

(No Model.)

2 Sheets—Sheet 1.

S. H. HARRINGTON.
RAILWAY SIGNAL.

No. 495,938.

Patented Apr. 18, 1893.

Fig. 1.

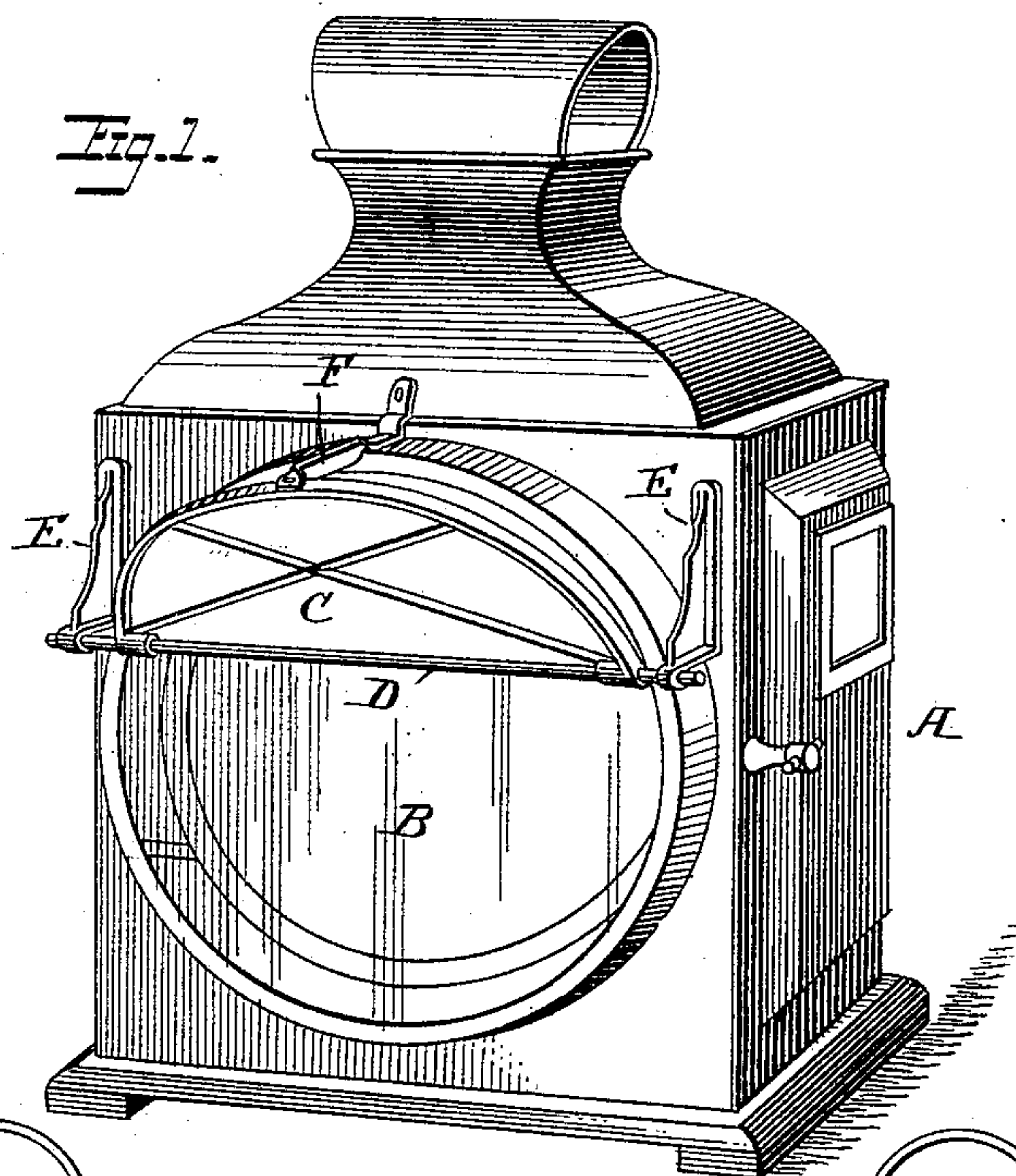
