

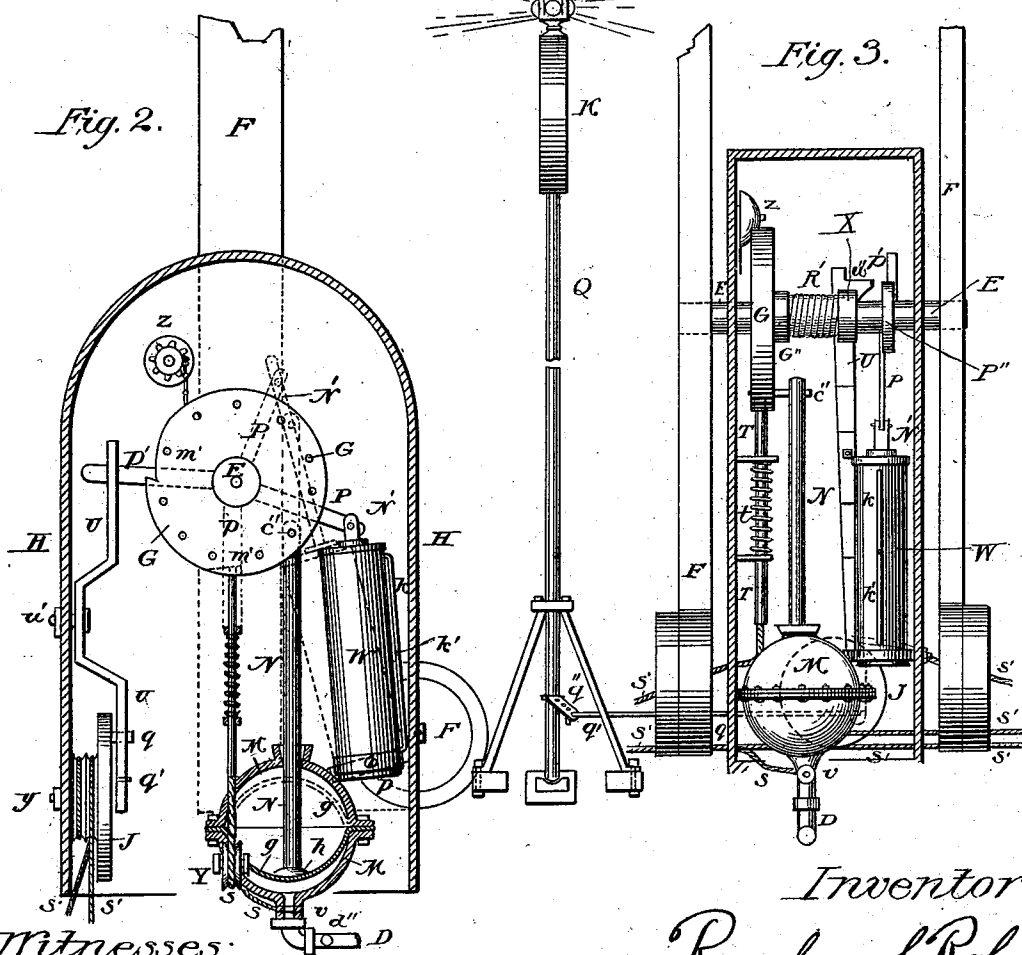
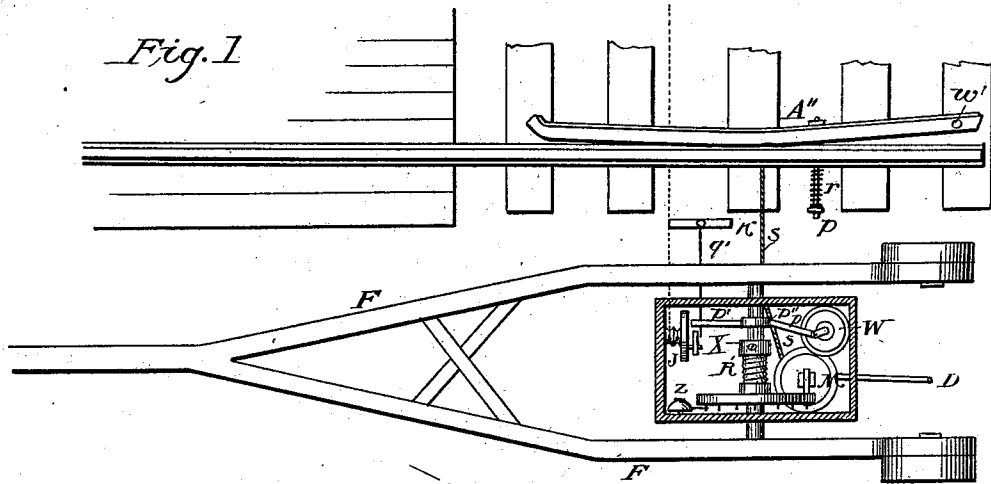
(No Model.)

