E. H. TOBEY.

RAILROAD SIGNAL LIGHT.

No. 60,594. Patented Dec. 18, 1866.

Fig: 1.

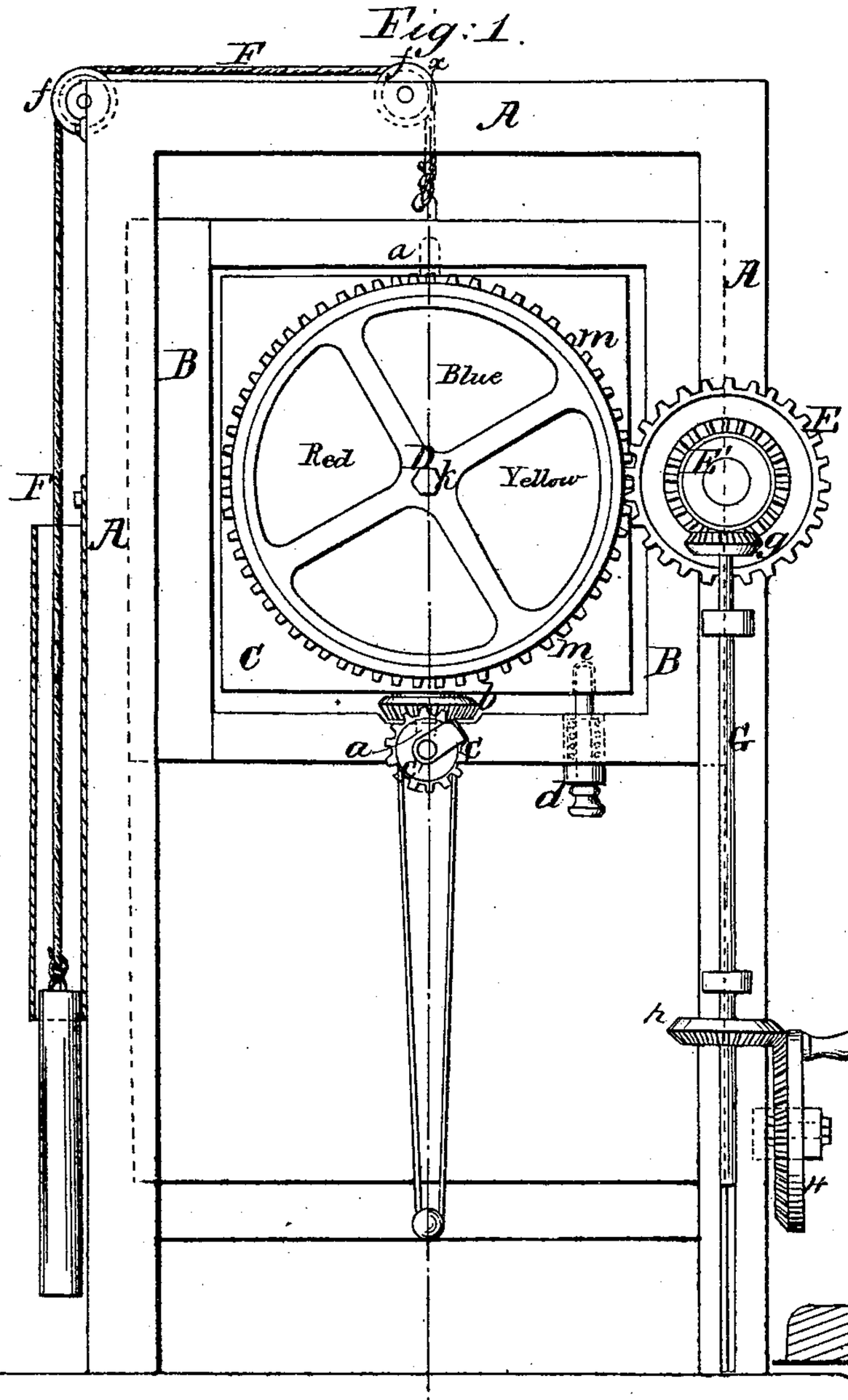
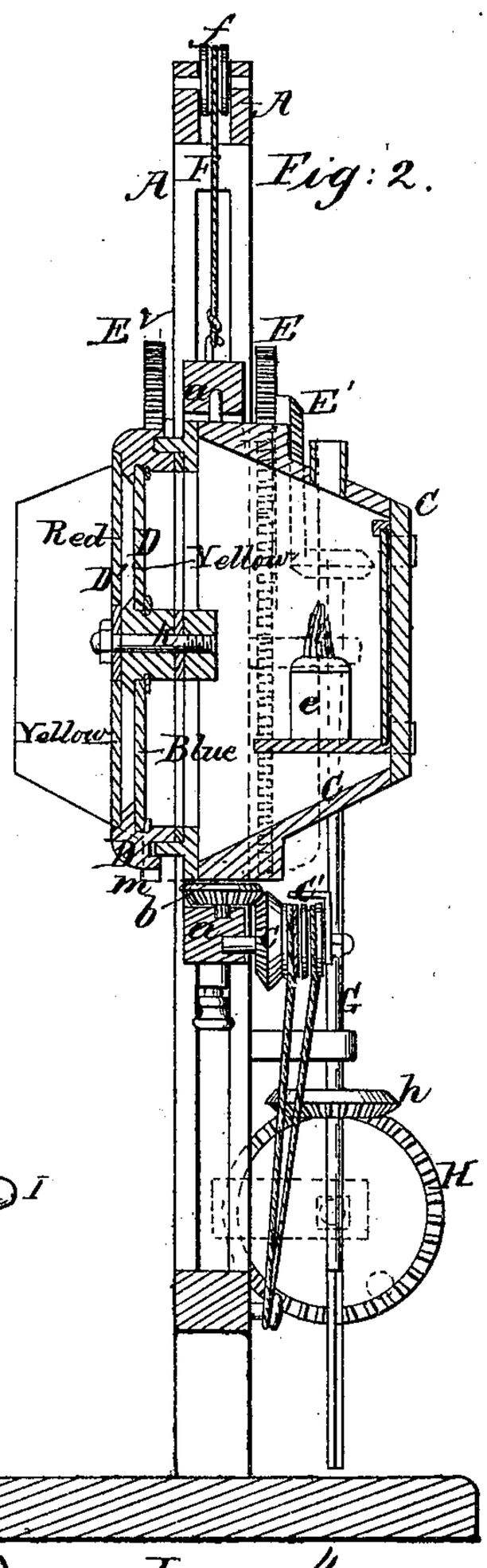


