

(No Model.)

2 Sheets—Sheet 1.

F. E. KINSMAN.
RAILROAD CIRCUIT CLOSER.

No. 470,806.

Patented Mar. 15, 1892.

Fig. 1.

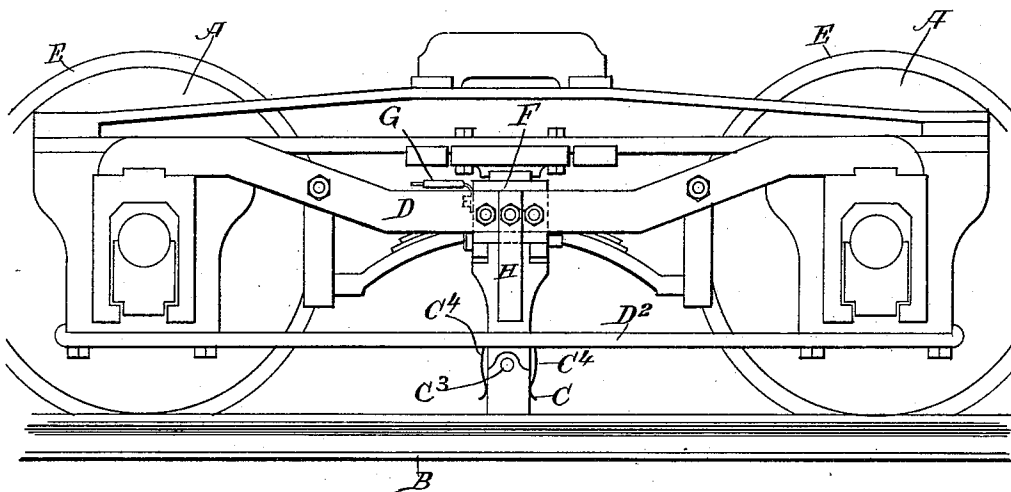


Fig. 2.

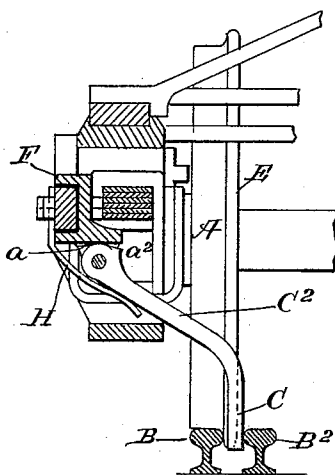
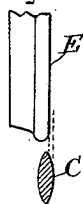


Fig. 3.



ATTEST:

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(No Model.)

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Fig. 3.

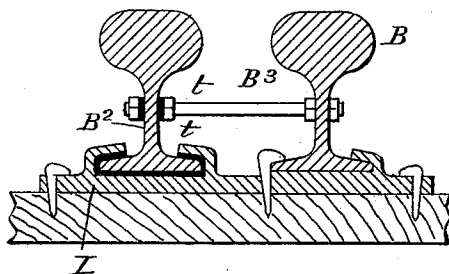


Fig. 4.

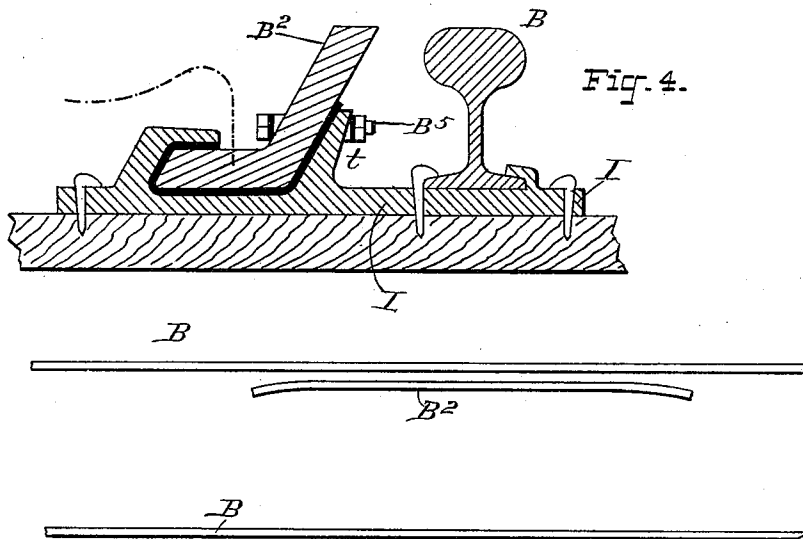


Fig. 5.

