(No Model.)

2 Sheets—Sheet 1.

H. H. SWAN.

RAILROAD SIGNAL LIGHT.

No. 345,653. Patented July 13, 1886.

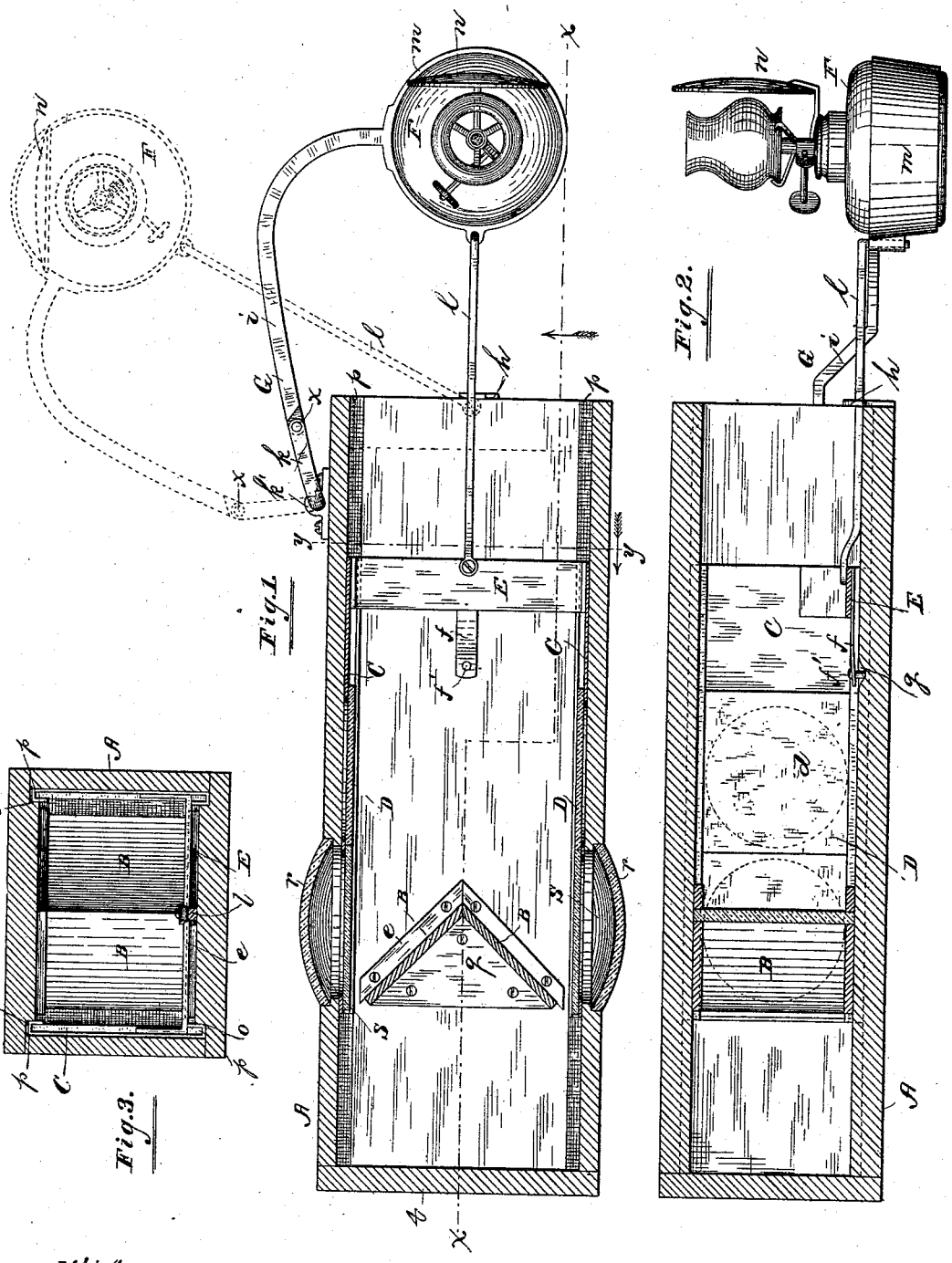

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses.

Henry Faulkner.

W. G. Baker.

Inventor

Henry H. Swan

by James Rosendale

his Attorney

(No Model.)

2 Sheets—Sheet 2.

H. H. SWAN.

RAILROAD SIGNAL LIGHT.

No. 345,653. Patented July 13, 1886.