Fig: 2.



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IMPROVEMENT IN RAILROAD SIGNAL LIGHTS.

ELISHA H. TOBEY, OF WATERTOWN, NEW YORK.

Letters Patent No. 60,594, *dated December* 18, 1866.

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

TO WHOM IT MAY CONCERN:

Be it known that I, ELISHA H. TOBEY, of Watertown, in the county of Jefferson, and State of New York, have invented certain new and useful Improvements in Railroad Signals; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of an apparatus constructed in accordance with my invention; and

Figure 2 is a vertical section of the same, on the line *x y*, fig. 1.

The signals to which my invention more particularly relates are those which are placed at certain points on railroads to indicate to trains whether or not it is safe to approach. It is well known that at those points on a railroad where switches or side tracks branch from the main track these signals are erected, which, by the display of lights or plates of different colors, indicate to the engineer of the approaching train that everything is right, or that he must slacken speed, or stop the train, &c. Many methods of arranging and operating the signal apparatus are employed; but all of them are defective in the extreme, and really afford but little protection against the accidents they are designed to prevent. In all of them the light is not sufficiently distinct, and even if it were, the height of the frame with which they are employed is not sufficient to allow the light to be seen any great distance, especially if there be sharp curves in the road. These signals are thus practically of little or no use to the engineer of the approaching train, and their chief use would seem to be to indicate to the switchman that everything is right. But if by any chance the switch tender, after hoisting such a signal, should neglect to adjust his switches properly, the consequences to the train approaching at full speed would be most disastrous. The object of my invention is to guard against all such dangers, so that, if from any cause the track is not in proper condition, the engineer shall have ample time to stop the train before arriving at the dangerous spot. To this end my invention consists principally in making the signal plate or face of the lantern or reflector box containing the light capable of being revolved, the reflector box remaining stationary. By this method a dial or signal plate, composed of glass of one or more colors, as desired, will, when revolved, produce an intermittent light, which, intensified by the reflecting surfaces of the box, can be seen at a very great distance, and will indicate by its revolution that the switchman is at his post.

My invention further consists in the arrangement of the gear for transmitting motion to the rotary dial plate; in the construction and arrangement of the reflector box, so as to be capable of revolving in a horizontal plane at right angles to the plane of revolution of its dial plate; and in the combination of the reflector box and frame with the main frame in which it slides, so that its dial plate may be thrown in gear or out of gear, as desired.

To enable others skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect, by reference to the accompanying drawings.

The apparatus there shown consists of the signal frame A, reflector box frame B, reflector box C, dial or signal plate D, gear mechanism for actuating the dial plate and reflector box, and rope and pulleys for elevating and lowering the reflector box frame. The frame, A, is composed of two uprights, connected at the top by a cross-piece. The frame is of suitable size to receive the frame B between the two uprights, which have ways formed in their interior and opposite faces, in which the reflector box frame slides vertically. The uprights, A, may be of any desired height, the construction and arrangement of the apparatus permitting them to be of much greater length than can be attained ordinarily, so that the signal light may be raised sixty feet or more, if desired. The reflector box frame, B, is intended, as its name indicates, to hold the reflector box. It slides in ways between the uprights A, and is raised or lowered by means of a rope, F, attached to its top and taken out over pulleys, *f f*, in the upper cross-piece A, extending thence downward to the ground, and being actuated either by weights or by hand. The revolvable reflector box, C, is pivoted to the top and bottom of its frame, B, by pins *a a'*, its axis of rotation passing through these points. Between the bottom of the box and the lower cross-piece of the frame, B, is a bevelled pinion, *b*, mounted on the pin *a'*, and revolving therewith, meshing at the same time with a mitre-wheel, *c*, attached to the frame B, over the hub, *c'*, of which an endless rope or band, *n*, passes, by means of which the mitre gear, *c* and *b*, may be revolved in either direction, thus effecting the rotation of the reflector box, no matter at what distance it is above the ground. The box, C, can