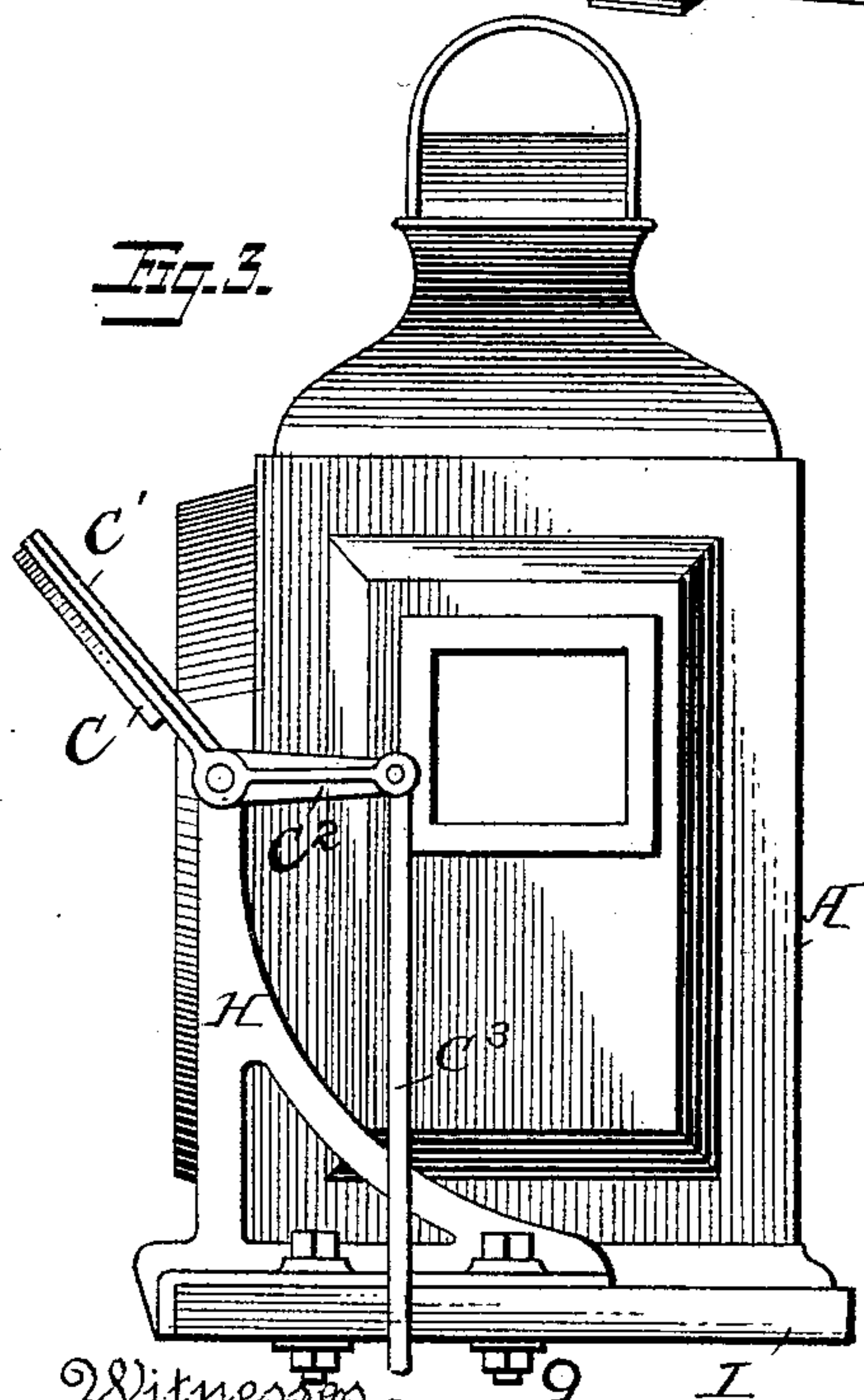
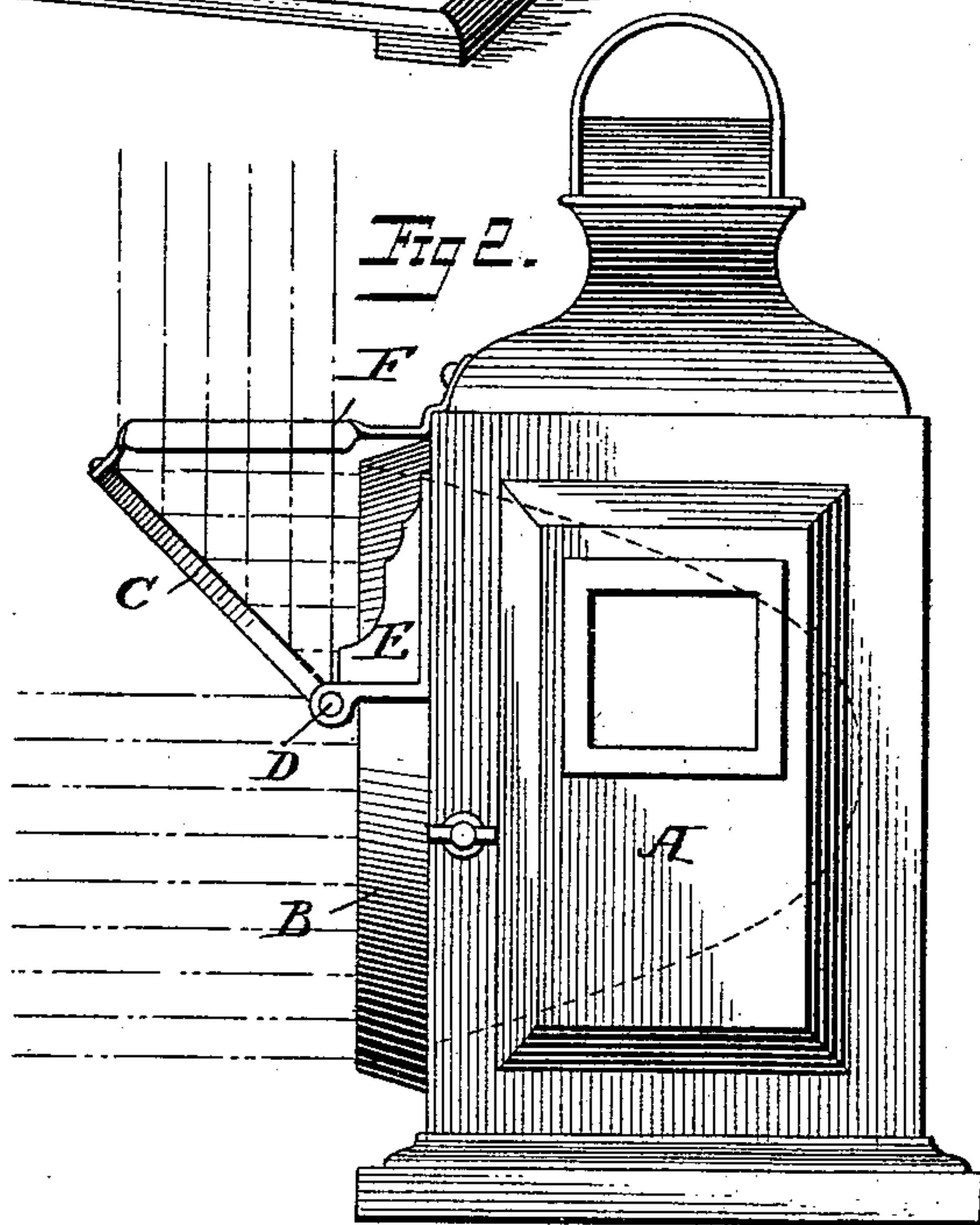


