(No Model.)

J. H. TAYLOR & Z. T. MILLER.

RAILWAY SAFETY GATE.

No. 338,316. Patented Mar. 23, 1886.

Fig. 1.

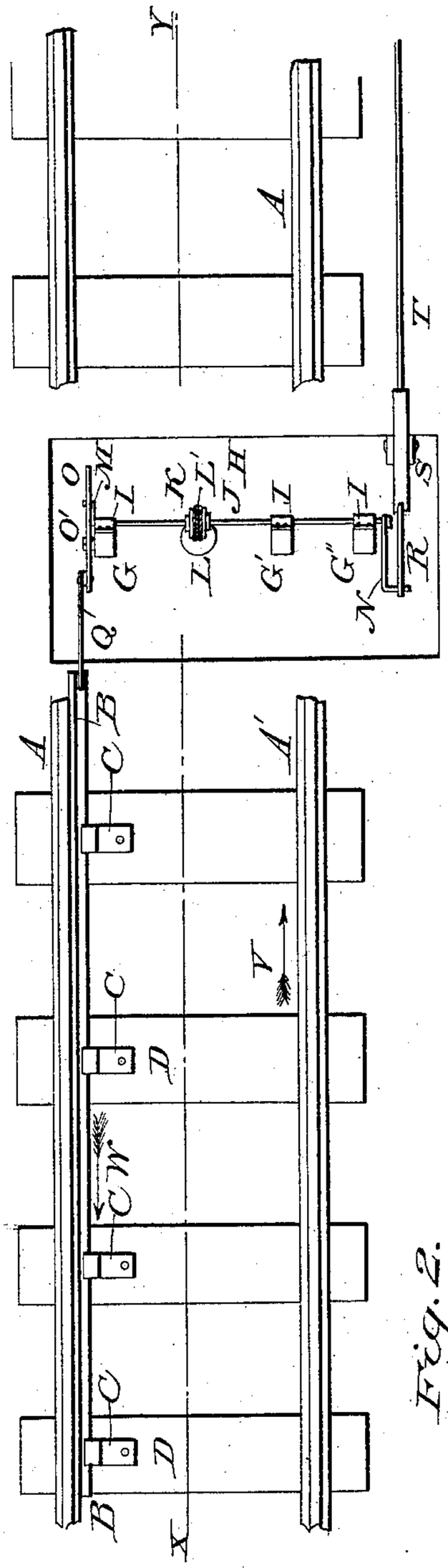

Fig. 2.

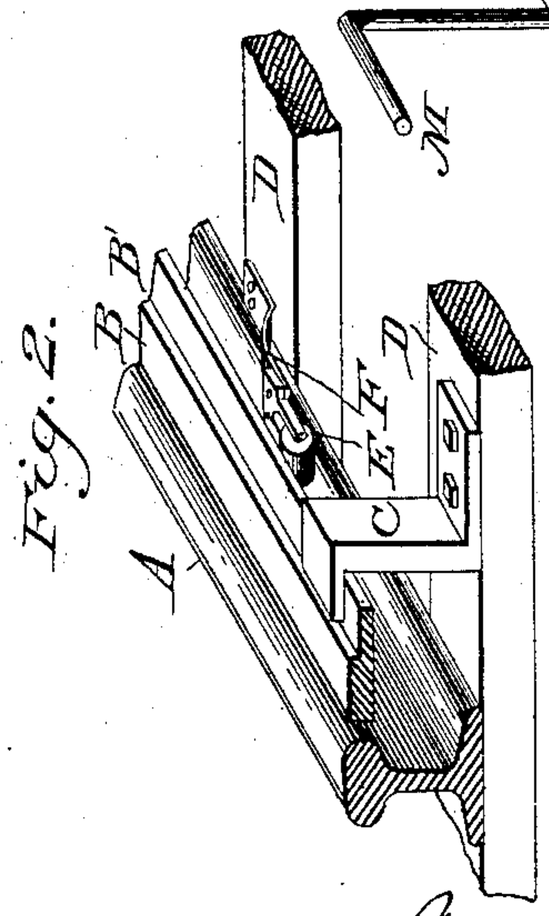

Fig. 3.