ATTEST:

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UNITED STATES PATENT OFFICE.

FRANK E. KINSMAN, OF PLAINFIELD, NEW JERSEY.

RAILROAD CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 470,806, dated March 15, 1892.

Application filed July 30, 1891. Serial No. 401,143. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. KINSMAN, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented a certain new and useful Railroad Circuit-Closer, of which the following is a specification.

My invention relates to that class of devices designed to close or otherwise operate upon an electric circuit, while a railway-car or other vehicle is in motion, by means of a device carried by said vehicle.

My invention relates more particularly to circuit-closing devices which are designed to complete an electric connection between a circuit on the locomotive or car and a circuit on the road-bed for the purpose of taking up current to operate any devices upon the locomotive or car; but is likewise applicable to circuit-closing devices, which, during movement of the car, may close or otherwise operate upon an electric circuit established entirely upon the road-bed.

The object of my invention is to provide a device which shall not be subject to interference from the presence of frogs, crossings, or switches on the line of rails over which the vehicle carrying such circuit-closer travels and which shall nevertheless be adapted to close an electric circuit through a fixture, which shall rise, preferably, not above the top surface of the rail upon which the vehicle runs.

The device, which closes the circuit or otherwise operates upon the same, and which acts either as a direct electrical contact or mechanically upon other devices, I shall hereinafter term a "circuit-closer," and I shall describe my invention as carried out in connection with a circuit-closer adapted to complete the connection between the moving vehicle and the road-bed.

My invention consists in mounting or hanging the circuit-closer from the vehicle so that it shall travel in the path of the wheel-flanges and constructing it with a beveled side or projection extending slightly beyond the side of the flange for operation upon the fixture mounted upon the road-bed. This circuit-closer extends down below the level of the rail upon which the vehicle travels, so that it may act upon a fixture which shall

not rise above the level of the said rail. Being mounted to travel in the line of the wheel-flanges, it obviously will not be obstructed by any crossings, turn-outs, or switches, as the way will be cleared for it by the flange of the wheel itself. At the same time it is not necessary to have any fixtures upon the road-bed rising above the level of the main rails, and hence the liability of contact with any of the parts of the railway truck or vehicle is largely avoided.

In carrying out my invention I prefer, in general, to mount or suspend the circuit-closer on the vehicle in such way that it shall be capable of lateral movement and to be thereby adapted to yield when it engages with the side of the fixture on the road-bed; but it would be within my invention to so construct or mount the circuit-closer on the vehicle as to be incapable of sidewise movement and to adapt the fixture on the road-bed to a lateral yielding movement when it is engaged by the circuit-closer carried by the vehicle.

My invention consists, further, in the special details of construction and combinations of devices, as hereinafter more particularly described, and then specified in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive-body truck carrying a circuit-closer mounted and constructed in accordance with my invention. Fig. 2 is a cross-section through the truck at the point where the circuit-closer lever is mounted. Fig. 3 is a cross-section through the main rail and a contact rail or bar with which the circuit-closer is adapted to make rubbing contact at the sides. Fig. 4 is a cross-section through a modified form of contact rail or bar. Fig. 5 shows in plan the form of the contact rails or bars. Fig. 6 is a plan of the car-wheel with the end of the circuit-closer in cross-section.

A A are the wheels of a vehicle—as, for instance, a locomotive or a railway-car—which travel upon the main rails B.

C is the circuit-closer of my invention, which is mounted or supported as an attached piece or a piece integral with the arm or bar C², which latter is hung from any suitable support moving with the vehicle, but preferably from a part of the truck. I have in the pres-

ent instance shown it as hung from the equalizing-bar D of the truck, which is a part that has very little up-and-down motion, and therefore will permit the circuit-closer to ride without appreciable movement with relation to the rail. In some cases I prefer to hang the arm or support C² from the brace-rod D², as by that means I am enabled to bring the point of suspension nearer the rail, and therefore can use a much shorter arm.

The circuit-closer is mounted, as shown, to ride in line with the flange E of the wheel, the edge or point of the circuit-closer, as shown more clearly in Fig. 6, being within the lateral boundaries of the flange preferably, so that any device upon the road-bed which shall be cleared by the flange will necessarily be cleared by the circuit-closer.

The circuit-closer is mounted generally as near to the wheel as possible, so that it may pass switches readily. The arm C² is made very solid and stiff, so that it may pass through switches without breaking or disturbance.

