3 Sheets—Sheet 1.

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Railroad-Switch.

No. 197,915. Patented Dec. 4, 1877.

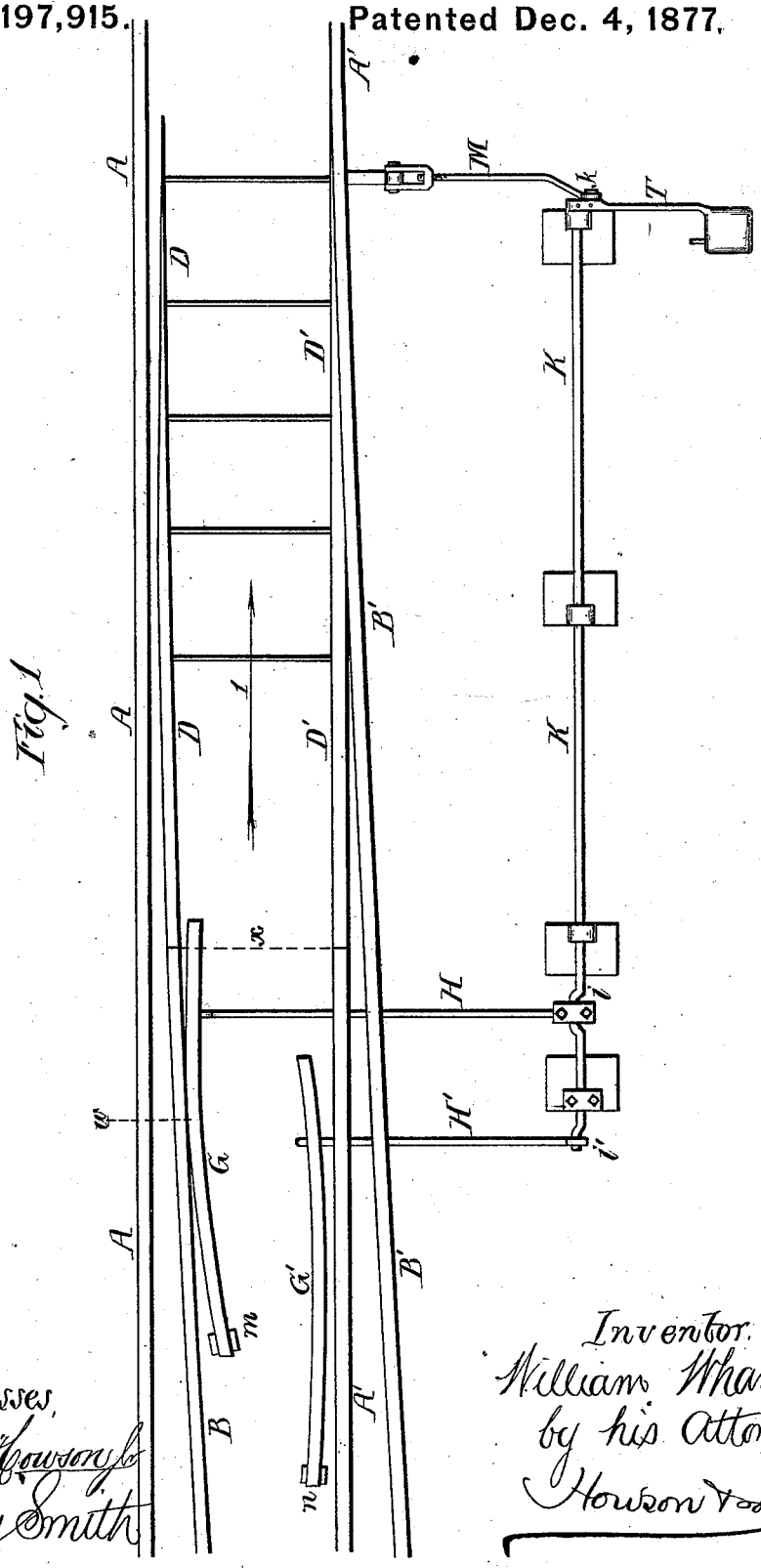

Fig. 1.

