2 Sheets--Sheet 1.

J. B. ALEXANDER, dec'd.

FINNELLA M. ALEXANDER, Adm'x.

Railway-Switches.

No. 144,379. Patented Nov. 11, 1873.

Fig. 1.

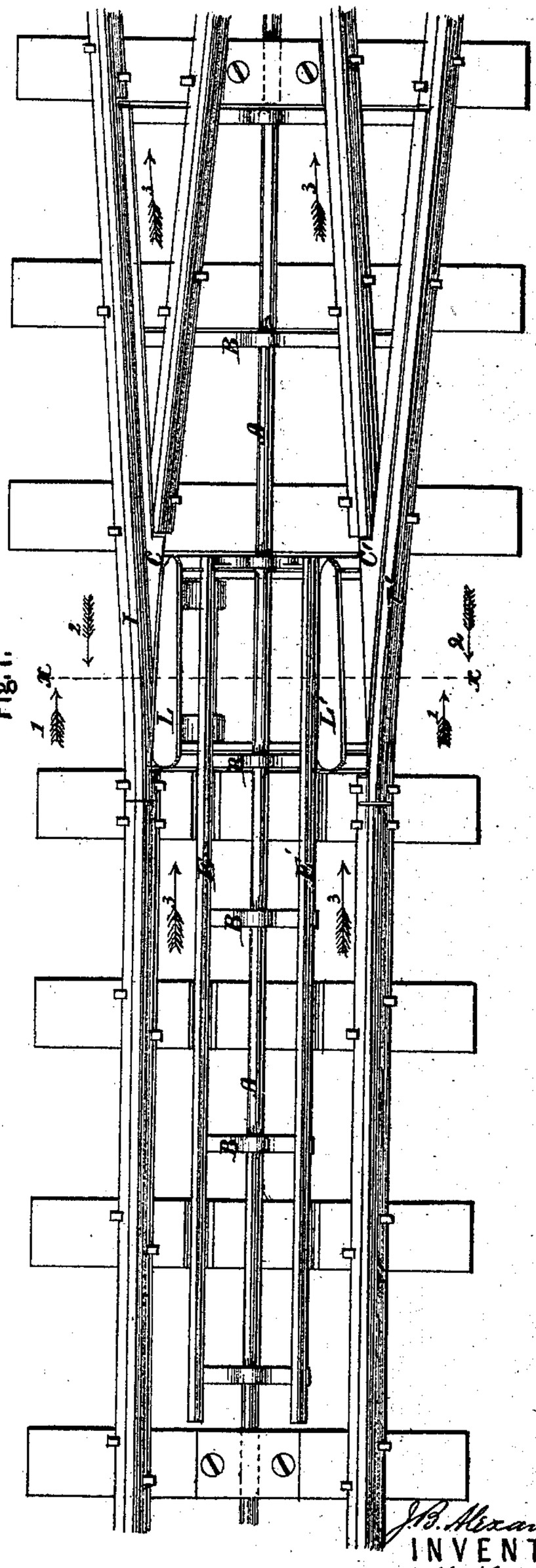
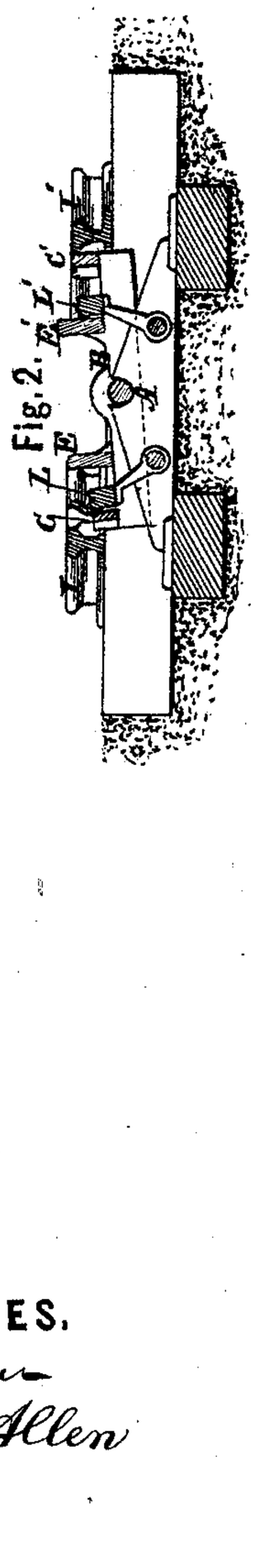


Fig. 2.



WITNESSES.

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2 Sheets--Sheet 2.

J. B. ALEXANDER, dec'd.

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Fig. 3.

