

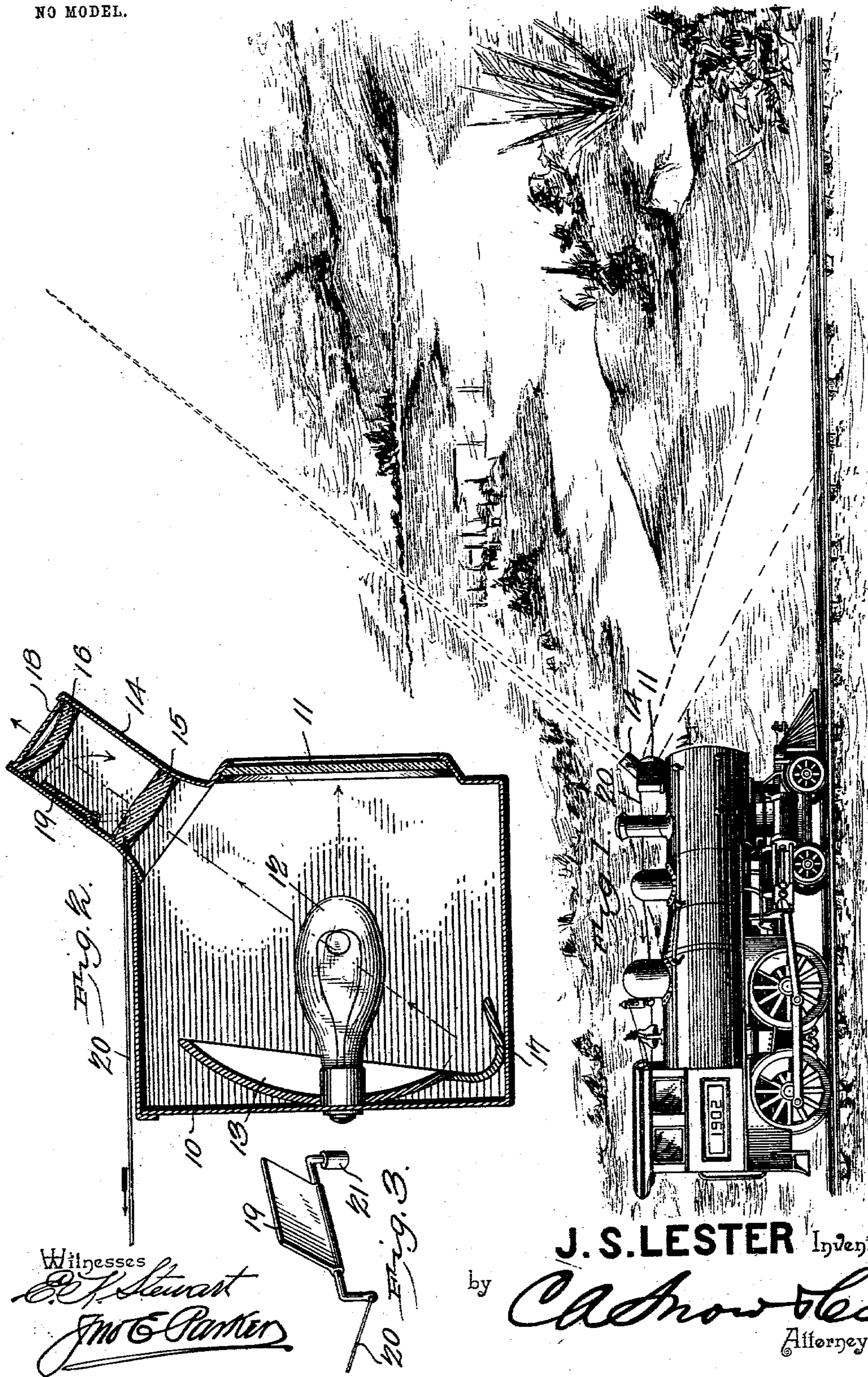
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PATENTED FEB. 17, 1903.

J. S. LESTER.
LOCOMOTIVE HEADLIGHT.

APPLICATION FILED JAN. 31, 1902. RENEWED JAN. 17, 1903.

NO MODEL.



Witnesses

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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE-HEADLIGHT.

SPECIFICATION forming part of Letters Patent No. 720,823, dated February 17, 1903.

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To all whom it may concern:

Be it known that I, JAMES S. LESTER, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Locomotive-Headlight, of which the following is a specification.

My invention relates to certain improvements in locomotive-headlights, and has for its principal object to so construct the headlight as to form a warning-signal which may be observed at a considerable distance.

A further object is to so arrange and construct the headlight as to place the warning-signal under the control of the engineer or fireman, so that, if necessary, it may be used for signaling purposes by partially or wholly cutting off the light-rays in accordance with any predetermined code.

A still further object of the invention is to so combine a reflector and a number of lenses as to concentrate the light-rays in the form of a pencil which will form a signal of pronounced character and readily distinguishable from other signaling-lights.

A still further object of the invention is to so arrange the signal that the light-rays may be projected upwardly and at an angle to the vertical, so that an observer at a distance may determine the direction of travel of the locomotive.

