(No Model.) 2 Sheets—Sheet 1.

E. FONTAINE.

ACTUATING MECHANISM FOR RAILWAY DEVICES.

No. 508,928. Patented Nov. 21, 1893.

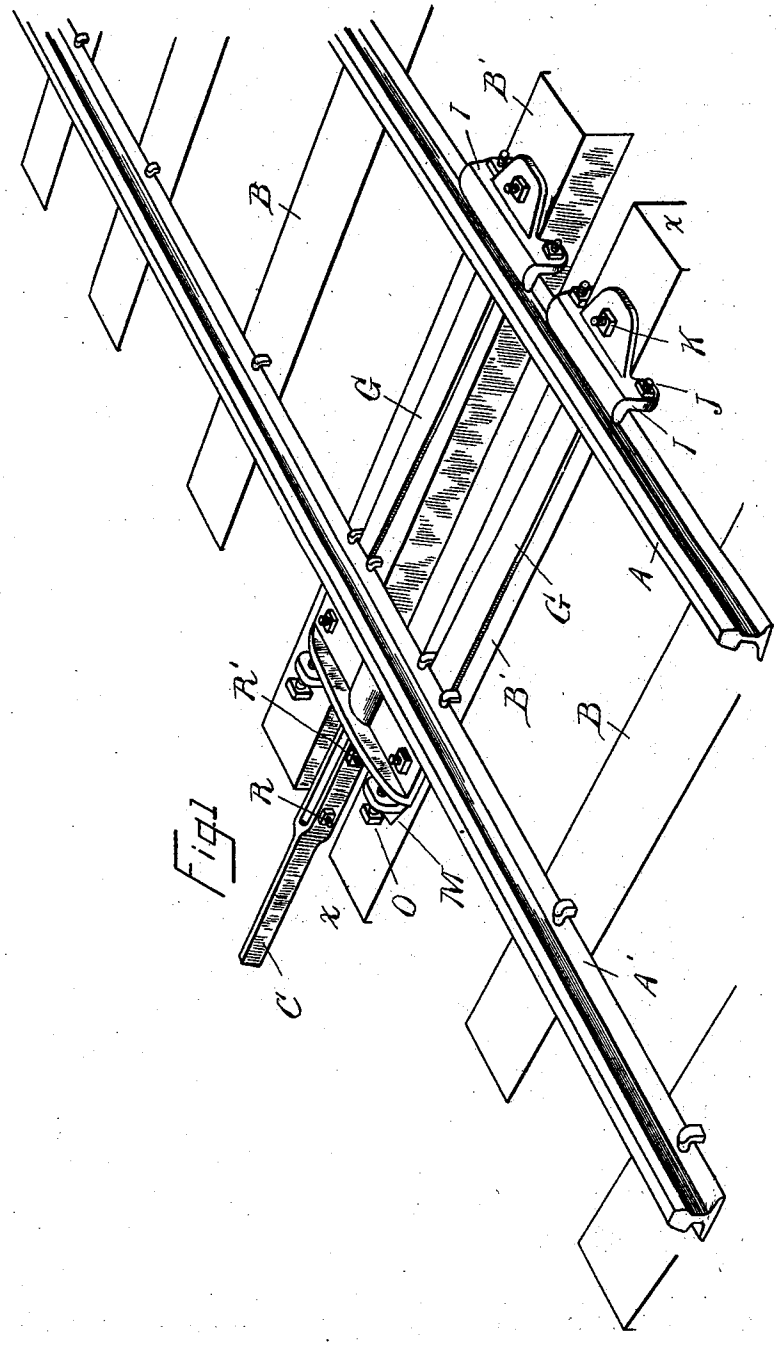

Fig 1

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

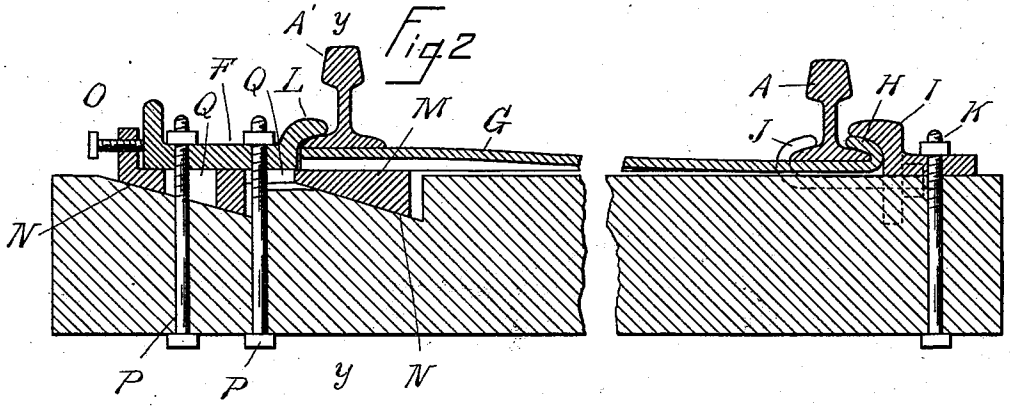


Fig. 3

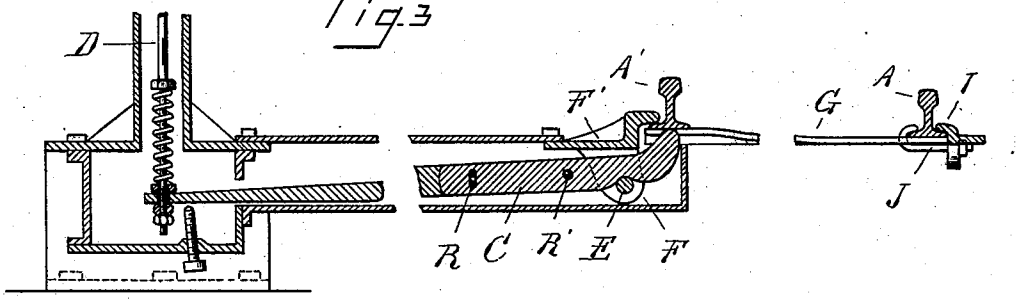


Fig. 4

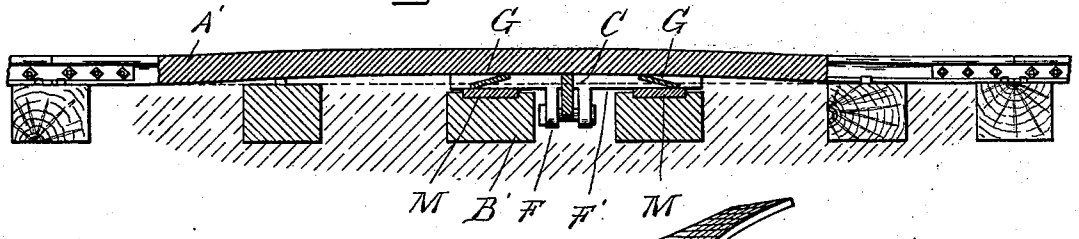
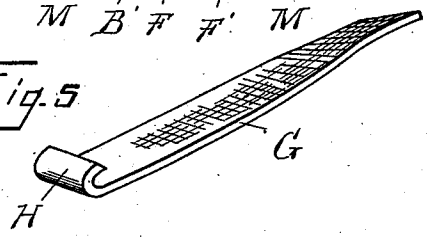


Fig. 5



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UNITED STATES PATENT OFFICE.

EUGENE FONTAINE, OF DETROIT, MICHIGAN.

ACTUATING MECHANISM FOR RAILWAY DEVICES.

SPECIFICATION forming part of Letters Patent No. 508,928, dated November 21, 1893.

Application filed January 24, 1893. Serial No. 459,567. (No model.)

To all whom it may concern:

Be it known that I, EUGENE FONTAINE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Actuating Mechanism for Railway Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates more specifically to an improvement in that class of actuating mechanism wherein the power is derived from a train in passing over devices in the track.

