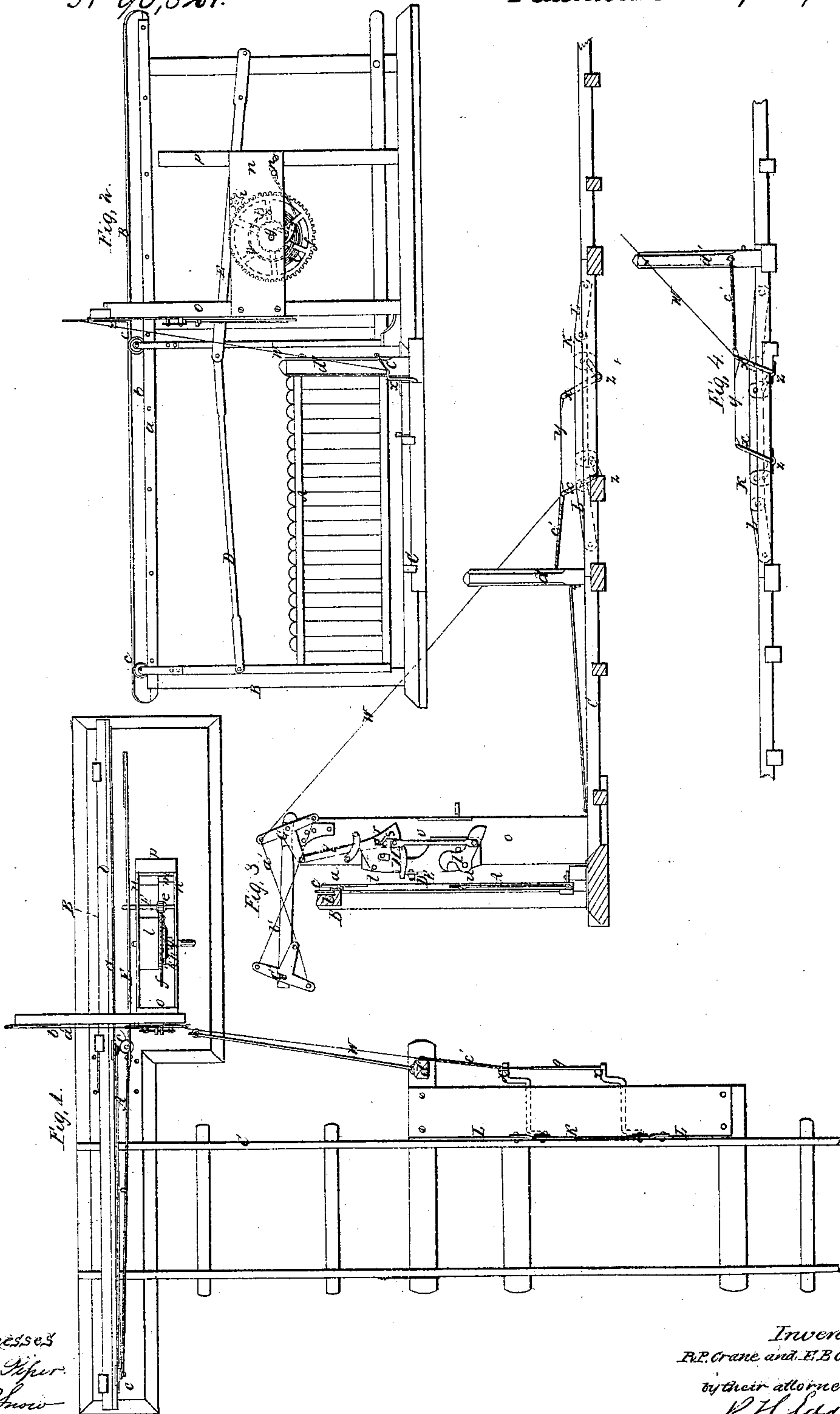


R.P. & E.B. Crane

Railroad Gate.

Nº 90,821.

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Witnesses
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Letters Patent No. 90,821, dated June 1, 1869.

AUTOMATIC RAILWAY-GATE.

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

To all persons to whom these presents may come:

Be it known that we, ROBERT P. CRANE, of Beloit, Rock county, and State of Wisconsin, and ELLERY B. CRANE, of the city and county of Worcester, and State of Massachusetts, have invented a new and improved Mechanism for Automatically Operating the Gate of a Railway-Crossing; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view of it.

Figure 2 is an elevation of the gate, its frame, and the mechanism directly appertaining thereto.

In the drawings—

A denotes a gate, suspended upon a horizontal rail, *a*, affixed to the upper girt, *b*, of a frame, B.

The said frame extends across a railway-track, C, at the crossing of such with a road, and is for closing the railway against the entrance upon it of animals from the roadway, or it may be used also to project across the roadway, for the purpose of arresting the passage of persons or vehicles across the railway-track just previous to the passage of a train of cars across the roadway. In either case the gate would be operated by the train.