R. C. ROHRER.

AUTOMATIC SAFETY GATE FOR RAILROAD CROSSINGS.

No. 506,187.

Patented Oct. 3, 1893.



Witnesses:
L. H. Diefendyer.
J. H. Yeager

Inventor:
Reuben C. Rohrer
By H. A. Weller, his atty.

UNITED STATES PATENT OFFICE.

REUBEN C. ROHRER, OF ORWIGSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO SOLOMON MOYER, OF SAME PLACE.

AUTOMATIC SAFETY-GATE FOR RAILROAD-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 506,187, dated October 3, 1893.

Application filed September 17, 1891. Serial No. 406,043. (No model.)

To all whom it may concern:

Be it known that I, REUBEN C. ROHRER, of Orwigsburg, in the county of Schuylkill and State of Pennsylvania, have invented a new and useful Mechanism for Operating Safety-Gates for Railroad-Crossings Automatically, of which the following is a detailed, clear, and exact description.

The invention relates to a simple, substantial, and practical operating mechanism for gates at rail-road grade-crossings, the objects of which are essentially to provide mechanical means whereby the gates may be closed, opened, checked, and released, with the necessary attached signals; and, the necessary motive power be supplied to the mechanism by a train, or by a road vehicle, or both, in motion.

With these objects in view, my invention will be readily understood by reference to the following specification and claims, and the accompanying drawings which are and form an inseparable part thereof.

Similar letters in the drawings indicate corresponding parts in the different figures.

Figure 1. is a top view of the mechanism for depressing the gate arms and then releasing them, showing a portion of rail-road track, opposite the gate. Fig. 2. is a side sectional view of the mechanism operating upon the revolving shaft for raising and lowering the gate; as also the mechanism for arresting or releasing the depression of the gate. Fig. 3. is an end sectional view of the same mechanism, with danger signal attached.

At a suitable distance from the gate, is placed, in the tracks of the rail-road any suitable device or devices, which by the action of the forward motion of a moving train, forces some fluid through a channel connected with the gate mechanism by the pipe D. This pipe D. empties into the pipe-shaped base of the chamber M. M. below the valve, *v*. The chamber M. M. is of metal, preferably globular in shape, and separable at its greatest horizontal circumference into hemi-globes, fastened tightly together with bolts through their flanges. Between the joints of these bolt-flanges, tightly packing the same, is a rubber, leather, or other suitable sheet *g g* so formed that within the closed chamber it

hangs loose, dividing the interior of the chamber M. M. with an impervious flexible diaphragm, upon which rests a metal disk *h*, affixed in its hollow, to the rod N, at its base. The air or liquid in the pipe D, being put in motion by the passing train, fills the space in the chamber M. M. between its base valve, *v*, and the diaphragm *g. g.*, raising said diaphragm thereby moving upward the disk, *h*, and the rod, N, attached thereto. The rod, N., is at its upper extremity connected with a crank-pin, *c''*, attached to the wheel, G. The wheel G, is movably journaled on the shaft E, E, and has, or may have a boss upon its inside face. In the face of this boss; or of the wheel G itself, is fastened one end of a spiral spring, R', which spring, of graduated tension, winds around the shaft E, E, until it meets and is fixed by its other end in the fixed collar X, of the shaft E. E. The motion or pull of the spring R', is toward the depression of the gate-arms. The wheel G. is loose upon its shaft or axle E, E, to allow it full motion whether the gate shaft E, E, is arrested or free. If the gate arms are arrested as hereinafter described, the motion of the wheel, G, so tightens the spring R' that when the gate arms are released from arrest, the power of the spring R' will revolve the shaft E E, to which the gate-arms are attached, thus lowering the said gate-arms. The spring R' acts thus also as a shock-arrester. If the descent of the gate arms be not arrested the movement of the wheel G, by the push of the rod N, will lower the gate-arms simultaneously with its revolution, by drawing the spring R' so attached to said wheel G, and the fixed collar X. The wheel G has in its circumference a notch *m'* to allow the pawl T, to hold the gate in a depressed position until released by the movement of the train. A metal cylinder W, of suitable proportions, having movable in it a perforated piston, and filled with oil or other liquid not materially affected by changes of temperature or atmosphere is fixed on a bolt pin *p''* to the gate gear casing H. H. H. to allow the cylinder a rocking motion. To the piston of said cylinder is attached a piston rod N', connected at its upper extremity, by a movable joint, to the fixed crank-arm P, attached to the fixed collar P'' on the shaft E,

E. This cylinder will regulate the rapidity of the descent or ascent of the gate arms, and averts any jarring in the movement of said gate. By means of pins on the outer face of the wheel G. the forward motion of said wheel G. will cause the lever of a bell or gong-hammer, to sound a warning bell or gong, on the approach of a train.