My invention consists in the peculiar combination and arrangement of parts whereby the weight of the train in passing over an elevated rail imparts motion to a lever, all as more fully hereinafter described in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a railway track to which my device is applied. Fig. 2 is a vertical central cross-section of the track substantially on line *x*—*x* in Fig. 1. Fig. 3 is a similar cross-section in the plane of the track lever. Fig. 4 is a longitudinal section of the track on line *y*—*y* Fig. 2. Fig. 5 is a detached perspective view of one of the tension springs.

A A′ are two rails of the track secured in the usual manner to the ties B except as hereinafter described.

C represents the lever actuated by the passage of the train over the rail A′, and D represents a connecting rod (push or pull rod) which is intended to communicate the motion of the lever to any signaling device for which my invention is adapted to be used.

The lever C is fulcrumed in proximity to the rail A upon a pin E secured in lugs F which depend from the under side of the guard plate F′ between two ties B′ which support said guard plate. The short arm of the lever bears against the under side of the rail A′ and the long arm operates the connecting rod. The rail A′ has its ends secured to the adjacent rails and to the ties in the usual manner, but the central portion of this rail is slightly elevated by the torsional power of two strong leaf springs G G. These springs are preferably made with a permanent twist so that in placing them upon ties with one end secured thereto level with the ties their free ends which project under the rail are on a cant as shown in Fig. 4, and act with their torsional force to spring the rail upward in the center. I preferably arrange the springs G crosswise of the track upon the ties B′ and fasten one end thereof to the outer rail A. To this end each spring is formed with a hooked end H which is adapted to engage the foot of the rail A and is secured thereto by a clamping plate I which is clamped fast to the rail by hooked clamping bolts J. The rail A is firmly secured to the track and the clamping plates I may be additionally secured to the ties B′ by bolts K or otherwise. The outer ends of the springs being thus held level with the ties the inner ends which are confined between the ties upon which they are secured and the under side of the rail A must therefore act by torsional power to elevate the rail. In practice I have found that two springs having a combined torsional power of three thousand six hundred pounds, will spring up a sixty pound rail about one half inch, which is quite sufficient for the purpose of my invention.

The guard plate F′ has a guard L which projects over the foot of the rail and holds the rail from being elevated by the springs more than the required distance. I also preferably provide the guard plate with means for leveling it up; to this end I support the guard plate not directly upon the ties B′, but place adjustable bearing plates M beneath it, one upon each of the ties B′. These bearing plates have inclined seats N formed on their under sides which rest in correspondingly inclined seats formed in the top of the ties B′; by means of adjusting screws O, these bearing plates can be adjusted laterally whereby the guard plate is raised or lowered within the desired limit of adjustment. Bolts P are used to hold the guard plate in position and these bolts pass through slots Q in the plate M and through the ties B′ thereby securing both plates in position and the bearing plates can be adjusted after loosening these bolts. This mode of adjustment is especially desirable when it is impossible to raise or lower the ties on account of the ground being frozen.

The lever C is preferably made in two parts for the purpose of adjustment. To this end

the long arm near the fulcrum is bifurcated and the extending portion of this arm is made of a separate piece bolted in between the bifurcated portion by two bolts R R', the former of which passes through a slot in the extension to permit of the latter being adjusted up or down with the bolt R' as a fulcrum.

The bearing plates M preferably extend under the rail A' a sufficient distance to form a wearing plate for the ends of the springs G to lie upon instead of upon the wooden tie.

In practice the parts being constructed and arranged as shown and described they are intended to operate as follows: Normally the parts are in the position shown in the drawings, wherein the central portion of the rail A is sprung up above the level of the ties by the torsional power of the springs G, the ends of which are now at a cant so that if sufficient weight is brought to bear upon the rail A t latter will flatten down the springs G and permit the rail A to bear upon the short end of the lever C, the adjustments being such that there is from a quarter to a half inch play for the springs G between the under side of the rail A when in its elevated position and the bearing plates M, and if a train passes over the rails the weight of the locomotive or cars will depress the rail A and flatten down the ends of the springs against the bearing plate M and thereby exert sufficient power upon the short arm of the lever to actuate the lever and transmit motion to the signaling mechanism.