With these and other objects in view the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a locomotive provided with a headlight constructed in accordance with my invention and illustrating the direction in which the signaling and ordinary headlight rays are projected. Fig. 2 is a sectional elevation of a form of headlight embodying the principal features of the invention. Fig. 3 is a detail perspective view of a form of shutter which may be employed to intersect a portion or all of the light-rays when it is desired to signal.

Similar numerals of reference are employed

to designate corresponding parts throughout the several figures of the drawings.

The casing 10 may be of the same general shape and size as that ordinarily employed for locomotive-headlights and provided with the usual glass front or lens 11, through which the greater portion of the light-rays pass to illuminate the road-bed in advance of the engine. In the casing is a lamp 12, which may be in the form of an incandescent globe, as shown, or may be of any character similar to that in ordinary use, an electric lamp being here illustrated in order to show one form of light which may be employed for the purpose.

At the rear of the lamp is arranged a reflector 13 for concentrating and directing the light-rays through the glass 11.

In the upper front portion of the casing 10 is placed a tube 14, in which are arranged a double-convex lens 15 and a concavo-convex lens 16, the concave face of the outer lens 16 being arranged on a circular line of a diameter less than that of the arc forming the convex face, the arrangement of such lenses effecting the concentration of the light-rays toward a focal point at a considerable distance from the headlight. The longitudinal axis of the tube 14 is directly in alinement with the center of a parabolic reflector 17, arranged below the light and serving to concentrate and direct the rays of light in the direction of the tube. In order that the signal thus produced may be of pronounced character, one or both the lenses may be colored, or an additional colored-glass disk 18 may be employed at the end of the tube or at any other convenient point, such glass being preferably red, so that the pencil of light may attract more attention and be readily distinguished, or a disk of any other color may be employed, and by providing the different locomotives of a railway-line with different-colored lights the number of the locomotive or train may be readily distinguished at a distance.

The signaling-light is directed upwardly and at an angle in front of the locomotive, the angle being such that the light will at all times be in advance of the engine without regard to the grade which the latter may be as-

ascending or descending, so that an observer at a distance may readily determine the direction in which the train is traveling. A signaling device of this character is especially
 5 useful in mountain districts or on single-track railways, engineers of approaching trains being notified of the presence of another train on the road long in advance of the movement of the engine within visual distance, and
 10 where each engine carries a light of different color the number of the engine or train may be readily determined by the engineer of another train or by the station-masters or other employees along the line. In some cases it
 15 may be useful to employ signals of one color for passenger-trains and another of a different color for freight service, or a light of a predetermined color may be reserved for special trains which may have the right of way
 20 or be used for a similar purpose on street-cars.

In order that the light-rays may be employed for signaling purposes, a hinged shutter 19 is arranged at a suitable point within
 25 the tube 14, such shutter being connected by an operating rod or cord 20 to a suitable handle within the cab of the engine, so that the engineer may intersect a portion or all of the light-rays or may by a movement of the shutter in accordance with the Morse or other code
 30 send a message to a station ahead or to any other point desired. The shutter is preferably provided with a counterbalancing-weight 21 to retain it in a normally open position and
 35 to return said shutter to open position after the release of the closing strain on the rod or cord 20. When the shutter is employed, the signaling to an approaching train or to a station may be in accordance with a predetermined
 40 code, so that the number or class of the train or engine may be signaled, this being especially valuable on lines where a large number of engines are used and where it would not be practicable to supply a different-colored light to each engine.
 45

While the construction herein described, and illustrated in the accompanying drawings, is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from

the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. The combination with a locomotive-headlight having a lamp, an inclosing casing and a main reflector, of an auxiliary parabolic reflector arranged below the main reflector and below and to the rear of the lamp, an upwardly and forwardly inclined tube carried by the upper front portion of the headlight-casing and having its axis in alinement with the median line of the reflector and lamp, lenses disposed in said tube for concentrating the
 60 light-rays and for directing a signaling-ray upwardly and in advance of the locomotive, a shutter arranged in said tube for intercepting the light-rays, and means under the control of the engineer for moving said shutter
 70 to open and closed positions.

2. The combination in a locomotive-headlight, of a casing 10 having a glass front 11, a lamp 12 in said casing, a reflector 13 disposed to the rear of the lamp and adapted to
 75 direct the light-rays in advance of the locomotive, an auxiliary parabolic reflector 17 disposed below the main reflector 13 and below and slightly to the rear of the lamp 12, a tube 14 leading from the upper front portion of the casing and arranged at an angle
 80 to both the front and the top of said casing, said tube having its axis on a line coincident with the median line of the parabolic reflector 17, a double convex lens 15 arranged in the lower portion of the tube, a concavo-convex lens 16 arranged at the upper portion of the tube, a disk 18 of colored glass arranged at the outer end of the tube, a hinged shutter 19 disposed within the tube at a point between
 90 the two lenses, a counterbalance-weight 21 normally maintaining the shutter in open position, and an operating-rod 20 extending from the shutter to an operating point, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES S. LESTER.

Witnesses:

E. E. DOYLE,

FRANK S. APPLEMAN.