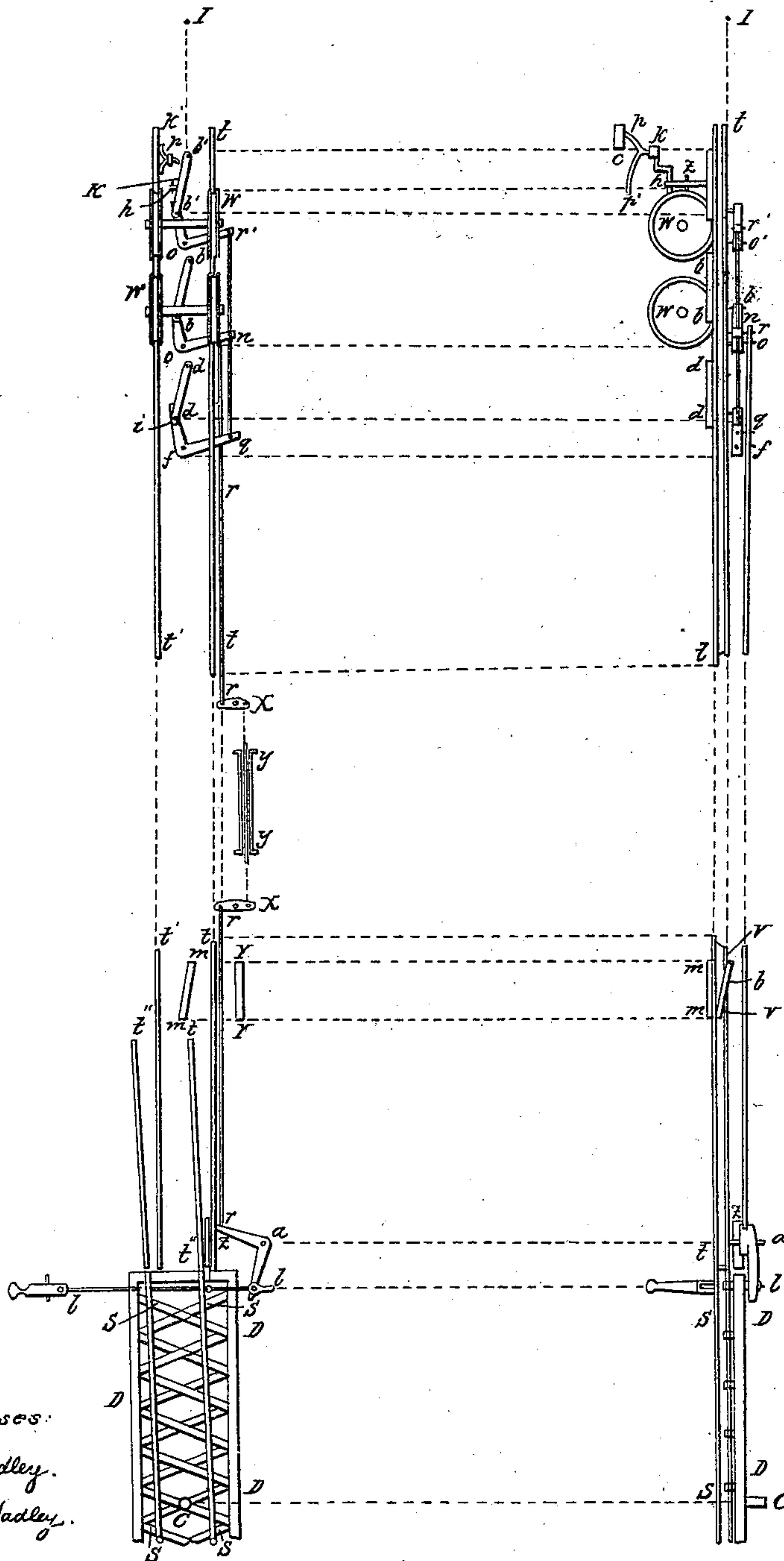


A. C. TWINING.
Railway Signal and Alarm.

No. 76,559.

Patented April 7, 1868.



Witnesses:
James Hadley.
Anne L. Hadley.

Inventor:
Alex. C. Twining.

United States Patent Office.

ALEXANDER C. TWINING, OF NEW HAVEN, CONNECTICUT.

Letters Patent No. 76,559, dated April 7, 1868.

IMPROVED RAILWAY-SIGNAL AND ALARM.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALEXANDER C. TWINING, of the city of New Haven, county of New Haven, and State of Connecticut, have invented a new and Improved Means of Preventing Accidents to Railroad-Trains, especially when the continuity of track is broken by an opened draw-bridge or switch, and which I call "The Switch and Draw-Sentry;" and I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

My invention consists of a combination of the locking-mechanism of a railroad-draw or switch, or other opening, with a mechanism operated upon a locomotive-engine or the train, by a piece which I call the handle, and also with other mechanism, on or above the track, which I herein call by the name bars, by which combination the unlocking of the draw or opening compels the bars into such position or condition, that while the unlocked or open situation continues, and no longer, they can act upon the handle and make it open a steam-pipe to put the brakes on automatically, or else to sound the whistle or alarm for braking up an advancing train. The locking-apparatus is to be constructed and operated after any sufficient and approved plan or manner; and so is also whatever mechanical connection is employed between it and the steam-pipes, &c. It is immaterial whether the operating force through or by the bars is the same as for unlocking, or another force brought into action thereby, as, for example, electric currents along wires from that apparatus to the bars, coiling around and producing magnetism to give action to the handle.