Fig. 4.

Witnesses:
E. L. Clark.
H. V. Buckley

Inventor:
James H. Taylor
Zachary T. Miller
by George E. Buckley
Atty

UNITED STATES PATENT OFFICE.

JAMES H. TAYLOR AND ZACHARY T. MILLER, OF PHILADELPHIA, PA.

RAILWAY SAFETY-GATE.

SPECIFICATION forming part of Letters Patent No. 338,316, dated March 23, 1886.

Application filed December 19, 1885. Serial No. 186,222. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. TAYLOR and ZACHARY T. MILLER, both citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Railway Safety-Gates at Railway-Crossings; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part hereof.

The nature of the invention will fully appear from the following description and claims.

In the drawings, Figure 1 is a plan view of our mechanism applied to a railroad-track, showing, also, a gate at a railway-crossing to be raised and lowered by it, with part of the track broken away; Fig. 2, a detached view of part of a railway-track with a section of part of our supplemental friction-track, through which latter power is communicated to the operating mechanism; Fig. 3, an inner view of the inner side of the railroad-track with its ties in cross-section on the line X Y of Fig. 1, also showing our operating mechanism applied to a gate in elevation; Fig. 4, a detached view of our crank-shaft.

A A′, Fig. 1, are the two rails.

B is our supplemental friction-rail, passing along close to the main rail A. The upper surface of this supplemental rail is slightly below the horizontal plane of the upper face of the main rail.

B′ is a flange, forming part of and passing along the lower inside part of the friction-rail B.

C C are the cleats or clamps, one end of each of which is secured to a railroad-tie, D, the other end being bent up and lapped over, so as to hold down the rail B by impinging upon the upper surface of the flange B′, (see Figs. 1 and 3,) whereby the rail B is held down upon its supporting-rollers E. (See Figs. 2 and 3.) Each roller E is secured by its axis upon a bent spring, F, the pressure of which spring is upward. The lower end of each of these springs is secured by a screw or bolt to a cross-tie. Of course, variously-shaped and different kinds of springs will occur to the mind of a skilled mechanic instead of one bent spring, F; but the latter will answer the purpose. The pressure of these springs serves to sustain the rail B, as by a yielding cushion, against the bent-over lips of the clamps C.

G G′ G″ are posts or standards set in a trench, H, and are of such limited height as to avoid the risk of being touched by trains of cars passing above them. To these posts are secured collars I I, through which passes the crank-shaft J. Upon this crank-shaft is rigidly set a weighted pulley, K, the weight L and cord L′ of which are shown in Figs. 1 and 3.

M N are two cranks, one at each end of the shaft J, in different intersecting planes. (See Fig. 4.)

O is a slotted lever, pivoted at O′ to the post G. The end of crank M passes through and vibrates in the slot P of this lever.

Q is a connecting-arm hinged to one end of lever O, and hooked into or hinged at the other end to the terminus of the flange B′ of the friction-rail B. The crank N, outside of the space between the rails A A′, engages at its outer extremity with the lower end of connecting-arm R, and is pivoted thereto.

S is a post or standard, sustaining and pivoted at its upper end to the bar T, near the inner end or heel thereof. The inner end or heel of this gate is pivoted at U to the upper end of the connecting rod or arm R. The post S and gate T are outside of the tracks and out of the way of passing trains.

The operation is as follows: The gate T is designed to drop as a train approaches a crossing, to prevent the passage of vehicles across the track. We will suppose a train to be moving in the direction of the arrows V. (See Figs. 1 and 2.) The flanged part of each car-wheel is of greater diameter than the part which bears or "treads" upon the main track A, which latter is fixed and rigid. The flange of the wheel bears upon the yielding supplemental track B. As the tread or main part of the wheel rolls upon the track, the flanged part, being of larger diameter, will travel at a greater rate of speed than the main part of the wheel, and a frictional contact will occur between the circumference of the flange and the top of the supplemental rail B, which contact will operate to push the latter rail backward—that is, in a direction contrary to that of the motion of the train. As a number of

these flanges are engaged with the long supplemental rail B simultaneously, this retrograde movement of rail B is assured. After the train has passed, the rail B, relieved of the backward pressure and operated or drawn by the weight above referred to, will resume its former position.