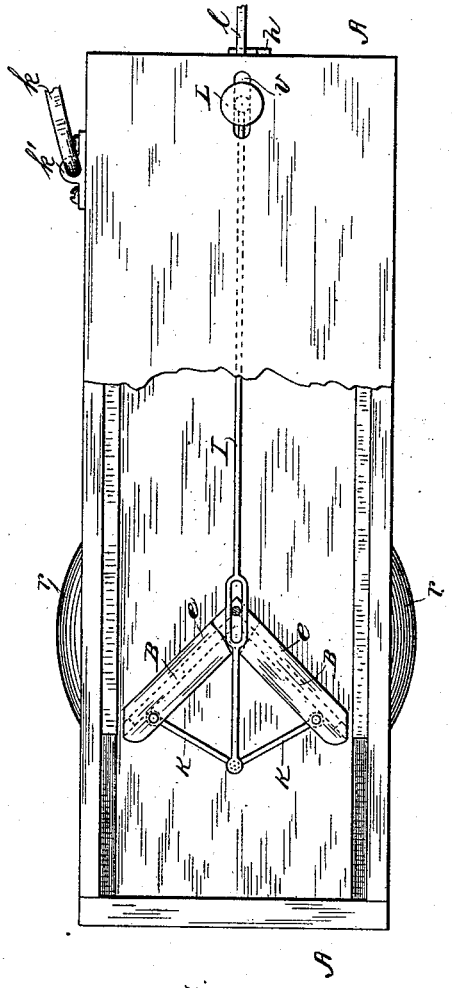

Fig. 4.

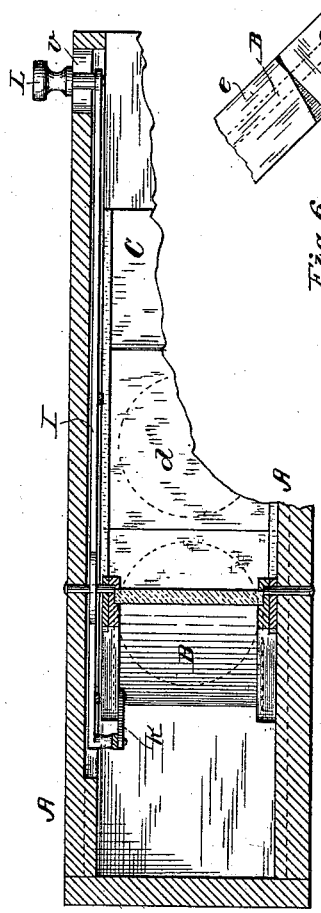

Fig. 5.

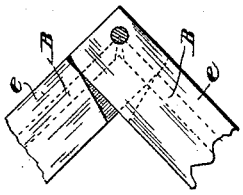

Fig. 6.

Witnesses.
Harry Faulkner,
W. S. Baker.

Inventor.
Henry H. Swan,
by James Bonsall & Co.
his Attorneys.

UNITED STATES PATENT OFFICE.

HENRY H. SWAN, OF MARISSA, ASSIGNOR OF THREE-FOURTHS TO LEWIS MYERS AND JAMES ROSENTHAL, BOTH OF CHICAGO, ILLINOIS.

RAILROAD SIGNAL-LIGHT.

SPECIFICATION forming part of Letters Patent No. 345,653, dated July 13, 1886.

Application filed June 13, 1884. Serial No. 134,807. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. SWAN, a citizen of the United States, residing at Marissa, in the county of St. Clair and State of Illinois, have invented a new and Improved Signal-Light for Railroads; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of devices commonly used at stations for the purpose of signaling approaching trains in the night-time; and it is the object of my invention to provide a signaling device which may be operated from within the station-house to throw at night an intense signal-light along the railroad-track, which light shall be visible from a long distance, and to render it possible to view the track or surroundings in the day-time for a long distance on both sides of the station or other inclosure from the room in which the device is operated, and thereby avoid the necessity for leaving the room for the purpose.

Further objects of my invention are to provide a device which shall, in addition to other advantages, possess the desirable feature of inexpensiveness of construction, and in which the light employed in its use shall at the same time serve as a means of providing light for the room from which the device is operated.

My invention consists in the general as well as the specific construction of the mechanism and combination of parts whereby the foregoing objects are effected, all as hereinafter more fully set forth and claimed.

Referring to the drawings, Figure 1 is a plan view of my invention, having the top or cover of the receptacle removed to show details; Fig. 2, a longitudinal section of the same, taken on the line *x x* of Fig. 1, and viewed in the direction of the arrow-heads; Fig. 3, a transverse section of the device, having the cover in position, taken on the line *y y* of Fig. 1, and viewed in the direction of the arrow-heads; Fig. 4, a plan view of the device, having a portion of the cover broken away to show the construction of a modification, and showing the means for operating the same; Fig. 5, a longitudinal vertical section of a broken portion of my device, to represent in side elevation what is shown in Fig. 4, and Fig. 6 a plan view of a broken portion of a detail.