As shown in Fig. 6, the side of the circuit-closer C projects slightly beyond the side of the flange and is formed on the side with a beveled or rounded or inclined surface, where it engages with the fixture upon the road-bed. The side of the bar or arm C might be beveled or rounded upon one or both sides, as desired. If the fixture on the road-bed be made to give, the arm C² may be rigidly secured in position; but I generally prefer to mount this arm or lever so that it may have a yielding or swinging movement laterally, thereby permitting it to give when it engages the fixture on the road-bed. Thus, as shown in Figs. 1 and 2, the arm C² is pivoted or mounted by a hinge or joint on a bracket extending from a block F, which is secured to the equalizing-bar or other support. The block F is fastened by bolts or otherwise to a support, and is preferably insulated therefrom. Electrical connection with the circuit on the car or vehicle is made by wire or other attachment G, fastened to the block F or other part. A spring H is applied, as shown, to act on the arm or lever C², so as to tend to hold the same in position to engage with the contact bar or rail or other fixture on the road-bed, and suitable stops are provided on the lever C² at *a* *a*² to limit its movement, the stop *a* limiting its movement outwardly toward the main rail B and the stop *a*² limiting its movement inwardly toward the contact-rail or other fixture. The latter stop is preferably so adjusted or arranged that the edge of the circuit-closing bar C cannot extend beyond the side of the flange. The bevel on the circuit-closer should be from both edges toward the middle, so that it may pass readily when it engages the circuit-closing fixture or other obstruction on the road-bed readily.

As a measure of precaution I suspend the circuit-closer C from the main arm C² by means of another joint or hinge, (indicated at

C³), which permits the circuit-closer to give in case it should by accident engage squarely with a fixed obstruction at its forward or rear edge. By providing this additional hinge I furnish substantially a universal-joint suspension for the circuit-closer, inasmuch as it may move freely laterally and horizontally, or by a combination of such movements can yield or move in any other direction.

It is not at all necessary that the joint C³ should be employed, as I have found in practice that the device works perfectly when the circuit-closer C is formed in one piece with the arm or lever C² and is of solid and stiff construction. When the joint C³ is employed, several stiff springs C⁴ should be employed to keep the circuit-closer C in position and to prevent it from yielding readily when it strikes the bevel or incline of the fixture on the road-bed at a high velocity.

As will be seen in Fig. 2, the circuit-closer C depends below the upper surface of the main rail B, and is therefore adapted to engage with the side of a fixture upon the road-bed—such, for instance, as a contact-rail B²—which has its ends inclined, as indicated in Fig. 5, to prevent shock as far as possible when the circuit-closer moves into engagement with it. This contact rail or bar B² is connected in any proper manner with the electric circuit upon the road-bed or extending from any desired point, and the contact of C with the bar or rod B² will complete the electric connections. The bar or rod B² is shown in Figs. 2 and 3 as consisting of a section of ordinary railroad-rail. I preferably mount the same in a seat formed on a chair I, which is provided, also, with a seat or support for the main rail B. The contact rail or bar B² may be insulated, as shown in Fig. 3, from the chair, and it may be stayed in position by means of a bolt or rod B³, connecting the same with the main rail, but preferably insulated, so as to prevent electrical connection between the supplemental rail and the main rail or chair supporting the same.

In order to save material and make a good contact, I sometimes form the contact rail or bar as an L-bar, such as indicated in Fig. 4, the seat in the chair being correspondingly modified to receive the same. The rail B² may in this case be held in position by a bolt B⁵, which passes through a flange or upwardly-extending rib rising from the chair I, as indicated. The L-bar B² preferably has an incline or under-cut, as shown, to allow for the accumulation of snow, grease from wheels, &c., without packing by the flange of the wheel. The same space is provided when an ordinary rail is employed, as in Fig. 3, beneath the head of the contact rail or bar. The cavity thus provided and forming a storage place for snow, &c., is indicated in the figures at the point *t*.

The sharp upper edge of the contact-rail in Fig. 4 is adapted to make good connection

with the circuit-closer by cutting away any accumulation of dirt or oil upon it. There is also a less tendency to accumulation of oil and grease at the wearing contact of the rail, the grease or oil tending to flow away down upon the flat surface or to drop off from the contact-edge.

