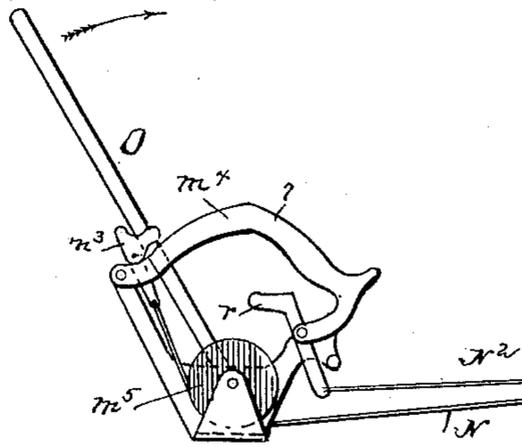
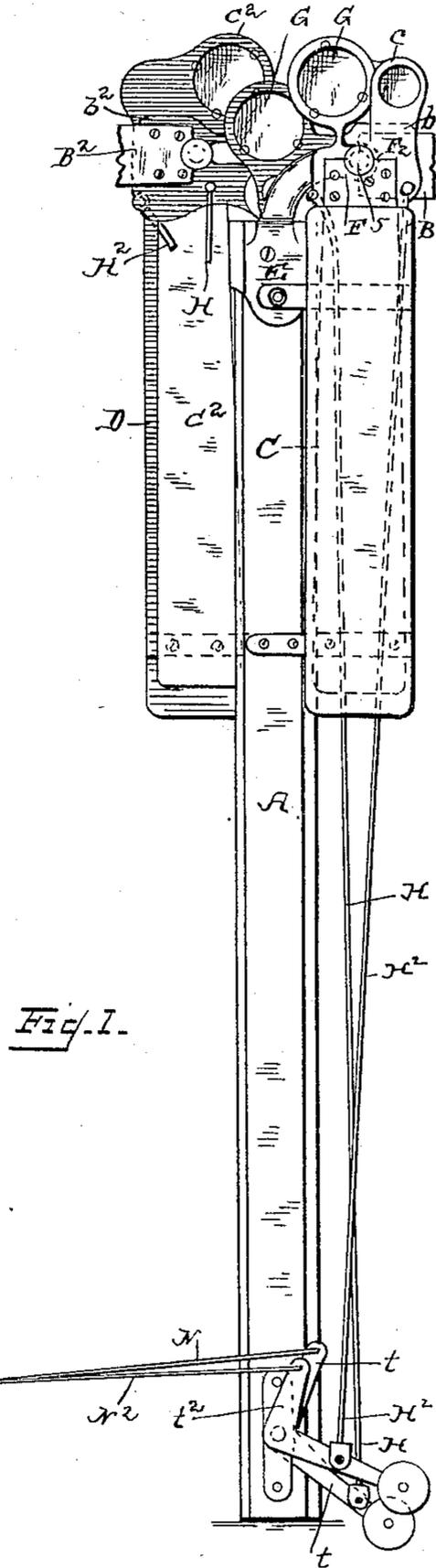
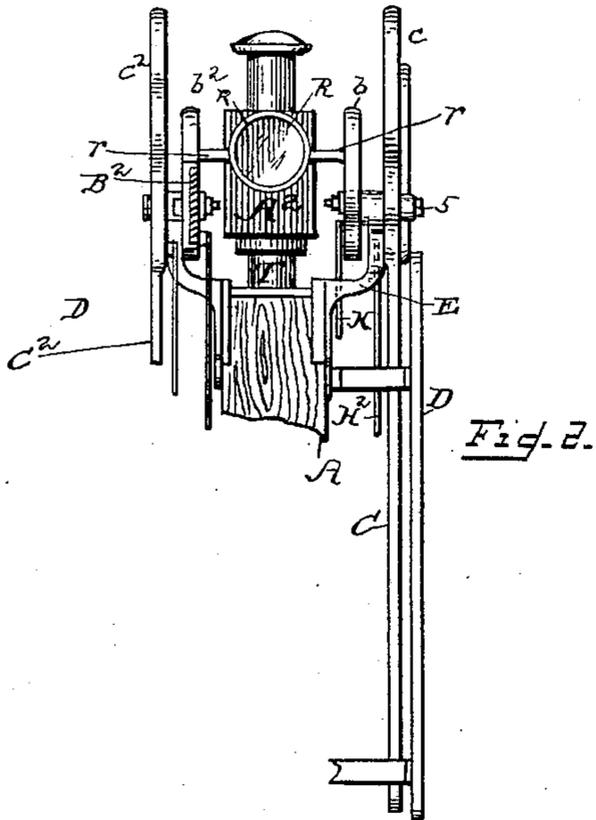


(No Model.)

C. SELDEN & G. R. OTT.
RAILWAY SIGNAL.

No. 452,394.

