

(No Model.)

E. C. WILEY.

CIRCUIT CLOSER FOR RAILWAY RAILS.

No. 533,154.

Patented Jan. 29, 1895.

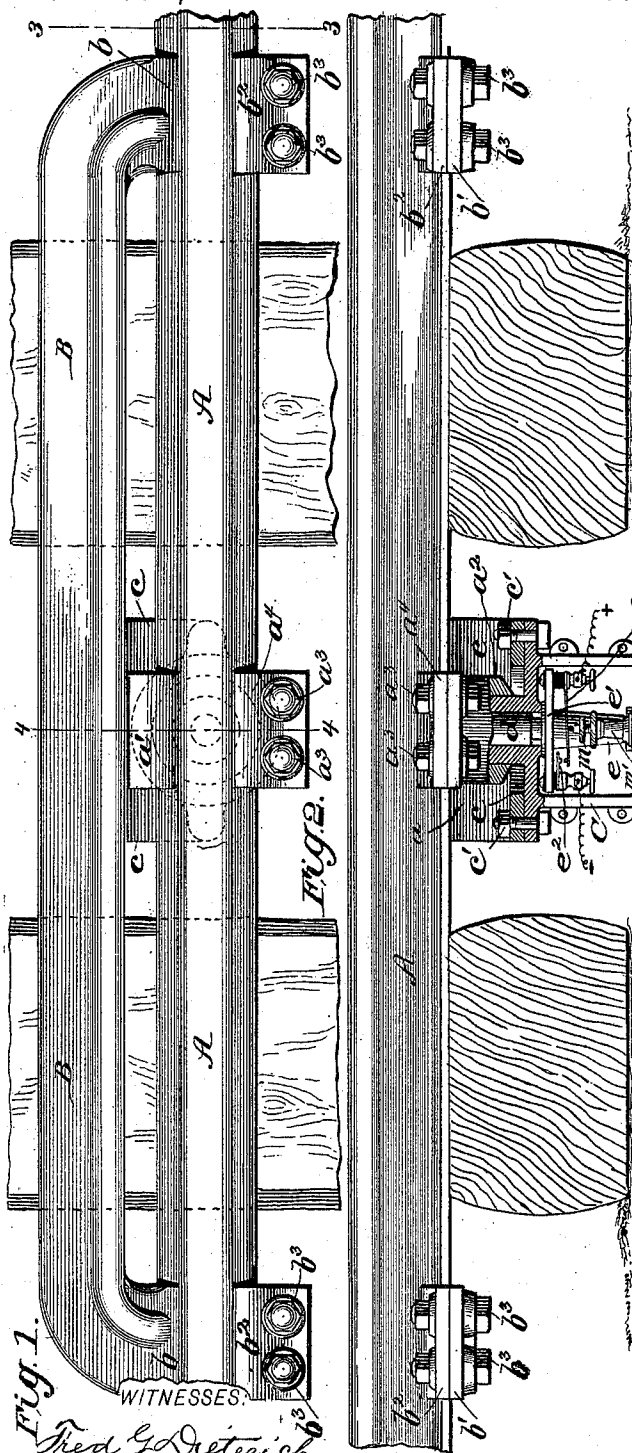


Fig. 1.

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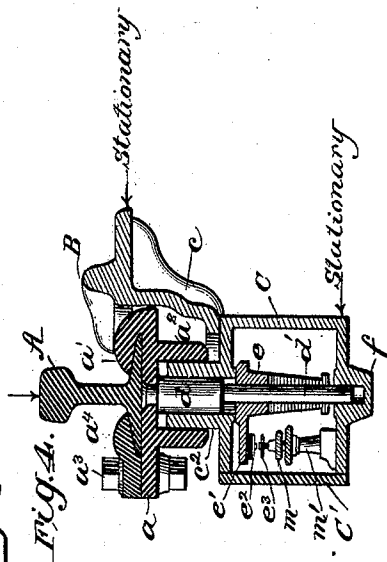


Fig. 4.

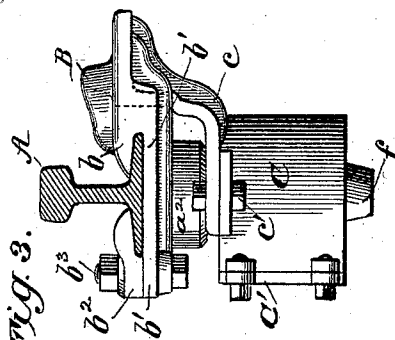


Fig. 3.