The upper surface of the rail B is at such a slight distance below the upper surface of track A that the contact of the inner flanges of the car-wheels with it is assured, and the tendency of the push of the flanges above referred to is in the direction of the arrows W W. (See Figs. 1 and 2.) The rail B is capable of longitudinal motion from the nature of its attachment, above described. The backward push of rail B will operate to pull on the arm Q, raise the lower end of lever O, and depress its other end, thus lowering the crank M. As the latter moves, it will traverse in the slot P of the lever O. By this motion of the crank M the shaft J will be turned in such a direction as to wind up the cord, chain, or band L′ upon the pulley K, and thus raise the weight L. This motion of the shaft will also raise the outer end of crank N, and throw up the arm R, which (see Fig. 3) will lower the bar or gate T. As remarked above, when the train has passed and the friction of the wheel-flanges upon the rail B is removed, the weight L will tend to unwind the cord, chain, or band L′ from the pulley K, and the motions of the pulley and of the other parts will be the reverse of those last described. The rail B will be drawn back into its original position, and the gate will be opened or raised once more.

In the construction of our device it will of course be necessary to use a sufficient weight, L, to overbalance the weight of the gate or bar T, in addition to that necessary to draw the rail B into place, when it has been pushed back, as above described.

It will be seen that the upward and downward movement of the rod or bar R, or such movement as could be communicated to it mediately by other mechanical devices from the sliding rail B, could be used for operating railroad signals, either alone or in combination with the gate T. The cord L′ and weight L might be replaced by many other forms of weights well known in the arts. For instance, a bar rigidly secured at right angles to the side of shaft J, with a heavy weight at its outer end, is well known and would answer the purpose.

The basis of our invention is the longitudinally-reciprocating rail B, the vibration of which under the friction of the car-wheel flanges and the weight L is an automatic means to actuate either railroad-signals or gates to roads which cross the track.

The movement resulting from the friction of the car-wheel flanges referred to may be opposed and reciprocated by powerful springs applied to the rail B to return it to the place occupied by it before it was pushed backward. These springs take the place of the weight above mentioned.

Any ordinary mechanic will perceive that the reciprocating motion of the rail B may be employed to operate various safeguards necessary upon railroads in various directions by means well-known in the arts—as the vibratory motion of the piston of the steam-engine can be used to revolve a shaft or operate a lever—and we do not limit ourselves to the mechanism described above to utilize the motive power developed by our invention of the reciprocating tracks B.

What we claim is—

1. In an automatic mechanism for opening or closing gates over railroad-crossings, the combination of the main rails A A′, the supplemental longitudinally-reciprocating rail B, held down close beside the main fixed rail A by cleats or clamps C, and sustained against the same by the spring-cushioned rollers E E, arm Q, slotted pivoted lever P, crank-shaft J, with its cranks M N, weight L, attached substantially as described, and arm R, attached to the heel of the pivoted gate T, whereby the latter is raised and lowered, all combined and operating substantially as described.

2. In an automatic mechanism for opening and closing gates over railroad-crossings, the the combination of main rails A A′, supplemental longitudinally-reciprocating rail B, held down close beside the main fixed rail A by cleats or clamps C, and sustained against the same by the spring-cushioned rollers E E, and vertically-vibratory arm R, actuated by intermediate mechanism from said rail B, substantially as described.

3. In an automatic mechanism for operating devices to avoid railroad accidents at crossings, the combination of the main rails A A′, supplemental longitudinally-reciprocating rail B, held down close beside the main rail A by cleats or clamps C, and sustained against the same by the spring-cushioned rollers E E, and movable arm R, receiving motion by intermediate mechanism from said rail B, substantially as described.

JAMES H. TAYLOR.
ZACHARY T. MILLER.

Witnesses:
GEORGE E. BUCKLEY,
H. V. BUCKLEY.