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Harry Smith

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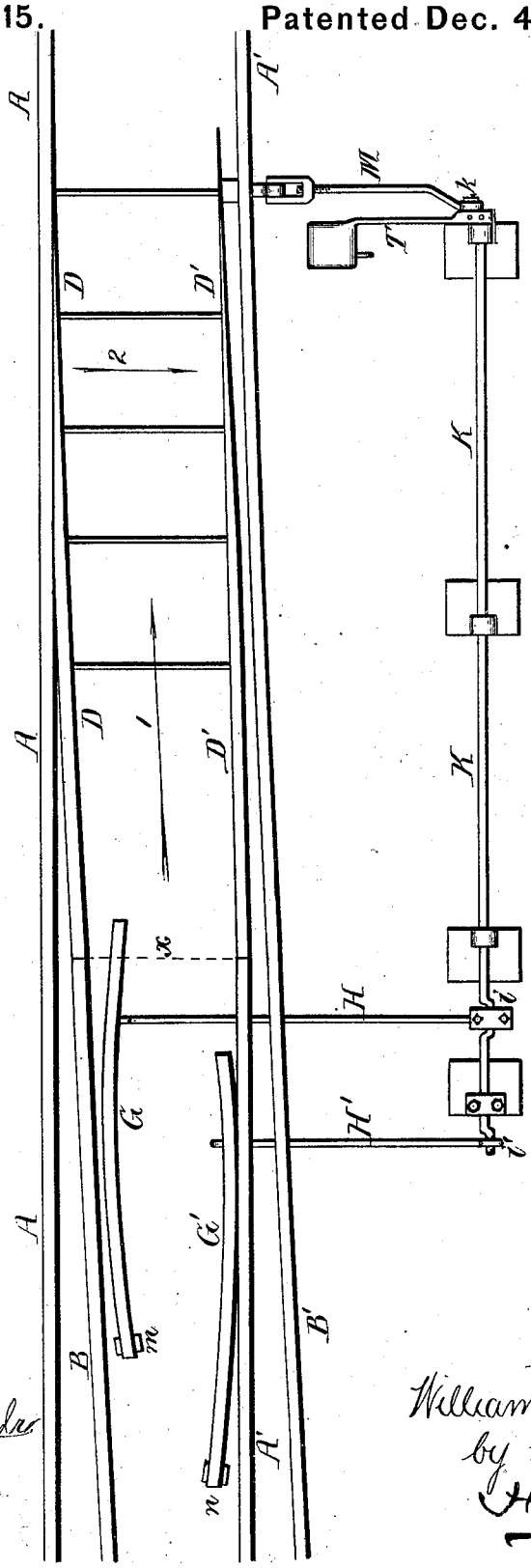

Fig. 2.

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Railroad-Switch.

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Fig. 3.

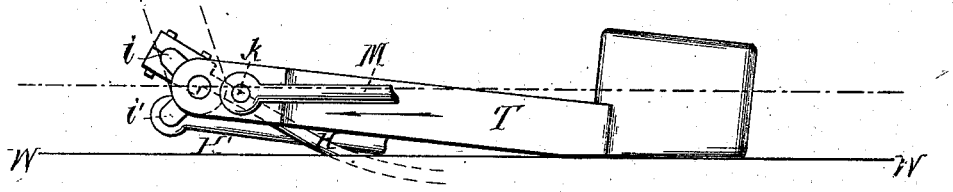
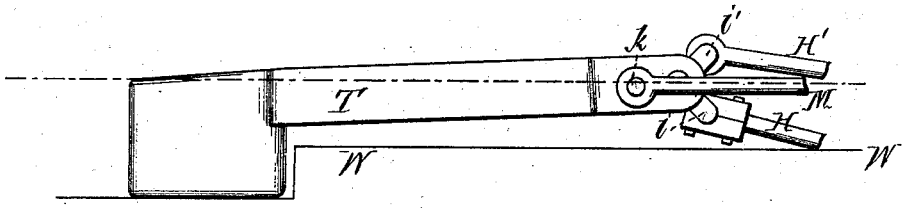


Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM WHARTON, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **197,915**, dated December 4, 1877; application filed June 25, 1877.