INVENTOR

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UNITED STATES PATENT OFFICE.

EDGAR C. WILEY, OF BRISTOL, TENNESSEE, ASSIGNOR TO THE WILEY RAILWAY ELECTRIC SIGNAL COMPANY, OF SAME PLACE.

CIRCUIT-CLOSER FOR RAILWAY-RAILS.

SPECIFICATION forming part of Letters Patent No. 533,154, dated January 29, 1895.

Application filed May 29, 1894. Serial No. 512,828. (No model.)

To all whom it may concern:

Be it known that I, EDGAR C. WILEY, of Bristol, in the county of Sullivan and State of Tennessee, have invented a new and useful Improvement in Circuit-Closers for Railway-Rails, of which the following is a specification.

The object of my invention is to provide a certain and reliable circuit closer for railway rails, which shall be operated by the passage of the train over said rails and the bending downward of the rail itself in such passage.

My invention consists in combining with the main rail a pair of contacts that are brought together or separated by a friction drag-slide which is operated by the bending downward of the rail and the uprising of the rail again, which drag-slide always acts to both close and open the circuit, by its initial movement.

The invention also consists in combining this drag-slide device with the main rail and a supplemental rail, one part of the device being attached to the main rail, and the other to the middle of the supplemental rail, the ends of said supplemental rail being anchored to the main rail, all as hereinafter more fully described.

Figure 1 is a plan view of the whole device. Fig. 2 is a side view with the circuit closing devices partly in section. Fig. 3 is an end view with the main rail in section through line 3—3 of Fig. 1, and Fig. 4 is a vertical section through line 4—4 of Fig. 1.

In the drawings, A represents the main rail, upon the inside of which is arranged the supplemental rail B made of cast iron. This supplemental rail is about four feet long, and is arranged beside the main rail above its cross ties, and in position parallel with the main rail. The ends of this supplemental rail turn under and form a chair or seat to receive the base flange of the main rail. This chair, see Figs. 1 and 3, is formed of the plate b' having an overhanging flange b , and a detachable plate b^2 fastened by bolts b^3 down upon the other side of the base of the rail. This forms a strong anchorage for the ends of the supplemental rail to the main rail.

The friction drag-slide with electrical contacts is arranged about the middle of the supplemental rail, and is constructed as follows: To the base of the main rail, see Fig. 4, is

firmly secured a plate a having an overhanging flange a' that embraces the base of the rail on one side, and a detachable plate a^4 that is clamped upon the base of the rail upon the other side by bolts a^3 . On the bottom of the plate a is formed a short downwardly projecting tube a^2 , which telescopes or slides vertically upon the exterior of a smaller tube c^2 of a subjacent box or casing C. To the plate a within the tube a^2 is firmly attached, by riveting or otherwise, a downwardly projecting stem $d d'$ whose upper portion d fits closely but loosely in tube c^2 as a guide, and whose smaller portion d' extends down through the box or casing C and is guided in a hole f in the bottom thereof. This box or casing C is wholly disconnected from the main rail, but is rigidly attached to the supplemental rail B by means of the arms c formed on said rail which arms are bolted at c' to the top of said box. The box C and rail B are then rigidly attached together, while the main rail A and stem $d d'$ are rigidly attached together, and the rail A and stem $d d'$ have a motion in relation to the supplemental rail B and box C that is dependent for extent upon the springing of the rail A under the weight of the train between the ends of the supplemental rail. This motion is very slight, but it is sufficient to operate the electrical contacts, which I will now describe.

Upon the lower portion d' of the stem is arranged to move vertically a friction drag-slide composed of a slitted sleeve e whose lower slitted end causes it to clamp and adhere to the stem and move with it except when opposed by a stop, when it slides on said stem. This sleeve has an offsetting projection e' on one side that carries the insulated springs $e^2 e^3$ secured by binding posts connected respectively to the circuit wires. Beneath the spring e^3 and mounted upon the bottom of the box C is a post m' having an adjusting screw m at its top which, when the drag slide $e e'$ descends, causes the spring e^3 to be forced against e^2 , thus closing the circuit. By raising or lowering the screw m this contact may be made sooner or later in the movement, and the sensitiveness of the device may be thus adjusted as occasion may require.

