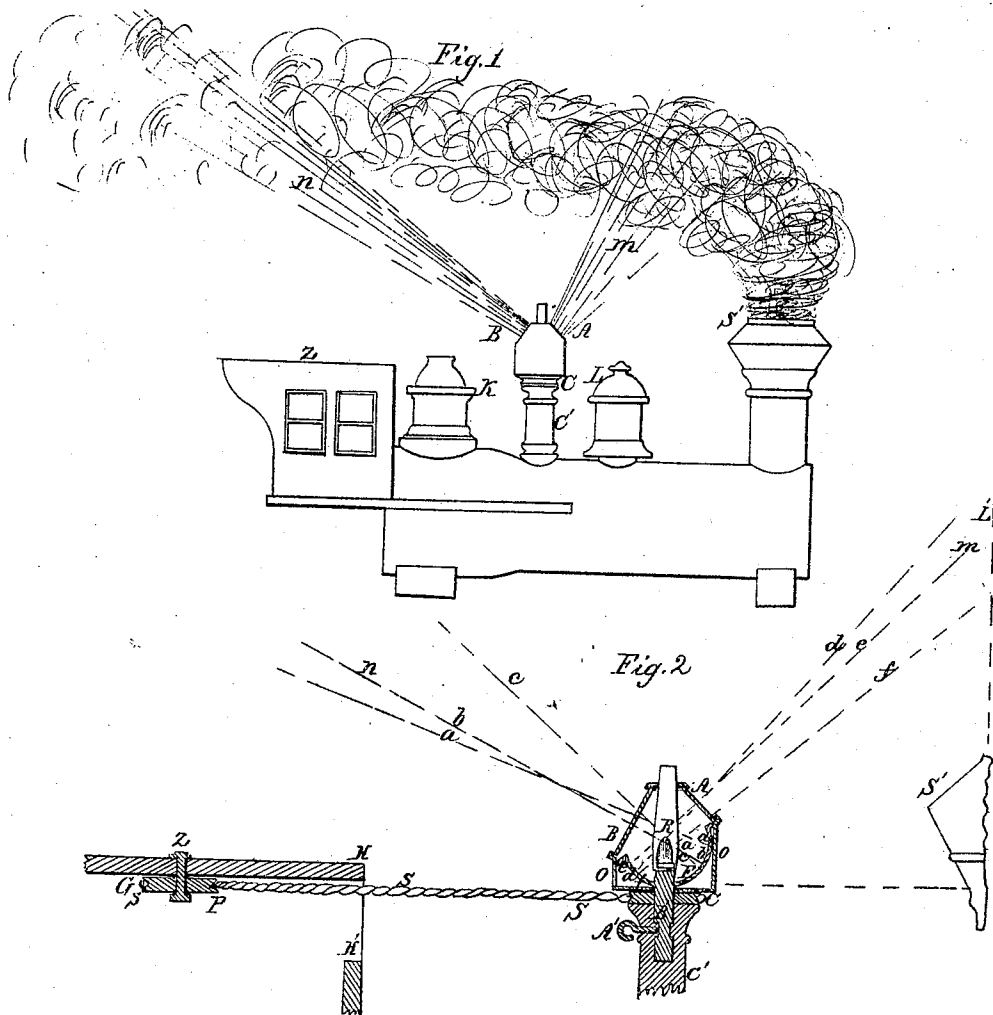


J. M. CRULL.
Locomotive Signal-Light.

No. 95,991.

Patented Oct. 19, 1869.



Witnesses
 Theophilus Heavie
 Charles Collins

Inventor
 J. M. Crull

United States Patent Office.

J. M. CRULL, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, A. C. McCULLLEY, W. A. MIDDLETON, AND JACOB WALTERS, OF SAME PLACE.

Letters Patent No. 95,991, dated October 19, 1869.

IMPROVEMENT IN LOCOMOTIVE SIGNAL-LIGHTS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, J. M. CRULL, of the city of Harrisburg, county of Dauphin, and State of Pennsylvania, have invented a new and improved Locomotive Signal-Light; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the upper parts of the locomotive, with the signal-light mounted upon it, and with pencils or beams of light emitted from the signal upon a column of smoke.

Figure 2 is a sectional view of the signal-light fixture, of the tops of the smoke-stack, and of the fire-house, arranged to show the height of each of those parts, respectively.

The nature of this invention consists in arranging and placing an adjustable lamp or signal-light in the rear of the smoke-stack on a locomotive, having its reflector or reflectors so constructed, in relation to one or more oblique faces of the case, as to throw one or more pencils of light upon or against a column of smoke issuing from the smoke-stack, either at rest or in motion, and rendered capable of striking and illuminating sections of said column of smoke, at variable points of the compass, according to the direction of the wind and train, and thus, by rendering said column luminous, to present a signal in the air, to prevent collisions at night.

I construct my signal-lamp with one or more oblique transparent sides, for the emission of pencils of light.

The side A, fig. 1, emits its pencil at an angle of about forty-five degrees from the horizon.

The side B emits its pencil of rays at an angle of about thirty degrees from the horizon.

The burner R is so arranged in reference to the reflecting-surface F, fig. 2, as that the rays *a b c* or *e d f*, when reflected, will come into the field of the pencils *m* and *n* with only a moderate divergence, as shown in fig. 2.

The pencil *m* is thus directed at a greater angle, so as to illuminate a column of smoke at as great a height

as possible while the locomotive is at rest, and the smoke rising in a vertical direction.

The pencil *n* is so directed as to illuminate said column to the best advantage while the locomotive is in motion, in which case the column will be more or less deflected backward.

The pencil *m* may also be used to illuminate a column of steam issuing from the safety-dome K, fig. 1, when the signal is reversed.

The lamp-frame O O, fig. 2, is mounted upon a post, C, with a pulley, C, between it and the top of the post, which pulley is fixed to the lamp, by the shaft or spindle B, which passes down through it tightly, and which is rigidly connected with the bottom of the lamp.

Said spindle is keyed at A' into the post C in a socket, loosely, in which it revolves.

The pulley C is connected with a pulley, G, on the ceiling of the fire-house, by a cord, S, or its equivalent.

The signal is thus rendered adjustable to different points, and is so made as to have the pencils of light strike the smoke column when carried away by the wind, out of the line of travel, or when the locomotive is sweeping a curve.

The location of the signal is here assumed on the locomotive in the rear of the stack, but other situations may also be preferred, as on steamboats, the main idea being to illuminate a smoke or steam column, to produce a visible spectacle, to prevent collisions, as explained.

I claim—

1. The application of adjustable signal-lights or reflectors to locomotives, steamboats, &c., when placed in such a position as to illuminate a portion or section of the smoke or steam issuing from the smoke-stack, substantially as and for the purposes herein set forth.

2. The two oblique faces A B, in combination with the reflector F, pulleys C G, and post A' C, substantially as herein set forth.

Witnesses:

J. M. CRULL.

ELIAS HOLLINGER,
THEOPHILUS WEAVER.