To all whom it may concern:

Be it known that I, WILLIAM WHARTON, Jr., of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Railroad-Switches, of which the following is a specification:

The main object of my invention is to so combine, with a siding and main track of a railroad, a switch with two movable guard-rails and connecting mechanism, that, whether a locomotive or car be traversing the main track, or from the siding to the main track, it shall always insure the proper adjustment of the switch to accord with the course traversed, and so that the switch shall be locked when moved to either of its two positions.

In the accompanying drawing, Figure 1, Sheet 1, shows part of a main track, siding, and switch with my improvements, the switch in this view being adjusted for travel on the main track; Fig, 2, Sheet 2, the same, showing the switch adjusted for cars traversing from the siding to the main track; Figs. 3 and 4, diagrams illustrating the action of the switch-operating mechanism.

A is the permanent continuous rail of the main track, and A′ the opposite rail of the same track. B and B′ are the two rails of the siding or turn-out, the rail B′ merging into the rail A′ of the main track at or near the points of the switch-rails D and D′, which are connected to the track at the line *x*, the switch-rail D being a continuation of the rail B of the siding, and the switch-rail D′ a continuation of the main rail A′, each switch-rail terminating in a comparatively sharp point.

G is a movable guard-rail, arranged near the rail B and connected to the track at *m;* and G′ is a similar guard-rail, arranged near the rail A′ and connected to the track at *n*.

The guard-rail G is connected by a rod, H, to a crank, *i*, on the shaft K, and the guard-rail G′ by a rod, H′, to a crank, *i*′, on the same shaft, the outer end of which is connected by a crank and by a rod, M, to the switch-rails near the outer pointed ends of the same, so that any movement imparted to either of the guard-rails by a wheel of a locomotive or car must be imparted to the switch-rails.

The detailed construction and operation of the mechanism through the medium of which this movement is, by preference, imparted, will be more fully explained hereinafter.

It should be understood that the general course of travel is in the direction of the arrow 1, Figs. 1 and 2, and that the drawing represents a portion of one of two main tracks.

As shown in Fig. 1, the switch-rails have been adjusted for travel on the rails A A′ of the main track and switch-rail D′, the guard-rail G′ being at such a distance from the rail A′ that the flanges of the wheels of locomotives and cars can pass freely between them, and the bent portion of the guard-rail G being in contact with the rail B of the siding. Should a locomotive, while the switch-rails are in this position, be moving from the siding in the direction of the arrow 1 toward the main track, the flange of one of the front wheels, in passing between the rail B and guard-rail G, must force the latter toward the center of the track, and the said guard-rail must, through the medium of the intervening mechanism, move the switch-rails from the position shown in Fig. 1 to that seen in Fig. 2, when they will direct the locomotive in its proper course from the siding to the main track.

It will be observed that as the point *w*, Fig. 1, where the bent portion of the guard-rail G touches the rail, is at a distance behind the line *x*, where the switch-rails are connected to the track, the locomotive must perform the duty of moving the switch-rails while the latter are unloaded; or, in other words, before they have to sustain any part of the weight of the locomotive. Hence the duty of moving the switch is a comparatively light one.

During the opening of the guard-rail G and the movement of the switch-rails to the position, Fig. 2, the guard-rail G′ has been brought in contact with the rail A′, so that if the switch-rails should be accidentally left in this position, Fig. 2, one of the front wheels of the first locomotive which traverses the main

track in the direction of the arrow will move the guard-rail G′ toward the center of the track, and will restore the switch-rails to their proper position, Fig. 1, for permitting the locomotive to pursue its proper course on the said main track.

This duplex system of movable guard-rails, combined with the rails of the siding and main track and switch-rails, and with mechanism by which the movement of the guard-rails is communicated to the switch, constitutes an important feature of my invention, as it permits the locomotive, whether it be traversing the main track, or from siding to the main track, to set the switch-rails so that it can pursue its proper course.