in this manner be made to face in either direction, or may be continuously revolved, so as to show its light in a certain direction at intervals only. For the purpose of holding it in position, a spring catch *d*, suitably arranged. is placed in the frame B. The handle of this catch should have a cord attached to it, so that it may be drawn away from the box C when the latter is to be revolved. The light, *e*, is contained within the box C, the sides and end of which should be covered with sheets of tin or silver, or other suitable metal, to form reflecting surfaces, and thus intensify and augment the brilliancy of the light. Over the open front of the reflector box is fitted a revolving signal or dial plate D, held in place by a bolt or rod *k*, which forms its axis of rotation. The glass dial plate is of one or more colors, as desired, and it may be arranged, by means of partitions within the reflector box, so that the light, *e*, will illuminate either the whole or half of it at one time, or only one of its sections of colored glass. Upon the periphery of the plate are formed teeth *m*, which, when the reflector box is raised to the proper height in the frame A, mesh with the teeth of a wheel E, which actuates or causes, in connection with other gear, the toothed dial plate to revolve. The gear-wheel, E, is secured to the frame, A, at the height at which the reflector box is required to be, and has attached to it a smaller mitre gear E^1, which engages with a pinion *g*, mounted on the end of the rod G, upon the lower portion of which a pinion, *h*, is mounted, meshing with and receiving motion from the toothed wheel, H, and crank I. It will be seen that by this arrangement the dial plate, when engaged with the gear E, can be easily thrown out of gear, if desired, by raising or lowering the frame B, which will cause the separation of the two. This, perhaps, it is desirable to do when the reflector box, C, is revolved, in order to avoid catching the teeth of the wheel against those of the dial plate during the horizontal revolution of the box. The journal of the wheel E extends through the upright A, and has mounted on its other end a second wheel E^2, similar in all respects to the wheel E, with which the dial plate meshes when the reflector box is reversed, as shown in fig. 2, so that, whether the reflector box faces in one direction or the other, the dial plate will still mesh with and be revolved by the gear mechanism. The lower part of the rod G has a square shape, and is intended to be used in connection with the forked end of a rod or bar, attached to and moving with the switch, which rod, when the switch is not properly adjusted, will grasp and hold between its forks the square end of the rod G, and thus prevent the revolution of the gear and dial plate.

Under this arrangement the danger hereinbefore mentioned will be in great measure if not entirely avoided. For, as it is the duty of the switch-tender to revolve the signal plate on the approach of a train, and as the plate cannot be revolved unless the track is clear and the switches are properly set, the engineer, unless he can see the rotation of the dial plate, will of course check the speed of or stop the train, knowing that something must be wrong.

A wooden or metal signal plate or disk, D′, is placed over the glass one D in the day time, being held on the bolt *k*, on which the plate D revolves. Either or both plates may be taken off by removing the nut from the head of the rod or bolt *k*.

The apparatus I have described can be constructed with great ease, and with but little expense comparatively, costing not near so much as ordinary signal lights now in use. I have described my invention with particular reference to railroads, but it may also be used on wharves and steamboats, and in any other connection in which a strong and conspicuous signal is needed to indicate whether or not it will be safe to approach a certain locality, or for other like uses.

Having described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. I claim the combination, with a revolving reflector box or other receptacle for a signal light, of a signal or dial plate, capable of being rotated in a plane at right angles to the plane in which the said box is revolved, as herein shown and described.

2. In the apparatus herein described, I claim the combination of the dial or signal plate with the gearing by which it is revolved, under such an arrangement that the raising or lowering of the said plate in the signal frame shall cause it to be thrown in or out of gear, substantially as shown and set forth.

3. In combination with the main signal frame, I claim a reflector box or other receptacle for the signal light, under such an arrangement that the said box, while sliding vertically in said frame, shall also be capable of being rotated in a horizontal plane, substantially as shown and described.

4. In the herein described apparatus, I claim the combination, with the reflector box and revolving dial plate, whose axes of rotation are at right angles with each other, of the gear mechanism by which the said box and plate are respectively revolved, arranged for operation substantially as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

E. H. TOBEY.

Witnesses:

W. BAILEY,

EDM. F. BROWN.