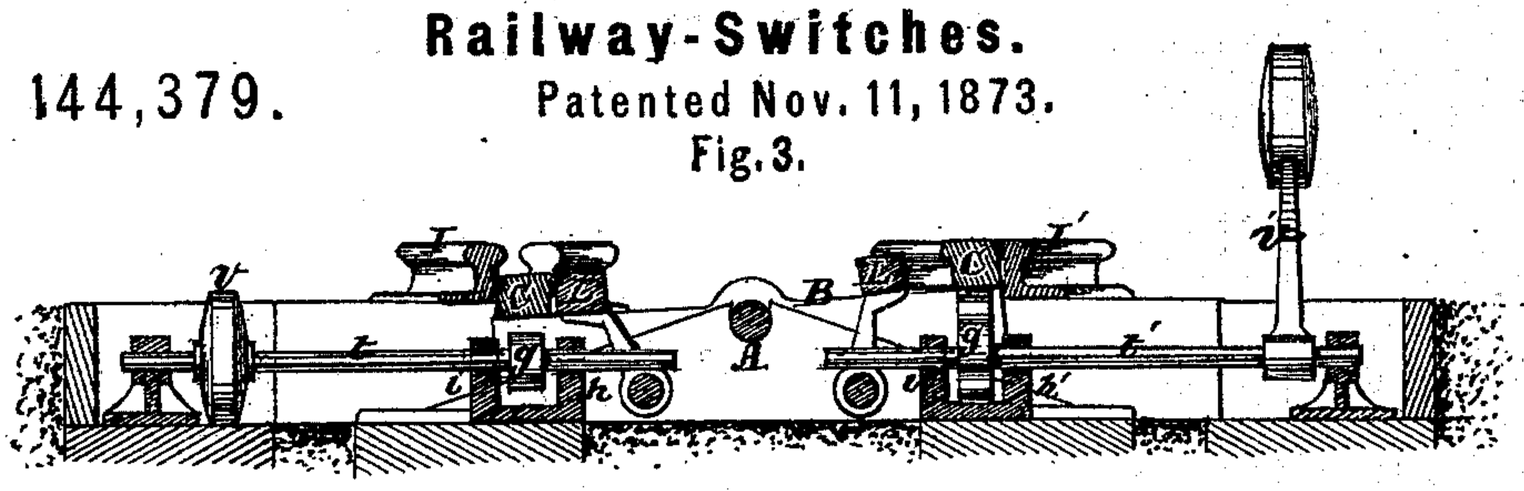


Fig. 4.

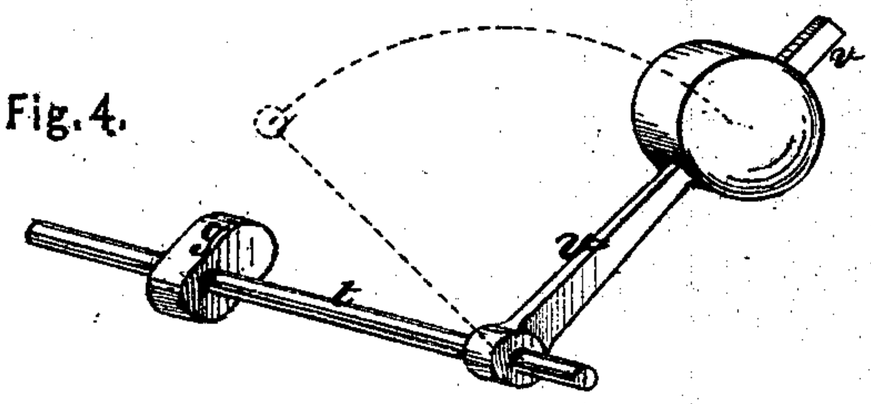


Fig. 6.