A is an oblong box or chute, formed, preferably, of a cheap grade of lumber, which may be painted and otherwise ornamented, if desired. This box is closed at one end, as shown at *t*, Fig. 1, and open at the opposite end. Toward the closed end of the box, openings *s*, preferably of circular form, are provided opposite to each other, one in each side, and covered with glass *r*, preferably having an external convex surface in the form of "bull's-eyes." Upon the base of the box two strips, *e*, converging to an angle of about ninety-two (92) degrees, are secured in a manner to bring the vertex upon a central point between the two sides of the box, the under side of the cover being provided with similar strips, *e*, adjusted directly opposite in the same manner as those just described, and corresponding with the latter in every respect. A triangular piece, *q*, is secured in position within such angle formed by the strips *e*, in a manner to bring the vertices of the angles of the pieces *q* behind those formed by the strips *e*, and leave a space between the inner sides of each set of strips and the sides of each angular piece *q*, to form guides for the plate-glass mirrors B, each of which is thus held in position at a desired angle to the bull's-eyes *r*.

On each inner side of the base and top of the box A a groove, *p*, is provided, extending the full length of the box, to form guides for the plates C, preferably of metal, which lie against the inner walls of the sides of the box, and are bent upon each lateral edge in an inward direction, to form angle-irons *o*, to receive and hold the plates of glass D, which cover circular openings *d* in the plates C.

As it is customary to employ two colors—green and red or blue and red—for signaling trains, two plates of glass of each of the colors employed are provided to lie opposite to each other within the guides formed by the angle-irons *o*.

E is a cross piece or brace secured at its ends to the opposite plate C, to provide a means for sliding them back and forth within the box A.

F is a lamp of ordinary construction for the burning of coal-oil, and provided with a reflector, *n*. The lamp F rests within a holder, *m*, which is supported by an arm, *l*, secured to it at one end, and pivotally secured at its opposite end to the cross-piece E at a central point between the sides of the box A. A bracket, G, comprising a short arm, *k*, having one end bent upon itself to a right angle to form a pivot, which is inserted into a retainer, *k'*, secured to one side of the box A, has a pivotal movement therein, and a bent long arm, *i*, hinged at one end to the free end of the arm *k*, as shown at *x*, and secured at its opposite end to the side of the lamp-holder *m*.

The operation of my device is as follows: The open end of the box A lies within the operating-room of the station, and the box projects thence without the room toward the edge of the platform common to all railway-stations. The plates of green (or blue) glass D are placed opposite to each other within the sliding plates C, toward the inner ends of the latter, and next to them are placed the plates of red glass D. A stop, *h*, is provided at the central point upon the end of the base of the box A, to prevent withdrawal of the plates C by means of the cross-piece E, which abuts against the stop *h* when drawn outward to the extremity of the box. When the cross-piece E is in this position, as indicated by the dotted lines representing it in Fig. 1 of the drawings, the "bull's-eyes" *r* are not covered by either of the colored panes of glass, which are drawn out by means of the lamp-holder *m*, which serves as a handle, the plates C being of a length to extend inward from the open end of the box A to the openings *s* in the sides of the box. When the plates C, holding the panes of colored glass D, occupy the position indicated by the dotted lines representing the position of the cross piece E in Fig. 1 of the drawings, the lamp and parts connecting it with the box A will occupy that indicated by the dotted lines representing them in Fig. 1 of the drawings, since the arm *l*, being longer than the long arm *i* of the bracket G, to enable the lamp F to occupy a position directly opposite the center of the opening to the box A, will have to occupy the position indicated by the full lines in Fig. 1 of the drawings. Supposing, therefore, that the device is not being used to signal, when the plates C, by means of the holder *m* operating upon the cross-piece E, would be drawn out to their full extent, as controlled by the stop *h*, the lamp mechanism would necessarily, in the operation of drawing the plates C out, be swung to the right side into the position shown by the dotted lines representing the lamp in Fig. 1, when no light from the lamp would enter directly into the box A. In this condition the device affords a very convenient means of inspecting the track in the day-time to a considerable distance along each side of the station from indoors, as the operator looking into the box sees the reflection of the track upon the mirrors B. To signal a train at night with a green (or blue) light, the lamp is swung around to the left until it reaches a point directly opposite the center of the opening leading into the box, where it is prevented from passing this point by the abutment of the arm *l* against the stop *h*. In the operation of swinging the lamp into the position just described and clearly shown in the drawings, owing to the difference between the length of the arm *l* and that of the arm *i*, the plates C will be slid to some distance into the box A. A spring, *f*, projects inward from the center of the cross-piece E, and has a downward-projecting button, *f'*, at its end. To bring the panes of green (or blue) glass D before the bull's-eyes, the plates C are forced somewhat farther into the box A than shall have been incidentally effected by the swinging of the lamp into its central position, and when the green (or blue) glass panes shall have reached a position completely to have covered the bull's-eyes the fact will have been indicated to the operator by the action of the spring *f*, the button *f'* of which will have entered a slight depression, *g*, in the base of the box, to remove it from which by pushing or pulling requires slightly-increased exertion. The reflector *n* of the lamp F throws its light upon the mirrors B, whence it is reflected through the glass-covered openings *s*, casting through them upon the track an intense light of the color of the panes of glass interposed between the mirrors and the bull's-eyes. To signal with a red light, it is but necessary to force the sliding plates into the box still further, the arrangement being such that the lamp-holder *m* will abut against the lower edge of the open end of the box when the panes of red glass shall have reached a position completely to cover the openings in the sides of the box A, the hinge construction of the bracket G permitting this operation. It will thus be seen that the operator without leaving his apartment may have at all times during the day a clear view of the track on both sides of the station and to a considerable distance, and is enabled to signal trains at night without difficulty, the lamp used for the purpose furnishing at the same time means for lighting the apartment.

