from the headlight to follow the curves or turns in the road-bed; and my invention also consists in the novel construction and arrangement of parts which holds the light steady and without a swaying or wobbling motion; and my invention also consists in the construc-

tion for centering the light on the road-bed when the said road-bed is straight, and for preventing a wobbling movement of the ray of light occasioned by the motion of the locomotive.

In the employment of my invention I utilize the forces of gravity and depend upon the banking of the tracks at curves or turns in order to cause the light to follow the road-bed.

Referring to the accompanying drawings: Figure 1 is a vertical longitudinal section taken through the headlight and reflector showing the operating parts in side elevation. Fig. 2 is a horizontal sectional view through the headlight showing the reflector and operating parts in top plan. Fig. 3 is a front elevation of the headlight and reflector. Fig. 4 is a top plan view of the operating parts of the device, the upper plate and pendulum post being removed, and Fig. 5 is a rear elevation showing the pendulum in illustrating the same in the position which it takes when the locomotive hits the bank at the curve or turn.

Like numerals of reference indicate the same parts throughout the several figures in which;

1 indicates the headlight, box 2, the front glass 3, reflector 4, the lamp which is preferably electric and 5 the operating mechanism; said mechanism 5 comprises an angle base 6 having the vertical portion 7, the upper horizontal plate 8 and the lower horizontal plate 9, said horizontal plate 9 being provided with a series of bolt holes 10 (Fig. 5) for securing the plate 9 to the bottom 11 of the headlight box 1.

Carried on the upper plate 8 are preferably four square posts 12 having threaded ends 13 to receive the pendulum post plate 14 as shown in Figs. 1 and 5. Formed on the plate 14 is the pendulum post 15, the pendulum arm 16 being pivoted in a yoke 17 secured to the end 18 of the pendulum post 15 as clearly shown in Fig. 1.

19 indicates the pendulum, which as shown in Fig. 5, is provided with two radial openings 20 in the periphery thereof each to receive a coil spring 21 carried on a pin or bolt 22, each of said pins or bolts 22 secured in position by means of a bracket 23 as clearly shown. Said pins or bolts 22 are threaded through the arms 24 of the bracket 23 and

are provided each with a lock nut 25 and a stationary flange 26 against which the outer ends of the coil springs 21 engage.

Referring to Figs. 1 and 4 it will be seen that an angle guide plate 27 is provided on the plate 9 of the angle base 6, said guide plate 27 extending upwardly behind the pendulum 19 in order to prevent any longitudinal movement of said pendulum and to insure proper position of the same. Journalled between the upper plate 8 and the pendulum post plate 14 is a toothed segment 28 having a bifurcated arm 29 forming a lever, said segment 28 being provided with a series of teeth 30 in engagement with a toothed segment 31 also journalled between the plates 8 and 14. The post or journal 32 of the segment 31 is formed preferably square above the plate 14 as shown in Fig. 4 to receive a reflector bracket 33 as shown in Figs. 1 and 2, said reflector bracket 33 having a bore or opening to conform to the shape and form of the journal or post 32, a set screw 34 or other locking means being provided to secure firmly the bracket 33 on the post 32.

Arranged over the plate 14 on the post or journal 32 and between said plate 14 and reflector bracket 33 is a concaved spring 35, said spring being arranged as shown in order to hold the toothed segment 31 and headlight to prevent rattling.

Secured preferably to the after post 13 arranged between the plates 8 and 14 are two leaf springs 36 in engagement with the bifurcated arm 29 of the toothed segment 28, said segment being bifurcated as above described to receive the pendulum arm 16 as clearly shown in Fig. 4.

Referring to Figs. 1 and 3 it will be seen that a spring 37 is provided preferably on the base or bottom of the headlight box having a central projection 38 for interlocking engagement with the central depression 39 in the forward bottom edge of the reflector 3.

Having thus fully described the several parts of my invention its operation is as follows: A headlight being arranged and assembled as shown in Fig. 1 the spring 37 (Fig. 3) holds the reflector 3 centrally within the headlight box and the reflector maintains this position as long as the locomotive continues to travel on straight tracks, this arrangement preventing any lateral or vertical movement of the reflector and insuring a steady beam of light projected straight ahead down the road-bed. As soon as the locomotive hits a bank in the track in taking a curve or bend the pendulum 19 swings into position shown in Fig. 5, which movement of the pendulum is communicated to the reflector 3 through the medium of the toothed segments 28 and 31, said reflector 3 taking the position shown in dotted lines in Fig. 2, thereby causing the beam of light to be pro-

jected in a direction of the curve or bend of the road-way illuminating the same and bringing the curve of the road-way into clearer view of the engineer. As soon as the locomotive leaves the bank rails the pendulum assumes its normal position moving the reflector into position shown in full lines in Fig. 2 allowing the spring 37 to again engage the depression 39 in the reflector again centering the reflector within the headlight box.

In order to adjust the pendulum to alter the swing thereof so as to cause the reflector to move properly the coil springs 21 can be given more or less tension by means of the threaded pin or bolts 22. Threading the bolts 22 into the bracket increases the tension; unthreading the bolts diminishes the tension and allows the pendulum to operate at a less inclination. The leaf springs 36 in engagement with the toothed segment 28 assists in centering the toothed segment 28; while the spring 37 in engagement with the reflector insures the reflector from any horizontal or wobbling motion while the locomotive is traveling on a straight track. By reason of this construction the reflector can be made to project the light upon the track irrespective of the extent of banking of the track, and of the inclination of the locomotive.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a headlight for locomotives, the combination of a reflector, a pendulum associated with said reflector, intermediate mechanism for communicating movement of said pendulum to said reflector, said reflector being provided with a depression near the edge thereof, a spring having a projection thereof for interlocking engagement with said depression for holding said reflector in a centered position after it is centered by the said pendulum, substantially as described.

2. In a headlight for locomotives, the combination of a reflector, a pendulum associated therewith, intermediate mechanism for communicating movement of said pendulum to said reflector, a spring having means thereon for interlocking engagement with said reflector for holding said reflector in a centered position after it has been centered by said pendulum, substantially as described.

3. In a headlight for locomotives, the combination of a reflector, a pendulum associated therewith, intermediate mechanism for communicating movement of said pendulum to said reflector, said pendulum being provided with radial cavities therein, a coil spring in each of said radial cavities, and means for increasing or diminishing the tension of said springs, substantially as described.

4. In a headlight for locomotives, the combination of a reflector, a pendulum, interne-

5 diate mechanism for communicating movement of said pendulum to said reflector, means for normally centering said reflector, and resilient means associated with said pendulum for altering the swing of said pendulum and for causing the same to swing more freely to one side than to the other, substantially as described.

10 5. In a headlight for locomotives, the combination of a reflector, a pendulum, intermediate mechanism for communicating movement of said pendulum to said reflector, means for normally centering said reflector, and means associated with said pendulum
15 for altering the swing of said pendulum upon inclination of the locomotive at the curves in the track and for causing the reflector to project the light on the track irrespective of the extent of inclination of the locomotive, substantially as described.
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6. In a headlight for locomotives, the combination of a reflector, a pendulum associated therewith, intermediate mechanism between said pendulum and said reflector for communicating movement of said pendulum to said reflector, said intermediate mechanism comprising a bracket for said reflector, a post for said bracket, and a spring arranged under and in engagement with said bracket, said spring having a normal tendency to force said bracket upwardly in such manner that the parts are held against rattling, substantially as described. 25 30

In testimony whereof, I affix my signature, in presence of two witnesses.

NATHANIEL A. TERRELL.

Witnesses:

A. P. BIBB,
J. TYLER JACKSON.