

UNITED STATES PATENT OFFICE.

ISAAC NEWTON PEIRCE, OF FOLCROFT, PENNSYLVANIA.

SIGNAL FOR RAILROAD-TRAINS.

SPECIFICATION forming part of Letters Patent No. 489,418, dated January 3, 1893.

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To all whom it may concern:

Be it known that I, ISAAC NEWTON PEIRCE, a citizen of the United States, residing at Folcroft, county of Delaware, and State of Pennsylvania, have invented a new and Improved Signal-Machine for Railroads, of which the following is a specification.

My invention consists, of a mechanical arrangement of purely white lights, to signal by position, to take the place of all colored signals, thus greatly increasing the safety of all passengers, passenger-trains and freight-trains on all railroads using this improvement on their signal poles. I attain this long desired object by attaching two or more purely white lights to a movable arm or blade, connected to a lever, under the control of the operator or signal-master, so that he can instantly change their relative position, and the signal he thus makes can be known and distinctly recognized by engineers and conductors, miles away, in the darkest night, where the line or direction of the railroad-track will permit it. For this purpose, I construct my machine on the usual signal pole or signal tower, by having the two or more purely white lights attached to one or more movable signal arms; one light at each of the extreme ends of the arm, and one in the center; and near the center is a short elbow or projection to which a chain or rod is attached, and thus a connection formed with the levers, giving power to the operator to move the signal arm upon its center pivot, and its several lights, either in a vertical, horizontal or diagonal position as may be desired; and to prevent the rays of these lights from comingling or running together,—and the several lights appearing as one solitary light at a distance—I construct tubes of tin or other metal, of proportionate diameter and length, to the size of the flame; and I fasten one end of the tube directly opposite to the flame, so as to permit the pencil or parallel rays of light from each flame to shine through the tube, directly down the railroad track, and thus be readily recognized in their various positions by engineers and conductors of railroad trains. At night or in darkness these white lights show by their position, the exact direction or position of the signal arm, as illustrated in the accompanying drawings, in which—

Figure 1. is a view of the signal machine,

with three white lights, relatively in a vertical position, to signal that the track is clear. P. is the pole. A the signal arm, with signal lanterns H. H. at the extremities, also a signal lantern C at the center where the arm turns upon a pin or pivot O fastened on the pole P. E is the elbow or projection on the arm A, to which is attached the chain or rod W. which connects it to the lever I thus giving the operator power to control and change the signals.

Fig. 2. is another view of the machine showing the other arm *a*. attached to opposite side of pole P. connected to another lever L to signal trains on another track running in an opposite direction. For this purpose the white lights *h'*. C. *h''* are placed facing the coming train, and they with arm *a*. are relatively in a horizontal position, as a signal of danger. Also in this view the arm A is on the reverse side and is in a diagonal position, as a signal of caution to the train on the first track.

Figs. 3. and 4 represent a semaphore signal lantern, having no large glass lens in front, but a long metal tube T fixed horizontally, with one end attached firmly to the lantern directly opposite to the flame *f* in the lantern, and of the same diameter as the width or height of the flame *f*. and of about eight times its diameter in length, to conduct only the parallel rays or pencil rays of the flame *f* and cut off all the diverging or scattering rays of light, thus showing at any required distance three separate and distinct lights, giving the position of the arm.

What I claim as my invention and desire to secure by Letters Patent is—

1. The combination of a semaphore arm movable on a center pin or pivot with lanterns at each extremity of the arm and in the center substantially as set forth.

2. The combination of a semaphore arm movable on a center pin, with lanterns at each extremity and in the center, having only pure white lights, substantially as described.

3. The combination, with a semaphore arm, of a lantern and tube T attached firmly and horizontally, to the front of the lantern immediately opposite to the flame *f* in the lantern substantially as described and set forth.

I. NEWTON PEIRCE.

Witnesses:

JAMES M. STEWART,
JOHN F. TURNER.