Although the reflectors B are represented on Sheet 1 of the drawings as adjusted in rigid frames, they will in practice be made adjustable by means of adjustable frames, as shown in Sheet 2 of the drawings. For this purpose the strips *e* are grooved, as shown by dotted lines in Figs. 4 and 6, to receive on the upper side of the receptacle the upper edges of the mirrors B, and on the lower side of the receptacle the lower edges of the same, by which construction the part *q* is omitted, and at the vertex of the angle formed by the strips *e* the latter are pivoted together in the manner shown, to permit enlargement and reduction of the angle, whereby the flat sides of the mirrors may be

brought to approach and assume, if desired, a parallel position with reference to the openings *s*, for the purpose of permitting during the day-time the view of a greater extent of track, and for permitting the light to be reflected at night at various angles. The adjustment of the mirrors is effected from the end of the receptacle, which is open and projects into the operating-room by means of a rod, I, operating a hinge, K, having its wings pivoted at their ends to the movable strips, *e*, as shown, and operated by means of a knob, L, attached to the rod I, toward its inner end, and sliding within a longitudinal slot, *v*, formed in the top of the receptacle.

What I claim as new, and desire to secure by Letters Patent, is—

1. A device for signaling railroad-trains, comprising a receptacle provided with openings in its sides and containing adjustable reflectors to reflect the light from an external medium through the said openings, substantially as described.

2. A device for signaling railroad-trains, comprising a receptacle to extend from the interior of the station toward the track, and provided with openings in its sides, and containing reflectors to reflect the light from an external medium through the said openings, and mechanism substantially as described, for interposing at will colored glass between the said reflectors and openings, for the purposes set forth.

3. The combination, with a box, A, open at one end, and provided with openings *s* in its sides, covered with glass, and having adjustable reflectors B, arranged within the said box, to reflect external objects through the said glass-covered openings, of a lamp, F, and mechanism, substantially as described, for adjusting the said lamp in a position whereby light therefrom shall fall upon the said adjustable reflectors B, and be reflected through the said glass-covered openings *s*, for the purpose set forth.

4. The combination, with a box, A, open at one end, and provided with openings *s*, covered with glass in its sides, and having reflectors B, arranged within the said box, to reflect external objects through the said glass-covered openings, of a lamp, F, provided with a reflector, *n*, a holder, *m*, for the said lamp, plates C, adapted to slide longitudinally in grooves within the box A, and forming receptacles for plates of colored glass held therein, a cross-piece, E, connecting the plates C, a spring, *f*, upon the cross-piece E, and having a button, *f'*, to enter, when desired, a depression, *g*, in the box A, and mechanism, substantially as described, for connecting the said lamp with the said box and sliding plates C, whereby the said lamp may be adjusted at will to throw its rays upon the reflectors B, and the plates C be moved inward to interpose panes of colored glass D between the openings *s* in the sides of the box and the reflectors B, and whereby the said panes D on the sliding plates C may be withdrawn, when desired, from a position between the said openings *s* and reflectors, and the said lamp moved from the position in which its rays enter the said box, the said construction forming a railroad signaling device, and the whole being constructed and arranged to operate as and for the purposes set forth.

5. A device for signaling railroad-trains, comprising a receptacle to extend from the interior of the station toward the track, and provided with openings in its sides, and containing adjustable reflectors to reflect the light from an external medium through the said openings, and mechanism, substantially as described, for interposing at will colored glass between the said reflectors and openings, and a lamp, for the purposes set forth.

HENRY H. SWAN.

In presence of—
LOUIS ENGLER,
JAC. ADAM.