Fig. 3.



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Fig. 2.



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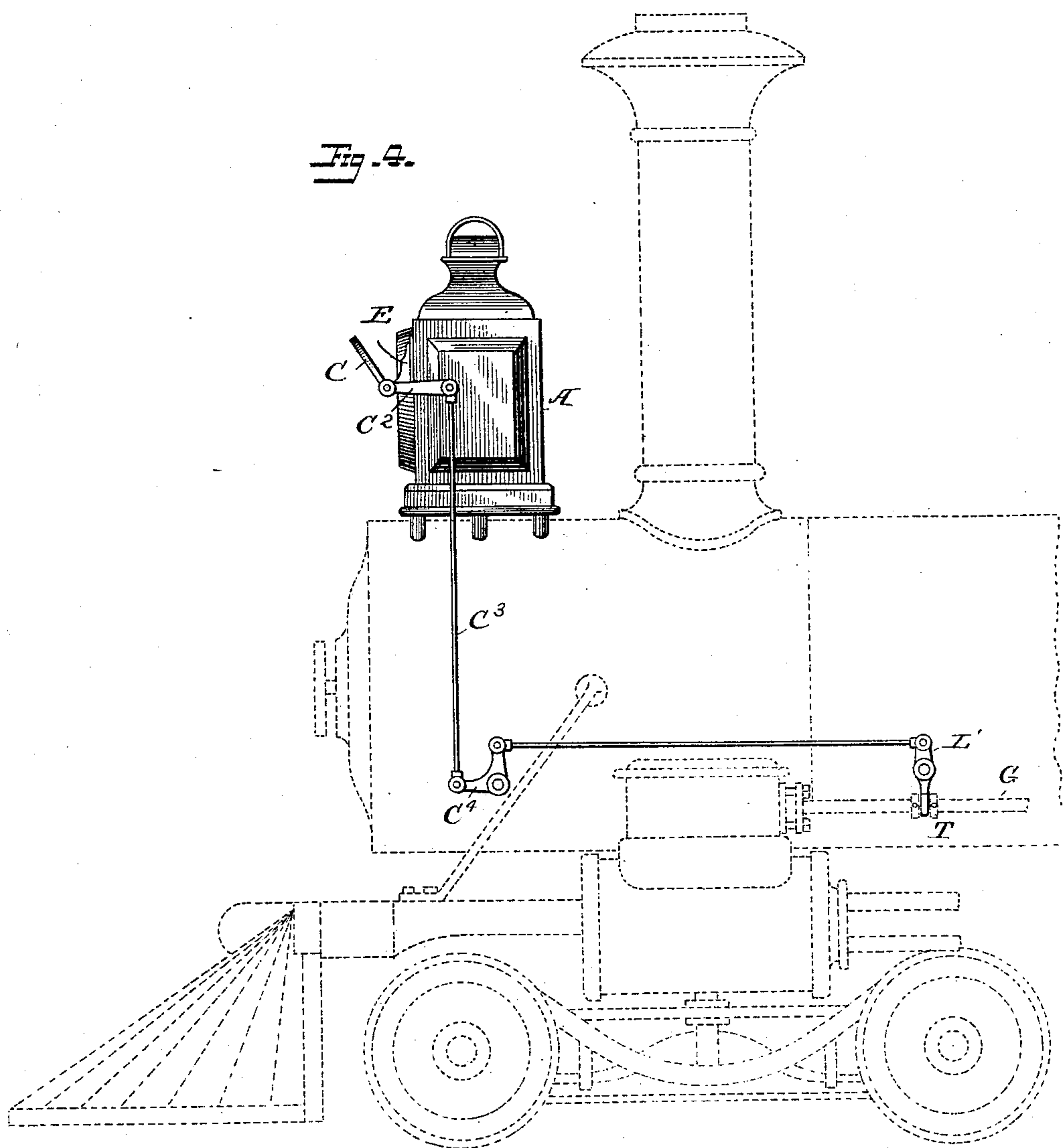
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UNITED STATES PATENT OFFICE.