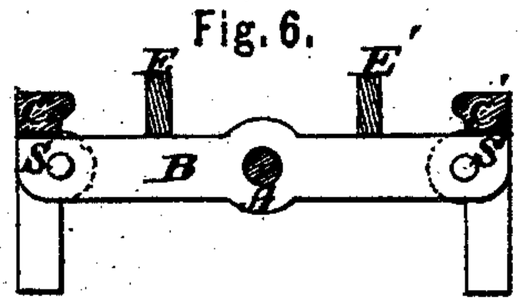
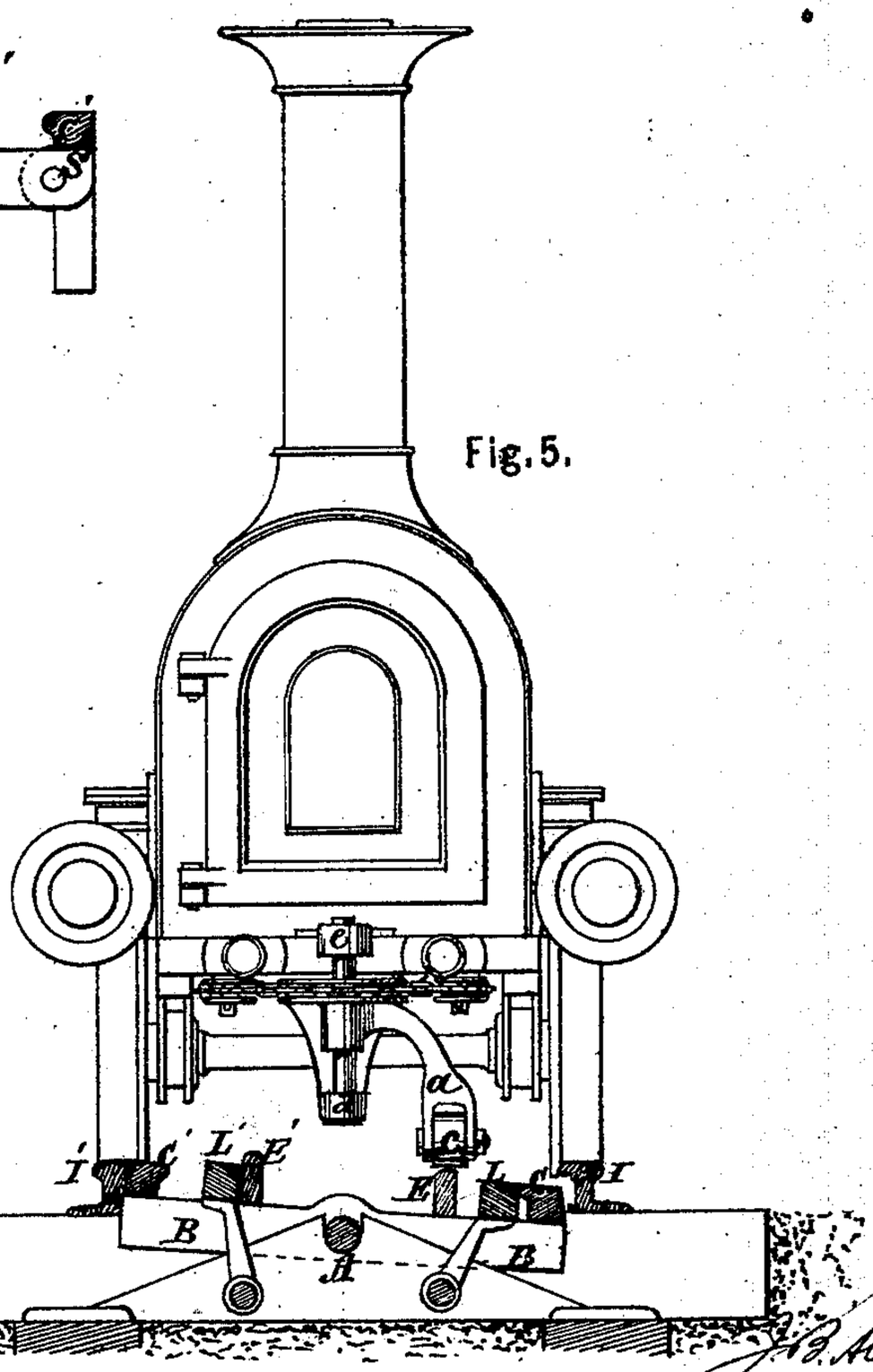


Fig. 5.



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UNITED STATES PATENT OFFICE.

FINNELLA M. ALEXANDER, OF WASHINGTON, DISTRICT OF COLUMBIA, ADMINISTRATRIX OF JOSEPH BELL ALEXANDER, DECEASED.

IMPROVEMENT IN RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. **144,379**, dated November 11, 1873; application filed February 6, 1872.

To all whom it may concern:

Be it known that JOSEPH BELL ALEXANDER, M. D., deceased, late of Washington, District of Columbia, (FINNELLA M. ALEXANDER, administratrix,) did invent certain Improvements in Railway-Switches, of which the following is a specification:

The invention consists of an automatic railway-switch, in which an attachment to the locomotive or pilot is made to set the switch in advance, as may be desired by the engineer of the said locomotive. This invention is an improvement upon the automatic railway-switch for which Letters Patent of the United States were granted to the said JOSEPH BELL ALEXANDER April 30, 1867.

In the improved form, the broad plate midway between the rails of the track is dispensed with, as are, also, some other parts; and, in place thereof, cross-bars are attached to the central rod or fulcrum, and support the vertically-movable rails of the switch. Independent guard-rails are used for the inside faces of the wheel-flanges, and are locked in position when brought into operation. Arrangements are afforded for operating this switch by hand-levers, when required, without interfering with the control of the same by the engineer on a train subsequently approaching.