Opposite the gate, in the tracks of the railroad is fixed an operating device to be agitated by the motion of a passing car-wheel, and attached to the mechanism within the gate-gear casing by a suitable rope, chain, or cable, *s.* Within the gate-gear casing H. H. H. this chain, rope, or cable, *s.* separates into two branches; one branch of which, passing over the pulley Y is attached to the pawl T. The second branch passes over to and is attached to the valve *v*, at the base of the chamber M. When, therefore, the cable, *s.* is drawn by the motion of the passing car-wheel, two simultaneous operations of release are performed, to wit: (a.) The branch of the cable *s.* attached to the pawl T, pulls down the pawl T, and releases the wheel G. and (b.) the branch attached to the valve, *v*, opens the valve *v*, allowing the air or liquid to escape, thus releasing the diaphragm, *g g*, within the chamber M, returning the same by the pressure of the rod N. to its relaxed position. These checks being so released, the gate-arms being so weighted as to rise automatically, will by their super-balanced rear weight, reversely revolve the shaft E, E, and raise the arms to their open position.

To secure the safety of the traveling public in vehicles or conveyances on the driveway or street, from being caught under or between the descending gate-arms, another mechanism to be actuated by passing vehicles is provided at the intersection of the road and the railway tracks, and attached by rope, rod, or cable to the wheel J, within the gate gear casing H. H. H. The wheel J, is attached internally to the gate-gear casing H. H. H. by a bolt-pin *y'*, and has a double grooved offset *l. l.* over which run and are attached the ropes, bars, or cables, from said operating device in the road aforesaid. On its inner surface, the wheel J, has a crank-pin, *q*, to work in the slotted opening of the lower end of the arresting lever U. The arresting lever U, is a metal bar, pivoted on a bolt-pin *u'*, and near its upper extremity has an arm *u''*, which, when the upper arm of the lever U is thrown forward by the partial revolution of the wheel J, caused by a passing vehicle, comes into position under, or in the path of descent of the fixed arm P', to

arrest the further revolution of the shaft E, E, and the gate arms; or, being in position of arrest, then the reverse action of the wheel J. withdraws the lever U, and the arm *u''* thereof out of the path of the fixed arm P', allowing the shaft, E, E, to revolve and lower the gate arms. To this lever-arm U, I may attach a signal device K. The arm P' is fixed at a proper angle in the fixed collar P'' on the shaft E, E.

Having thus in detail described my invention, what I claim as new in mechanism for operating safety-gates at railroad-crossings automatically, and desire to secure by Letters Patent, is—

1. The combination, with the shaft E, E, of a railway gate, of the fixed collar X; the wheel G; the spring R', surrounding the shaft E E, and attached at its ends to said wheel G and collar X; the chamber M, divided by a flexible diaphragm; the rod N, resting upon the diaphragm, and connected at its opposite end to the wheel G; and, pneumatic apparatus for operating the diaphragm;—all substantially as shown.

2. The combination, with the shaft E E, of a railway gate, of the wheel G, provided with notch *m'*; the rigid collar X on shaft E, E; the spring R', connecting said wheel and collar; the pawl T, provided with springs and fastenings; the chamber M, divided by a flexible diaphragm *g. g*, and provided with valve *v*, in its base; the rod N, resting upon the diaphragm, *g*, and connected at its opposite end to the wheel G; and automatic apparatus for operating the diaphragm, *g*;—all substantially as shown.

3. In combination with the mechanism for operating railway safety-gates, the herein described means of arresting or releasing descending gate arms, consisting of a wheel J, mounted on the gate-gear casing, and carrying a crank-pin; a pivoted lock bar U, having in one arm a slot embracing the crank-pin of wheel J, and a horizontal projection near the extremity of the other arm; the rigid collar P'' and fixed arm P' upon the shaft E, E; and mechanism located in the road or driveway crossing the rail-road tracks, and connected with the wheel J, for throwing the lock bar U into or out of the path of the arm P'; substantially as specified.

In testimony whereof I have hereunto set my hand this 12th day of September, A. D. 1891.

REUBEN C. ROHRER.

Witnesses:

HARRY F. ALBRIGHT,
GEORGE H. YEAGER.