SAMUEL H. HARRINGTON, OF INDIANAPOLIS, INDIANA.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 495,938, dated April 18, 1893.

Application filed January 4, 1892. Serial No. 416,979. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. HARRINGTON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Head-Lights for Locomotives, of which the following is a specification.

My invention relates to locomotive head lights and the like and has for its object to provide means whereby a portion of the light rays of such a light may be projected upwardly, so that the position of the engine or other vehicle to which it is attached may be indicated by observing the light rays from a distance, and it further has for its object to provide means whereby the approximate speed of the locomotive may be indicated through the medium of the rays thus projected, and to these ends it consists in the construction and arrangement of certain devices, substantially such as are more particularly hereinafter pointed out.

Referring to the accompanying drawings, wherein I have shown the preferred embodiments of my invention—Figure 1, is a perspective view of an ordinary locomotive head light adapted to my invention. Fig. 2, is a side view thereof. Fig. 3 is a side view of a head light having appliances for pulsating or flashing the light rays, and Fig. 4, is a side view of a locomotive having a head light attached thereto with a modified arrangement of parts for operating upon the light rays.

It is well known that it is common to provide locomotives and similar vehicles, with what is termed a head light, which is arranged to project the light rays in front of the engine to illuminate the track for the benefit of the engineer and to indicate to employes or other observers the approach or position of the train. The head lights heretofore generally used are able to project the rays but a comparatively short distance in front of the engine owing to the fact that a lamp of comparatively feeble illuminating qualities has been used. It is, however, becoming important in the extension of the railroad systems to provide a more powerful illuminant and

to this end the electric lamp has been found of great practical utility, as by its use the rays are not only more powerful and luminous, but they can be projected to relatively very great distances, so that the track can be observed by the engineer and the approach of a train can be determined by the railroad employes and other observers at a considerable distance. While this light, however, as ordinarily arranged, can project a powerful beam of light horizontally, owing to the irregularities in the topography of the country and other reasons, the approach of a train can only be observed at a distance when the track is practically straight, and it is with this object of providing means whereby the position or approach of a train can be observed at a great distance regardless of the topography of the country through which the train is passing that my invention is made. It is as an additional object of my invention to not only indicate the position of the approaching train but the relative speed of the train, or whether it is moving or stationary, that the second feature of my invention is made.

While various means may be adopted for carrying out the features of my invention, I have shown in the accompanying drawings and will now proceed to specifically describe what I have found to be a practical embodiment of the invention, but I do not limit myself to the precise construction and arrangement of parts herein set forth.

In the drawings A, represents a locomotive head light, which may be of any ordinary construction, but preferably one adapted for the use of an electric arc lamp, by means of which an intense beam of light may be projected in front of the engine through the goggle B. A plate or reflector C is mounted within the radius of the goggle or glass B, in a position to reflect or deflect a portion of the light rays projected from the head light by means of the usual reflector. Thus in Figs. 1 and 2, I have shown the auxiliary reflector C, as consisting of a sector conforming substantially to the outline of the goggle and it is mounted upon a bar D, which in turn is

suitably supported on the face of the head light case, as by means of brackets E. When this auxiliary reflector is to be used to reflect a portion of the rays of light in a constant direction the reflector is fixed or held in position by some suitable means, as by a stay or brace F, and in order to prevent this interfering with the projection of the reflected rays I make it in such a form as to present a narrow edge to the rays and to thereby interfere with or cut off as few of the rays as possible. Thus in the drawings I have shown it as being made of metal one end being attached to the auxiliary reflector C, while the other end is attached to the lamp case A, the portions within the reflected rays being set edgewise. With this construction it will be seen, as more clearly indicated in Fig. 2, that a portion of the parallel rays of the lamp impinge upon the auxiliary reflector, which is preferably set at an angle of about forty-five degrees to the rays and in such a position as to reflect, say thirty per cent. of the rays, although the amount of light reflected is a matter of choice and may be varied. In this arrangement the reflected rays will be projected upward in a vertical direction and they may be seen by an observer at a long distance from the locomotive and its position and movements can be relatively determined by observing the reflected vertical rays of light.