Another improved feature of my invention is the mounting of the contact-rail having a side contact or rubbing face in such manner that it may be kept free from ice, snow, rust, or oxidation at the contact-surface. This is accomplished by mounting the same, as shown, parallel with the main rail, but at the inside thereof and at sufficiently close proximity to be engaged by the car-wheels through the lateral play of the latter. As the wheels engage with the side of the contact-surface, the latter will be cleaned of ice, snow, grease, or anything that tends to impair the conductivity at the point of engagement of the circuit-closer with said contact-rail.

While I have described special insulation as provided for the contact-rail, it is not always necessary to use such special insulation, as in many cases the main and contact rails may be sufficiently insulated by the wooden ties of the road-bed. In this case I would dispense with the special form of chair described and would mount the contact-rail independently of the main rail, but directly upon the ties.

I do not limit myself to any particular manner of mounting the contact rail or bar, nor to making rubbing side contact with the same on the side of the contact toward the space between the main rails.

The special construction of the contact-rails, Figs. 3 and 4, and the forming of the same with an under-cut, as shown, below the contact-face, with which the moving circuit-closing arm makes rubbing side contact are not herein claimed, but form the subject of claims in other application for patent, filed by me February 20, 1892, Serial No. 422,176.

What I claim as my invention is—

1. A railway circuit-closer suspended from a vehicle and having its operating portion arranged to travel in line with the wheel-flange, as and for the purpose described.

2. A railway circuit-closer arranged to travel in line with the wheel-flange and having a beveled or inclined side extending laterally beyond the flange, as and for the purpose described.

3. A railway circuit-closer consisting of a contact-block C², having its forward and rear edges coincident with the line of travel of the wheel-flange and having one or both sides extended outwardly and beveled or rounded from the front or rear edge, or both.

4. A railway-car circuit-closer supported from the car-truck, so as to travel in line with the wheel-flange, and having its operating end or portion extended down below the level of the top surface of the main rail.

5. A railway-car circuit-closer suspended from the car-truck with its edge in line with the wheel-flange and adapted to yield laterally, as and for the purpose described.

6. The combination, in a railway circuit-closer, of a circuit-closing arm depending from the car-truck and having its edge arranged in line with the wheel-flange and a circuit-closing bar or rod mounted on the road-bed and having its side arranged to be engaged by said circuit-closer.

7. A railway circuit-closer arranged to travel in line with the wheel-flanges and supported from a laterally-swinging arm, as and for the purpose described.

8. A railway circuit-closer mounted to travel with its edge in line with the wheel-flange and attached to its supporting-arm by a joint or hinge adapted to permit the circuit-closer to yield in the line of movement of the vehicle.

9. In a railway circuit-closer, a depending arm fastened to the equalizing-bar or brace-rod of the truck and extending downwardly and terminating in a circuit-closer which is arranged with its edge to travel in line with the flange of the wheel.

10. In a railway circuit-closer, the combination, substantially as described, of a depending arm or bar hung from the car-truck and terminating below the surface of the main rail in a circuit-closer traveling in line with the wheel-flange, in combination with a fixture upon the road-bed arranged in position to be engaged by the side of said circuit-closer which projects sidewise beyond the car-wheel flange.

11. The combination, with the main rail, of a contact or rail having a side contact and mounted near the main rail at the inside thereof in position to be engaged by the car-wheels through lateral play, whereby the contact-surface will be cleaned, as and for the purpose described.

12. The combination, with a railway-vehicle, of a circuit-closer suspended from the brace-rod of the truck and arranged to travel in line with the flange of the wheel, as and for the purpose described.

13. The combination, with a railway-vehicle, of a circuit-closer suspended from a brace-rod of the truck by an arm extending downward and inwardly to carry the circuit-closer with its edge in line with the wheel-flange.

14. A railway circuit-closer having its edge arranged to travel in line with the wheel-flange and its side projecting inwardly from said flange to engage with a fixture mounted upon the road-bed between the main rails, as and for the purpose described.

15. In a railway circuit-closer, the combination, substantially as described, with an arm or rod terminating below the level of the main rail and arranged to travel with its edge in line with the wheel-flange, of a contact rail or bar mounted on the road-bed and

adapted to be engaged at its side by a side of the circuit-closer projecting laterally beyond the line of the wheel-flange.

16. A railway - car circuit - closer suitably supported upon the vehicle with its edge in line with the wheel-flange and having its side projecting or extending laterally beyond the flange, as and for the purpose described.

Signed at New York, in the county of New York and State of New York, this 14th day of July, A. D. 1891.

FRANK E. KINSMAN.

Witnesses:

WM. H. CAPEL,
THOS. F. CONREY.