It will be readily seen that my construction does not present the slightest obstruction in the track and the slight rise of the rail A being distributed over the greater portion of the rail is hardly perceptible, while at the same time the power is transmitted to the lever so gradually that no matter how fast the train goes no injurious blow can be transmitted to the lever which is the main object of my invention.

The springs, guard plate and bearing plates are all firmly held in their respective positions and therefore there is no liability of the parts becoming disarranged. The only difficulty which might arise would be from the unequal settling or heaving of the ties B and B' under the rail A which is often brought about by climatic influences. This can be easily rectified by the adjustments which I provide; thus if the ties B adjacent to the ties B' should be heaved by the frost so as to prevent the rail A from being depressed by a train, the guard F' can be raised up by loosening the nuts of the bolt P and adjusting the bearing plates M laterally by means of the set screws O until the rail A is again enabled to have its free play. The short arm of the lever is adjusted by means of the bolt R R' to remain in contact with the under side of the rail A. It will be noticed in this operation the springs G do not interfere as they are of comparatively great length. This adjustment therefore interferes in no way with a torsional action.

While I have shown my device as arranged to operate in connection with a lever of the first degree for the purpose of actuating a push rod, my device is equally applicable to operate levers or a system of levers adapted to operate a pull rod for such class of signaling devices in which a pull is required.

My device has the advantage that the movable rail is brought to a firm seat upon the ties while the train is passing over it and nothing less than the weight of the locomotive or the cars can produce an impression and therefore it is not likely to be tampered with and hand cars can pass over it without actuating the lever.

It is obvious that my invention may be carried out with the use of one spring alone and for further protection the whole or portions may be housed in and connected with the signaling devices as circumstances may require.

What I claim as my invention is—

1. The combination with the track, of a lever, a movable rail adapted to bear upon and actuate said lever by the weight of a passing train, and one or more springs arranged to normally deflect said rail upwardly near its middle above the supporting ties, substantially as described.

2. The combination with the track, a rail movably secured near its middle upon the supporting ties and normally deflected above said ties, a lever adapted to be actuated by said rail at the passage of a train and a leaf spring (one or more) engaging with its free end at a cant between the under side of said rail, and a supporting tie whereby the torsional power of said spring deflects the rail, substantially as described.

3. The combination with the track, of a rail movably secured near its middle upon the supporting ties and twisted leaf springs (one or more) having their free ends interposed at that point between said rail and supporting ties, and having their opposite ends secured level with the track, whereby said springs operate to normally deflect the movable rail above the supporting ties by the torsional power of the springs, substantially as described.

4. The combination with the track, of a rail movably secured near its middle upon a supporting tie, a lever bearing against the under side of said rail and adapted to be actuated by the movement of said rail and a twisted leaf spring placed crosswise of the track upon said supporting tie, said spring engaging with its free end between the supporting tie and the under side of the movable rail and having its opposite end secured level with the track, whereby the said rail is upwardly deflected by the torsional power of said spring, substantially as described.

5. The combination with the track, of a rail movably secured upon its supporting ties near its middle, a lever bearing against the under

side of said rail and adapted to be actuated by the movement on said rail and leaf springs (one or more) secured at one end to the rail opposite the movable rail and engaging with their free ends on a cant between the supporting ties and the under side of said movable rail, substantially as described.

6. The combination with the track, of the movable rail A′, the supporting ties B′ near the middle of said rail, the guard plate F′ movably securing the said rail to the supporting ties B′, the lever C fulcrumed to said guard plate and adapted to be operated by the movement of said rail, the twisted leaf springs G G′ upon the supporting ties B′ operating to normally deflect the said rail upwardly and adjusting means for the guard plate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE FONTAINE.

Witnesses:
N. L. LINDOP,
P. M. HULBERT.