Patented May 19, 1891.



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UNITED STATES PATENT OFFICE.

CHARLES SELDEN AND GEORGE R. OTT, OF BALTIMORE, MARYLAND.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 452,394, dated May 19, 1891.

Application filed February 12, 1889. Serial No. 299,581. (No model.)

To all whom it may concern:

Be it known that we, CHARLES SELDEN and GEORGE R. OTT, citizens of the United States, and residents of Baltimore, in the State of Maryland, have invented a certain new and useful Improved Railway-Signal, of which the following is a specification.

Our invention relates to railway signal apparatus, and has reference more particularly to the mechanism employed in operating or controlling the signal.

Our invention is designed particularly for application to signal apparatus in which pivoted semaphore arms or blades are employed that are mounted so as to be capable of swinging in a plane at right angles to the track and may be moved into different positions by the signal-man, as is well understood in the art. Our invention is, however, applicable to signals of any character, although for the sake of illustration we have herein illustrated our invention as applied to movable semaphore arms or blades.

It has heretofore been proposed to employ a single arm or blade, which, being placed at one position—as, for instance, at right angles to its supporting-post—has one significance, at an intermediate angle of, say, forty-five degrees another significance, and when brought parallel with the post and behind the shield gives another indication. It has also been before proposed to operate a number of arms or blades by separate hand-levers and connecting-cords.

Our invention consists, essentially, in operating or controlling two or more separate signals or signal-arms by a single hand-lever which is properly connected by the ordinary operating cord or wire with one of said arms and at a proper point in its movement engages with an auxiliary arm or lever connected through an operating wire or cord with another signal or signal-arm. We prefer to arrange the mechanism so that on the completion of a movement of the actuating hand-lever to an extent necessary for moving its signal from its normal position to another position having another significance a continuance of the movement of said lever in the same direction shall bring it into engagement with the auxiliary lever and result in moving the second signal through the means of the

wire or cord connecting said auxiliary lever with the said second signal. If a third signal be employed, a further movement of the apparatus after the operation of the second signal would, in accordance with our invention, result in the engagement of the actuating-levers at the station of the switchman with an auxiliary lever connected by a wire or cord with such third signal.

Our invention consists, further, in certain organizations of apparatus and combinations of parts to be hereinafter more particularly described and claimed.

We also prefer to carry out our invention in connection with signal-arms of different colors. When signal arms or blades are employed, they are preferably provided with holders for glass or other transparent material, which are brought out of and into line with a light when the signal is employed at night, or said signal-arms may be used with other devices, as well understood in the art, for giving suitable color indications at night.

In the accompanying drawings, Figure 1 shows in side elevation an apparatus embodying our invention. Fig. 2 shows in edge view parts of the apparatus shown in Fig. 1.

In Fig. 1 the signal-post A, placed beside the tracks, carries two sets of signal-arms or semaphores B C and B² C², which are arranged to swing transversely to the line of the track. One set only of the arms—to wit, B C—is shown connected with operating mechanism for the sake of simplicity. A mechanism similar to that for B C might be employed for operating arms B² C² or any additional sets of arms. The arm B is colored red, and when in the horizontal position shown indicates “danger.” When it is set to vertical position behind the screen D, the indication is “safety” or “line clear.” When the arm C is swung out from behind the screen D to an angle of, say, thirty to fifty degrees, the arm B being at the same time in vertical position, the indication is “caution” or “go slowly.”

The holders for the two arms B C are indicated at *b c*, and are preferably of cast-iron. As the special construction and attachment of these semaphore-arms form no part of the present invention and are shown and described fully in Patent No. 395,181, granted to

us December 25, 1888, they will not be herein described in detail.

The semaphore-arms B C are operated, respectively, by rods or connections II II², attached, respectively, to the holders *b c* and connected at their lower ends with the weighted levers *t t*², which latter levers are provided with the usual weights, adapted to give a bias to the arms and to cause the danger-arm to be thrown to "danger" position in case of the breakage or detachment of any of the connecting operating parts. The rods II II² are connected to the holders at opposite sides of the fulcrum for the holders, as shown, so that a push upon the rod II, tending to lift the same, will throw down the exposed end of the arm B, while a similar movement of the rod II² will throw out the arm C from its position behind the screen D. The arm B being the danger-signal, it is obvious that the weighted lever *t*, connected therewith, will cause the signal to show "danger," in case of breakage of the parts or in case of release of the hand-lever by which said lever *t* is operated.