The gate has wheels, *c c*, to rest on the rail *a*.

A rod, D, is pivoted, at one end, to the front bar of the gate.

At its other end, the rod D is pivoted to one end of a lever, E, which, at its middle, is fastened to one extremity of a horizontal shaft, F.

On the said shaft a pinion, *e*, is secured.

The pinion engages with a gear, *f*, which revolves freely on an arbor, *g*, and is arranged by the side of a ratchet, *h*, fixed to the said arbor.

A pawl, *i*, carried by the gear, is pressed in contact with the toothed periphery of the ratchet, by a spring, *k*.

A spiral spring, *l*, is coiled around the arbor, and has its inner end fastened to the arbor, the outer end of the said spring being hooked upon, or affixed to a stationary rod, or bar, *m*.

This bar is supported by two check-pieces, or plates, *n n*, fastened to the opposite edges of two upright posts, *o p*, the whole being as represented in the drawings.

Figure 3 is a transverse section of the gate-frame, and exhibits an elevation of the larger of the said two posts, with the mechanism applied thereto.

A triarmed lever, G, pivoted to the upper part of the post *o*, has its middle arm jointed to a hanger, *g*, from which a stud, *r*, extends into the notch *s*, of a lever-catch, H.

This catch, formed in manner as represented, is pivoted to the post, as shown at *t*.

Below the said lever-catch there is another, or guard-lever catch, I, which, formed in manner as shown, and supported on a pivot, *u*, is connected with the first lever-catch, by a rod, *v*, which is pivoted to the two catches, the whole being as represented.

From the upper arm of the triarmed lever G, a wire, *w*, extends down to the wrist of one of two cranks, *x x*, which are connected by a wire, *y*.

These cranks project parallel to each other, and upward from two horizontal shafts, *z z*, disposed at right angles with the railway, and suitably supported.

Alongside of one of the rails of the track is a short and narrow rail, K, which may be termed the tripper, it being, at its opposite ends, jointed to two other inclined rails, L L, which, at their outer extremities, are pivoted to the track-rail.

Figure 4 is a side view of the track-rail, with the tripper and its inclined rails, and the arms by which the tripper is connected with the two shafts *z z*.

From these shafts the said arms project parallel to each other, and are pivoted to the tripper.

The outer or inclined rails are to guide a car-wheel up to and off the upper edge of the tripper.

The tripper is to be arranged at a suitable distance from the road-crossing, or the gate, to enable a train of cars, while passing over the tripper, to effect the opening of the gate before the said train may reach the crossing.

There is to be on the opposite side of the gate, and at a like distance therefrom, another tripper and set of cranked shafts, connected by another wire, with an auxiliary triarmed lever, G', which, arranged as represented, is to be connected with the lever G, by crossed rods, or wires, *a' b'*, disposed as shown in figs. 1 and 3.

A spring, *c'*, fastened to one of the cranks *x x*, and to a post, *d'*, serves to effect the return of the tripper to its normal position after a train may have crossed it.

Now, if we suppose a key to be applied to the arbor *g*, and such arbor to be revolved thereby, so as to wind up the spiral spring, we shall find, that while the spring is so wound up, one of the arms of the lever E will be forced up against the lever-catch H, which will serve to hold the gate in its assumed position, whether it be either closed, or across the track, or open.

Suppose the gate to be closed, or, in other words, across the track, and a train is approaching the gate, the first carriage-wheel which rolls upon the tripper will depress it, and, as a consequence, the hook of the catch H will be withdrawn from over the arm of the lever E. The lever will thus be set free, and at once will be revolved through a half circle, by the power of the coiled spring. In the mean time, the catch H will have been discharged from the stud of the hanger

or lifter, and will have fallen back to its normal position, and, by extending into the path of revolution of the lever E, will arrest the said lever when it may have completed a semi-revolution. This movement of the lever will cause the gate to be retracted, or drawn open, and held open while the train may be passing the road-crossing. When, however, the train may move upon the auxiliary tripper, like results will follow, except that the gate will be closed, or moved across the track.

While the tripper is being raised, the hanger will be moved down into engagement with the catch H.

Should, however, the catch H, by any accidental cause, not advance quick enough to stop the lever, the latter will be caught and arrested by the auxiliary or guard-catch I, which, while the catch H is retracted, is simultaneously advanced, and will also be in the act of being retracted while the catch H is being advanced. Thus any danger of the gate being prematurely closed will be prevented by the action of the guard-catch I.

What we claim as our invention in the gate-operating mechanism above described, may be stated as follows:

We claim the combination of the lever G, the hanger, or lifter *g*, provided with the stud *r*, the lever-catch H, the lever E, and its operating-mechanism, as described, the said lever E being applied to the gate, and the said lever G being applied to the tripper, by means substantially as specified.

And, in combination therewith, we claim the auxiliary, or guard-catch I, arranged and combined with the main catch H, in manner and for the purpose as explained.

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Witnesses:

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