To give access to the box or casing C, a de-

tachable plate or door *C'* is bolted to one side of the same.

The operation of the devices is as follows:

When a train passes over the rail *A*, the supplemental rail *B* and box *C* remain practically straight, while the rail *A* that carries the weight of the train is bent downwardly. As rail *A* moves downwardly the attached stem *d d'* carries the drag-slide *e e'* with it from friction, and closes the electrical contacts with the first part of the movement of the drag-slide. Said drag-slide, as it moves downward, strikes the bottom of the box, and, stopping, permits the stem *d'* to move on through it to the full extent of the depression of the rail. Then when the train passes off the rail *A*, the latter, springing up of its own elasticity, lifts stem *d d'* and drag-slide *e e'*, and the latter with its initial movement opens the electrical contacts, and follows the stem until said slide strikes the top of the box, when the drag-slide stops, and the stem, following the rail up, moves on through the drag-slide. In this way the opening and closing of the electrical contacts are made by the first part of the movement of the drag-slide in both directions, and is made wholly independent of the extent of the depression of the rail, thus securing the following advantages: that while it permits the electrical contacts to be placed very close together, so that they always act, there is no danger of damage to the contacts or attached parts from the variable and uncertain extent of movement in the rail in bending down and springing up again.

By having the supplemental rail *B* off to one side of the main rail, instead of having it beneath it, a great advantage is obtained, for the reason that little or no excavation is required for the devices, and the devices may be readily taken up and changed to a new location without undermining the main rails, and further the devices may be placed equally as well upon a bridge or other location where there is no foundation of earth.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a circuit closer for railway rails, the combination with the main rail; of a box or casing anchored in a relatively stationary manner in relation to the main rail, and a stem attached to the main rail and carrying a friction drag-slide within said box or casing, said drag slide being adapted to close the electrical contacts by the initial downward movement and to open the said contacts by the initial upward movement from the springing of the main rail substantially as shown and described.

2. In a circuit closer for railway rails, the combination with the main rail; of a box or casing, a supplemental rail rigidly fixed to the box or casing about its middle and to the main rails at its ends, and a stem attached to the main rail and carrying a friction drag-slide within said box or casing adapted to

close electrical contacts by the initial downward movement of the drag-slide and to open them by the initial upward movement from the springing of the main rail in relation to the supplemental rail substantially as and for the purpose described.

3. In a circuit closer for railway rails, the combination with the main rail; of a box or casing, a supplemental rail arranged above the cross ties beside the main rail and rigidly fixed to the box or casing about its middle, and to the main rails at its ends, and a stem attached to the main rail and carrying a friction drag-slide within said box or casing adapted to close electrical contacts by the initial downward movement of the drag-slide and to open them by the initial upward movement from the springing of the main rail in relation to the supplemental rail, substantially as and for the purpose described.

4. In a circuit closer for railway rails, the combination with the main rail; of a supplemental anchorage rail arranged parallel with and beside the main rail and on top of the cross ties with both its ends rigidly attached to the main rail, and electrical contacts arranged between the middle portion of the anchorage rail and the main rail to be operated by the movement between the main and supplemental or anchorage rail substantially as and for the purpose described.

5. In a circuit closer for railway rails, the combination with the main rail; of a box or casing anchored in a relatively stationary manner in relation to the main rail, a stem attached to the main rail and carrying a friction drag-slide with insulated contact springs, and a subjacent adjustable bearing adapted to be struck by one of the springs in the descent of the drag-slide to bring the two springs into electrical contact substantially as and for the purpose described.

6. The combination with the main rail, and the circuit breaking devices; of the rigid supplemental rail arranged beside the main rail and anchored to it at its ends, and having about its middle a downwardly projecting arm *c* extending under the main rail and supporting a portion of the circuit closing devices, substantially as and for the purpose described.

7. The combination with the main rail; of the subjacent plate *a* rigidly attached thereto and having a downwardly projecting tube *a'* and stem *d d'*, the box or casing *C* having telescoping tube section *c'* at the top, and a contact closing post *m m'*, the supplemental rail *B* rigidly fixed to the box or casing, and the drag-slide *e e'* arranged upon the stem and carrying two contacts arranged to be brought together by the movement of the drag-slide substantially as and for the purpose described.

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Witnesses:

EDWD. W. BYRNE,
 SOLON C. KEMON.