The accompanying drawings show our illustrated arrangement by the figures marked "ground-plan," on the left, and "side view" on the right.

The switch *s s* is, for convenience, represented on the draw *D D D*, so that the track *t t, t' t'* will be broken if either the switch is open on the draw or is fixed to and opens with it. *l l* stands for the mechanism, of whatever description, which unlocks and locks the draw or opening. It may also serve for the mechanism which opens the draw by its farther action, after it has unlocked it, and also restores the same to place before it locks it. In the case of a draw it would naturally be upon the draw itself, but in other cases, upon the track. The drawing shows it as arranged to work back and forward the tongue *z*, which fits and holds in an opposite slot of the draw, and must be slipped back before the latter can be swung, drawn, or lifted, in the least. Moreover, the draw being higher all around the front than *z*, will block its returning or forward movement until the slot for *z* is in place, or, in other words, the draw or opening closed. Also I have elsewhere described and claimed, with reference to a future patent, the fastening of *z*, itself worked by the opening and shutting of the draw, still farther to compel and insure a safe position under all circumstances, and without false alarms. The unlocking bent lever *l a r*, when turned on *a* by *l l*, also works the rod *r r, r r*, and by it the bent lever *n o b* on *o* as its pivot. The latter plays the short rod *q n r'*, and with it as many other bent levers, *q f i, r' o' b'*, as may be desired. *r x, r x* and *x x* are only for keeping the working-points of *a r* and *o n* unaffected as to distance, by expansion. *z y* is a containing-pipe, for protecting the connecting-rods throughout, or as far as desired. The lever-arms *f d, o b, o' b'*, are connected, (as at *i*), with the "bars" or pieces *d d, b b, b' b'*, turning upon the fixed pivots, *d, b, b'*, at the opposite ends. These bars may be aside the track or on it, or, probably still better, on a construction above or projecting over, high enough for the locomotive to pass beneath. They may work up and down, as *v v, v v*, if desired, but are shown in preference working laterally upon the surface of the ties, and coming a little above the rails *t t, t' t'*. They are parallel to the track, or out of working condition if the draw or opening is locked, but when that is not locked, they are oblique, or in ready condition to act upon the handle, either up and down, or, better, horizontally across, as *m m, m m*, in the drawing. This last-named part of the combination is next to be described in connections and operation.

The handle *h* is simply a yielding vibratory or flexible attachment to the locomotive-engine or its accompaniments, and is connected with and works the cock *k*, to open or shut the steam-pipe *p* or *p'*. When the engine-wheels *w w*, &c., are passing the bars, *h* hits successively and slides along the front or incline of each, and so is pushed toward *t' t'*, (see ground-plan,) and, acting as a lever, it may be, around the fulcrum *z*, (see

side view,) or otherwise, opens the steam-passage through p or p' , or both, to the whistle, or to the brake-cylinder c , or to other apparatus, as described below. Now the whistle will sound for an instant, till h comes free from $b' b'$, when the axis z , being here supposed a spring, bent by the thrust of h , will recoil and shut off steam. Thus as many sudden shrieks of the whistle will be repeated as there are bars; or the making and breaking contact of the handle with the inclines may be made to produce, as before mentioned, this effect by some other application or species of force, or by other connecting-mechanism between the handle and the automatic apparatus.

In case the brakes are operated automatically by other apparatus than the steam-cylinder c , then let $p c$ represent that apparatus, and h the connections with the handle $h z$, operating the brake-apparatus by the sliding in contact with the inclines already described. But the engine passing away from an opening it has traversed, will avoid the bars on the other side; also, in backing, the handle passes behind the ends of the bars, or if impinging, can, by a proper construction, yield in a counter direction to the foregoing, or otherwise be defended against any contact that shall produce alarm or stoppage of the train.

Now, that the handle may be moved by, or may itself be an oblique lever, lifted or shoved by interference with the bars, or that the several inclines $l' l'$, $l l$, $d d$, &c., may be on a single bar, as $n o b$, or moved laterally parallel to itself, say by two of the levers; or that the bars, of whatever formation, may work horizontally up and down; or that, if the brake-cylinder is employed, whether alone or with the whistle, it must have its own handle to remain where it is pushed by the incline, but under the engineer's control; or that the handle itself should, under various modes of arrangement, be flat and firm, lengthwise of the track, are matters, among others, too obvious to be enlarged upon.

What I claim in the above, and desire to secure by Letters Patent, is the following:

In a railroad-draw or other opening, I claim the locking-apparatus, constructed and operating substantially as described, when connected with the described devices for actuating the brake, bell, or whistle, upon the engine of a moving train, all substantially as set forth.

In combination with the above, I claim also the handle h , connected and arranged as described, to strike on the successive inclines, substantially as and for the purpose set forth.

ALEXR. C. TWINING.

Witnesses:

S. W. MAGILL,

ELIZA K. TWINING.