When it is desired not only to indicate generally the position of the locomotive and the fact whether it is stationary or moving, but also the relative speed at which the locomotive is moving, I provide means whereby the auxiliary reflector may be automatically moved or vibrated at a rate corresponding to the rate of speed of the engine. Thus in Fig. 3, I have shown the auxiliary reflector C, as pivotally mounted in a suitable support and as being provided with means whereby it may be vibrated from some moving part of the engine and in the present instance I have shown it connected so as to be vibrated on every movement of the valvestem G, although it is evident that it may be operated by any moving part of the engine to which it can be conveniently attached.

In order to prevent the vibration of the auxiliary reflector disturbing in any way the head light, in the arrangement shown in Fig. 3, I provide brackets H, which are securely mounted upon the base board I, which is in turn secured to the locomotive and supports the head light and the auxiliary reflector C', is provided with an arm C², which in turn is connected by a link C³, to a lever L, pivotally mounted on some convenient portion of the locomotive and preferably normally under the stress of a spring S, while the rear end of the lever is provided with a friction roll R, arranged to bear upon an inclined block J, which is secured to the valve stem G, and it will be seen that at each reciproca-

tion of the valve stem the auxiliary reflector will be vibrated, varying the number and direction of the light rays, producing a vibrating or flashing of the light rays in a manner to be readily observed and to indicate the relative speed at which the locomotive is traveling.

In Fig. 4, I have illustrated a similar arrangement, except that the auxiliary reflector is attached to the head light case and is connected by means of a rod C³, to a bell crank C⁴, which in turn is connected to a tappet lever L', which is so arranged as to be struck by the tappets T, secured to the valve stem G, or other moving part of the engine. In this arrangement it will be seen that by adjusting the tappets on the valve stem they can be arranged to move the auxiliary reflector to a greater or less extent and at any distance, as for instance, they may be arranged so as to move the reflector only just before they reach the extreme limit of motion, or they can be arranged to move the reflector at any desired point between this and a continuous movement, as may be desired.

From the above description the general principles of my invention will be readily understood so that they may be adapted or applied in various ways and it will be seen that the parts may be added to devices as usually constructed without materially changing or interfering with their regular operations.

What I claim is—

1. The combination with a head light having a goggle or glass, of a reflector mounted thereon within the radius of the goggle and arranged to reflect a portion of the light rays in a vertical direction, substantially as described.
2. The combination with the head light having a goggle or glass, of an auxiliary reflector pivotally mounted thereon within the radius of the goggle, and arranged to reflect a portion of the light rays in a vertical direction, and means for vibrating said auxiliary reflector, substantially as described.
3. The combination with a head light having a goggle, of an auxiliary reflector arranged to reflect a portion of the rays of light in a vertical direction, a moving part of the engine on which the head light is mounted, and connections between said reflector and said moving part whereby said reflector is vibrated in unison with the movements of said moving part, substantially as described.
4. The combination with the head light, of an engine, of an auxiliary reflector pivotally mounted with relation to said head light and connections between the reflector and the valve stem of the engine, whereby the reflector will be vibrated in unison with the movements of the valve stem, substantially as described.
5. The combination with the head light and support therefor, of brackets mounted on the support, an auxiliary reflector pivotally

mounted in the brackets, a valve stem having an inclined plate arranged thereto, and connections between the inclined plate and auxiliary reflector, whereby the reflector is
5 vibrated in unison with the movements of the valve stem, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

SAMUEL H. HARRINGTON.

Witnesses:

H. E. HAMILTON,
EDW. SCHURMANN.