While different devices may be used as mediums for transmitting the movement of the guard-rails to the switch-rails, I prefer in all cases to use the shaft K, on which are three cranks, one connected to one guard-rail, another to the other guard-rail, and the third to the switch-rails.

When this cranked shaft is used it is essential that the two cranks *i* and *i′* should be so arranged, in respect to each other, that the movement of one guard-rail from the adjoining fixed rail shall insure the movement of the other guard-rail against its adjoining fixed rail.

While I prefer the use of movable guard-rails, other devices, to be actuated by the wheels of the locomotive or car, may be used in place of the said guard-rails. Rails admitting of being depressed by the locomotive, for instance, may be substituted for the guard-rails; but, whatever devices may be used, the cranks on the shaft should bear such relation to each other that, whether the locomotive be traversing the main track, or from the siding to the main track, the said cranked shaft shall serve as a medium for causing the devices actuated by the locomotive to co-operate with each other and with the switch, so that the latter may always be in a proper safe position.

If desired, the crank-shaft K may be connected to the switch by two or more cranks or rods, instead of one crank and one rod, M.

Different plans may be adopted for retaining the switch-rails in the position to which they have been adjusted; but I prefer to combine the device shown in the Patent No. 110,808, granted to me January 3, 1871, with my present duplex system of movable guard-rails.

This plan will be best understood by reference to Figs. 3 and 4.

To the cranked shaft K is secured a weighted arm, T, and part of this arm, in the present instance, forms that crank of the shaft which is connected by the rod M to the switch-rails, *k* being the crank-pin on the said arm.

When the switch-rails are in the position, Fig. 2, the weighted arm and the cranks on the shaft K are in the position shown in Fig. 3, where it will be observed that the center of the crank-pin *k* is below that of the shaft K, so that any force applied directly to the switch-rails themselves, to force them from their position in the direction of the arrow 2, Fig. 2, and exerted through the rod M against the crank-pin in the direction of the arrow, Fig. 3, must only serve to depress the weight of the arm T against its foundation W. In other words, the switch-rails are so locked in their position that they cannot be disturbed by any force applied to the switch-rails themselves, but when the locomotive moves the guard-rail G′ from the rail A′ it will pull the rod H′, Fig. 3, the crank of which is in a favorable position to act as a medium through which the rod can raise the weighted arm and turn it to about the position shown by dotted lines, when it will fall, partly by its own weight and partly owing to the momentum it has acquired, and will complete the movement which was commenced by the action of the locomotive-wheel on the guard-rail G′, so that the switch-rails will be moved to the position, Fig. 1, and the weighted arm and cranks to the position, Fig. 4. Simultaneously with these movements the crank *i*, connected to the guard-rail G by the rod H, has been moved from the elevated position, Fig. 3, round and downward to the position, Fig. 4, so that the said guard-rail is in contact with the rail B, ready to be acted on by one of the wheels of a locomotive.

When the weighted arm is in the position, Fig. 4, it serves to lock the switch-rails in the position, Fig. 1, from which they cannot be disturbed except by operating the weighted arm itself or the guard-rail G, and when the latter is done by the wheel of the locomotive the shaft K will be turned by the pushing of the rod H, which will result in turning the weighted arm and cranks to their former position, Fig. 3, when the switch-rails will again be in the position, Fig. 2.

Thus, whether the locomotive be moving along the main track or siding in the direction of the arrow, the mechanism described serves not only as a medium through which one or other of the guard-rails is caused to properly adjust the switch-rails, but also as a medium for locking the switch and causing one guard-rail to adjust the other in its proper position for service when the latter is in demand.

For the sake of convenience I have referred to the rails A A′ as constituting the main track, and to B B′ as the siding-rails; but it will be evident that the latter may constitute part of the main track and the former part of the siding.

I claim as my invention—

The combination of a main track, siding, switch, and two movable guard-rails, G G′,

with a shaft, K, having a crank connected to the switch, an operating arm, T, for locking the switch in either of its two positions, and two cranks, one connected to each of the two movable guard-rails, which are connected to the track independently of each other, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WHARTON, JR.

Witnesses:

HENRY HOWSON, JR.,

HARRY SMITH.