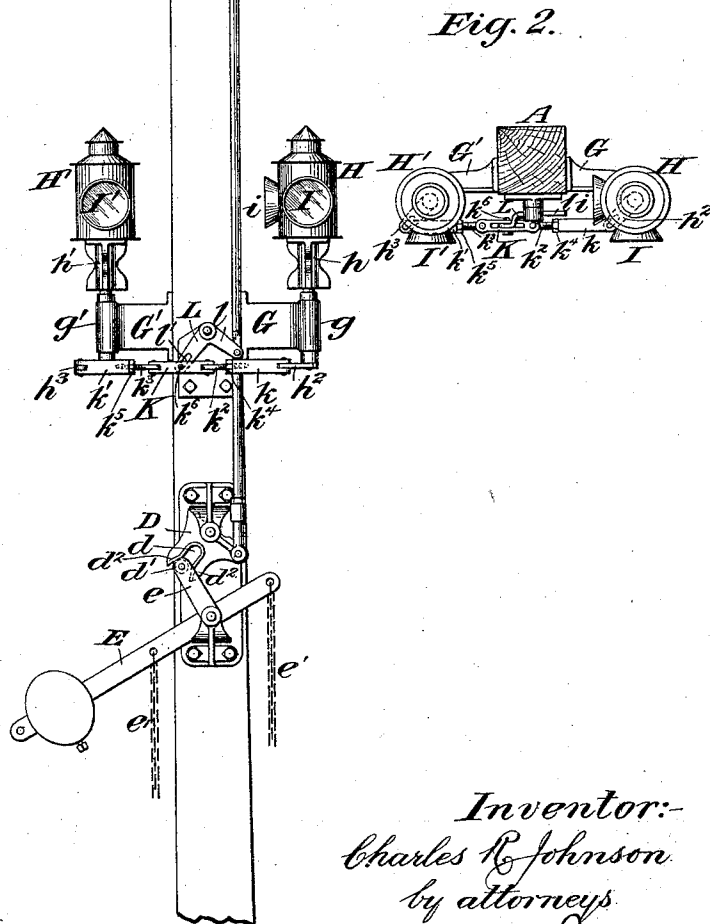
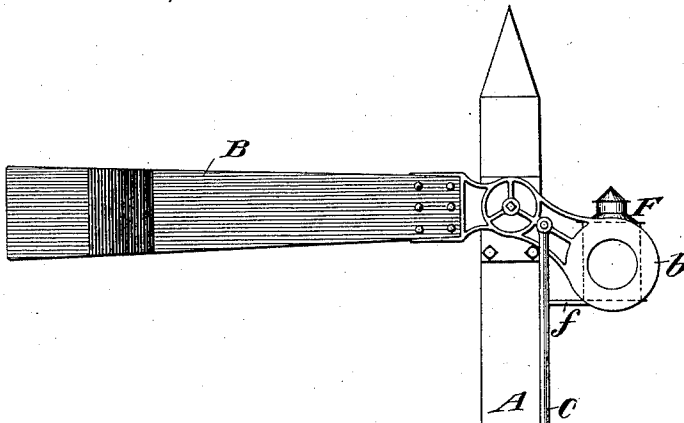


C. R. JOHNSON.
RAILWAY SIGNAL.

Patented June 14, 1892.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 476,926, dated June 14, 1892.

Application filed August 20, 1891. Serial No. 403,164. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. JOHNSON, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Railway-Signals, of which the following is a specification.

My invention relates to an improvement in railway-signals in which several lights are so arranged with respect to the signal-arm and its operating mechanism that they will show different series of lights of different colors when the signal is set for "danger" and for "safety."

My present invention more particularly contemplates the employment of three lights in connection with the signal-arm and its operating mechanism so arranged that there may be shown two lights of one color in a horizontal series or two lights of another color in a vertical series, according as the signal is set for "danger" or "safety."

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the signal in front elevation showing the position of the parts when set for "danger," and Fig. 2 is a transverse section through the signal-post, showing a top plan view of the horizontal series of lights and their supporting and operating mechanism.

A represents the signal-post provided near its top with a vertically-swinging signal-arm B, pivotally secured to the post and operated, as is common, by a rod C, connected therewith and extending along down the post to the swinging operating-plate D, to which it is also connected at a point to one side of the pivotal connection of the plate D with the post. The plate D is in effect an angle-lever, the operating-rod C being connected to one arm of the lever and the other arm of said lever being operated by an arm *e*, fixed to a weighted lever E, pivotally secured to the post and having attached thereto upon opposite sides of its pivotal connection chains or other suitable operating devices which connect with a suitable operating device (not shown) at the station from which the signal is to be manipulated. The plate D is utilized, however, to

secure the full throw of the lamps and blade, and as a locking-plate in connection with the arm *e* in addition to its function as a means for transmitting motion from the weighted lever E to the operating-rod C. To this end the plate is provided with a recess *d*, adapted to receive a stud or roller *d'* on the end of the arm *e*, and said recess *d* is provided with a flaring mouth, the jaws *d²* of which are adapted to rest upon the stud or roller *d'* on the end of the arm *e* when the lever E is tilted in the one direction or the other, and the pressure upon the arm *e* when it is engaged with one of said jaws *d²* will be in such a direction that the plate D cannot be swung by manipulating the rod C, but may be readily swung by manipulating the weighted lever E. The seats for the stud or roller *d'* allow the arm *e* to swing a short distance without effecting the movement of the plate D, its complete throw being insured before the roller *d'* engages the seats upon the flaring jaws. The plate D thus serves to lock the signal-arm B securely in its position, while at the same time it provides for lost motion, and is free to be manipulated by the movement of the lever E under the strain of either one of the connections *e'*.