A lever O, placed in the signal-man's house or in any other desired position, connects by wire or rod N with the upwardly-extending arm of lever *t*, as shown, so that on tension being applied to said wire N by means of the lever O the lever *t* at the signal-post will be operated in such way as to lower the signal-arm B. The connection of the wire N with the lever O is by means of a rider *m*³, which rides on a fixed incline *m*⁴ of the stand for lever O, the wire or cord N passing under a drum *m*⁵ at or near the point where the lever O is mounted. The lever O passes loosely through the rider *m*³, so that on swinging the lever O over toward the point 7 of the incline the rider *m*³ will be carried up said incline and will exercise a pull upon the wire N, thereby operating the signal-arm B, so as to lower the same in obvious manner.

The lever *t*², which operates upon the signal-arm C, connects by a wire or cord N², leading from said lever to the stand of the operating-lever O, with a supplemental or auxiliary lever *r*, pivoted on said stand and arranged to be engaged by the lever O at a determinate point in its swing when it is moved over from the position shown in full lines and in the direction of the arrow toward its opposite limit of movement. The point where the lever O engages with the auxiliary lever *r* is at or about the point 7 of the way or guide upon which the rider *m*³ moves. After passing such point the rider *m*³ produces no further effect upon the cord connected with it, because of the fact that the rail or guide on which said rider moves is thereafter inclined downward on such a line that the tendency of the cord to be shortened through winding over the pulley *m*⁵ shall be compensated for by the rider being allowed to move in nearer to the pulley. Hence in the latter portion of the movement of the le-

ver O no effect is produced upon the arm B or its holder after it has once been brought to vertical position, although during such portion of the movement of lever O it will operate upon the lever *r* and through the connecting-wire N² act upon the signal-arm C.

The general operation of the device is as follows: Normally the parts are in the position as indicated in Fig. 1, which is the position which they will naturally assume by the action of the biasing-weights of the levers *t t*² when the operating-lever O is released. In order to give the indication of "safety" by throwing the arm or signal B out of sight the lever O is turned to the right or in the direction of the arrow until it reaches, say, the point 7 on the rail or way for rider *m*³. Neither arm is then in view, and at night the glass G for holder *b* will have been thrown out of line with the lamp. In order to give the indication of "caution," the lever O is moved forward still farther in the same direction, thereby causing it to engage with the auxiliary lever *r* and to throw the arm C out at an angle, at the same time bringing the glass G for said arm into line with the lantern.

It is obvious that according to the proportioning of the parts the arm C will be moved outward and upward to a greater or less extent. On allowing the lever O to move back to the point 7 under the action of the biasing-weights both signal-arms will be obscured, and on permitting a farther movement backward to the original position the arm B will be raised into the "danger" position by the action of the biasing-weights.

What we claim as our invention is—

1. The combination, with two independent signal arms or blades, of an operating-lever connected with one of said arms through a suitable wire or cord, and an auxiliary lever connected with the other arm or blade and placed in the path of said operating hand-lever, as and for the purpose described.

2. In a railway signal apparatus, the combination, with two signal arms or blades, one indicating "safety" and the other "danger" and adapted to be alternately exposed to view, of an operating hand-lever connected through a suitable wire or cord with one of said arms or blades, and an auxiliary lever connected to the other arm or blade and disposed, as described, to be engaged by the operating hand-lever on a continuance of the movement of the said lever in the same direction after the signal directly connected therewith has been obscured.

3. In a railway signal apparatus, the combination, with two signals, of two levers *t t*², independently connected therewith, an operating hand-lever O, connected with one of said levers through a suitable cord or wire, and an auxiliary lever connected with the other and disposed in position to be engaged by said operating-lever on a movement thereof to a predetermined point, as and for the purpose described.

4. The combination, with the two signal arms or blades, of independent connecting rods and wires leading from the point where the signal-man is stationed, an operating hand-lever connected with one of said arms, and an auxiliary lever disposed in the path of the operating hand-lever and connected with the operating devices of the other arm.

5. The combination, with the signal-operating lever O, of a rider m^3 , loosely connected therewith and moving over a suitable rail or guide inclined upward to a predetermined point, a connecting wire or cord connecting said rider with the signal-arm, and an auxiliary lever disposed in position to be struck by the operating-lever when the rider has reached the highest point of the incline, said auxiliary lever being connected with a second signal-arm, as and for the purpose described.

6. The combination, substantially as de-

scribed, of a danger-signal, an operating-lever therefor, a cautionary signal, and an actuating-lever for the latter disposed, as described, in position to be engaged by the actuating-lever of the first signal when said first signal has been thrown out of signal position.

Signed at the city of Baltimore, in the State of Maryland, this 11th day of February, A. D. 1889.

CHARLES SELDEN.

Witnesses:

MURRAY HANSON,
WILLIAM H. BERRY.

Signed at the town of Garrett, in the county of De Kalb and State of Indiana, this 8th day of February, A. D. 1889.

GEORGE R. OTT.

Witnesses:

L. CONELL,
H. R. COFFINBURY.