A lamp F is located upon a fixed support *f* in such position that the disk *b* on the signal-arm support will fall in front of it and obscure it from view when the signal-arm B is set for "danger," as shown in Fig. 1, but will lift from in front of it and expose it to view when the said signal-arm is dropped into the position of "safety."

Suitable supporting-brackets G and G' are fixed to and extend laterally from the post A at a point below the lamp F, and are provided in their outer ends with sockets *g* and *g'*, respectively, in which are seated rotary lamp-supports *h* and *h'*. Fixed to the rotary supports *h* and *h'*, respectively, are lamps H and H', the former provided with two lenses I and *i* and the latter with a single lens I'. The lenses I and *i* of the lamp H are preferably located at a quadrant's distance apart in its periphery, so that, supposing the lenses I to be toward the front, a quarter-turn of the lamp will bring the lens *i* to the front.

The supports *h* and *h'* are provided at their

lower ends, below the sockets g and g' , with crank-arms h^2 and h^3 , the ends of which are connected with a bar K by links k and k' .

The particular means which I have adopted for connecting the links k and k' with the bar K in order to render them adjustable with respect thereto are as follows: The ends of the bar K are bifurcated, and the perforated heads of bolts k^2 and k^3 are secured in the bifurcated ends of the bar K by pivot-pins, while the threaded ends of the bolts are screwed into the ends of the links k and k' , and are locked therein by jam-nuts k^4 and k^5 . An angle-lever is pivotally secured to the front of the post and has one of its arms L engaged with a stud k^6 on the bar K and its other arm l connected with the operating-rod C. Provision is made for the circular path of the end of the arm L of the lever by providing it with an elongated slot l' for the reception of the stud k^6 . The connections of the arms L and l of the angle-lever with the bar K and operating-rod C are so located that when the operating-rod C is depressed to set the signal to "danger" the lamps upon the rotary supports h h' will be rocked into position, as shown in Fig. 1, to present their lenses I I' to the front. Suppose the lenses I and I' to be of the same color—as, for example, red—and the lens i of the lamp H and the lens of the fixed lamp F be green. When the signal is set for "danger," there will appear two red lights in horizontal alignment, as shown in Fig. 1, and when the signal is set for "safety" there will appear two green lights in vertical alignment, for the reason that the upward thrust of the operating-rod C will reveal the green light in the fixed lamp F, as hereinbefore set forth, and will at the same time rotate the lamps H and H', so as to throw the lenses I and I' off to one side out of view and at the same time bring the green lens i into view at the front and in vertical alignment with the lens of the lamp F.

By the above simple arrangement I am enabled by simply mounting the two lamps H and H' upon rotary supports and connecting them with the rod C to present a two-light signal for "safety" or "danger," which shall not only vary in color, but also in position. It will be observed that the construction and arrangement of parts is such that the lamps may be readily attached to the signals in common use without any substantial modification of their parts.

What I claim is—

1. The combination, with a horizontal series of rotary lamps and a vertical series of lamps, one lamp being common to both the horizontal and vertical series, of a signal-operating rod, and intermediate mechanism between the rod and lamps, whereby the lights from the horizontal series of lamps are exposed when the signal is thrown in one di-

rection and the lights from the vertical series of lamps are exposed when the signal is thrown in the opposite direction, substantially as set forth.

2. The combination, with a horizontal series of rotary lamps and a vertical series of lamps, one of the lamps of the horizontal series forming, also, one of the lamps of the vertical series and another lamp of the vertical series being fixed, of a signal-operating rod, a shield connected therewith and adapted to obscure and expose the fixed light as the rod is thrust in one direction or the other, and a connection between the signal-operating rod and the series of rotary lamps, whereby the latter are rocked in one direction or the other as the rod is thrust in the one direction or the other, substantially as set forth.

3. The combination, with the signal-support, the signal-arm pivotally secured thereto and provided with a disk or shield, and a signal-operating rod for operating the signal-arm, of a lamp fixed in position to be exposed and obscured by the disk carried by the signal-arm, a pair of lamps having rotary supports and located in horizontal alignment, cranks secured to the rotary lamp-supports, a bar connected with the cranks, and an angle-lever engaged with the connecting-bar and signal-operating rod, whereby the lamps in horizontal alignment are simultaneously rotated as the signal-operating bar is moved, substantially as set forth.

4. The combination, with the rotary lamps in horizontal alignment, one of the lamps being provided with lenses of different colors facing in different directions, and a fixed lamp located above the rotary lamp with the different lenses and having a lens corresponding to one of the lenses on the rotary lamp, another lens on the rotary lamp corresponding with the lens upon another rotary lamp in horizontal alignment therewith, of a signal-operating rod, mechanism connecting the signal-operating rod and the rotary lamps, and a shield connected with the operating-rod in position to obscure and disclose the light from the fixed lamp, the shield and the rotary movements of the lamps being so timed that when the operating-rod is thrust in one direction lights of the same color will be exposed to the front in the rotary lamps and the light of the fixed lamp obscured and when thrust in the opposite direction lights of the same color different from that before exposed will be disclosed from the fixed lamp and one of the movable lamps in vertical alignment therewith and the two previous lights obscured from the front, substantially as set forth.

CHARLES R. JOHNSON.

Witnesses:

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