As in the former patent already cited, the switch is operated by the pressure of an attachment to the locomotive or pilot, which comes in contact with one or another, as the engineer may direct, upon two supplementary rails laid down between the usual track-rails, and the depression of which said rail lowers the switch-rail on that side and elevates it on the other side, so that the locomotive and train are caused to deviate toward the side corresponding to that of the said depressed rail. As in the former patent, to which reference has been made, the locomotive has a roller-carriage, which may be adjusted by the engineer so as to act upon one or the other of the supplementary rails, as he may elect, according to the direction in which he may desire to proceed, upon the right or the left track, which divaricate at the switch. In the former patent this adjustable portion oscillates in a vertical plane to bring the roller in contact with one or the other of the said supplementary rails. In the invention which is the subject of the present specification the roller-carriage oscillates in a horizontal plane, its axis being vertical, as will be more fully hereinafter explained.

Figure 1 is a top view or plan. Fig. 2 is a vertical transverse section in the line *x x*, Fig. 1, looking in the direction of the arrows 1. Figs. 3 and 4 are views showing the operation of the hand-switch. Fig. 5 is a transverse vertical section at *x x*, looking in the direction of the arrows 2, and showing the approaching locomotive. Figs. 1, 2, 3, and 5 illustrate the application of parts of the new improvements to the form of switch-rails described in a previous patent, above referred to. Fig. 6 is a vertical transverse section, illustrating another part of the improvements, which consists in jointing the switch-rails to the cross-bars.

In the drawings, I and I′ are the track-rails, resting upon the usual sleepers or ties. A is a central fulcrum or axis, resting upon journals on the sleepers, and lying parallel to and midway between the track-rails. On this axis are fastened a number of cross-bars, B B B, upon which rest the supplementary rails E E′, which are actuated by the "switcher," as it may be termed, on the locomotive. Upon these cross-bars B B rest also the switch-rails C C′, which are not moved in a horizontal plane to control the line of direction of the locomotive and train, but are adjustable vertically and simultaneously, so that as one rises the other falls, the upper one being the operative one, and the depressed one being removed below the level of contact with the wheel or its flange. L L′ are independent locks or guide-sections, which rise or fall simultaneously with the switch-rails to which they are adjacent. The one which is elevated at any time is locked in position by the pressing against it of the upper surface of the blocks B beneath it, so that it cannot fall against the switch-rail and close the passage for the car-wheel flange. In Fig. 5 the guide-rail L is shown elevated into working position, and so lifted and laterally stayed by the block B beneath it that it rests against the side of the elevated supplementary rail E′. These

lock or guard rails L L′ are independent, and are operated by the rising and falling of the cross-bars B B beneath, the upper or operative lock, for the time, being fastened in effective position. The vertical pressure of the wheel-flange on the guard-rail, which is, for the time being, depressed, also serves to lock the switch. The parts may be arranged to effect the locking by the lateral bearing of the wheels against the elevated guard-rail, or the vertical pressure of the opposite wheels on the depressed guard-rail, or by both together.

In Figs. 3 and 4 are shown the hand-switches, which may be operated at any time to bring either the right or left switch-rail, C or C′, into effective position, as the case may be. *h i* are pillow-blocks, affording bearings for the horizontal axis *t*, on which is the cam *g*, which lifts the switch-rail above it. *v* is the lever by which the cam *g* is worked. One of these hand-switches is provided on either side of the track, and is effective to lift the switch-rail on that side, if it happen to be depressed, at the same time depressing the switch-rail on the other side, as they respectively rise and fall simultaneously. The cam, playing on the under surface of the switch-rail, pushes it upward, and then, retiring, leaves the switch, though changed in direction, entirely free to be operated by the engineer of the train, if he so desire.

On the front of the locomotive, the fore truck, or the pilot are bearings for a movable roller-carrier, *a*, in which a roller, *c*, is journaled. This carrier—called a "switcher"—is capable of rotation in a horizontal plane, so as to bring the roller over either of the supplementary rails E E′, as the engineer may elect. The carrier *a* is rotated by the chain *d*, which is under the control of the engineer. If the train be traveling in the direction of the arrows 3, Fig. 1, and it be desired to swerve the train to the left, the roller *c* on the carrier *a* will be brought over the supplementary rail on the left hand, and the switch-rail C will then be depressed out of the way of the car-wheel, while the switch-rail C′ will be raised.

The switch-rails C C′ may be firmly attached to the cross-bars B B; or they may be jointed thereto, as shown in Fig. 6, where S S′ are the centers of oscillation of the said switch-rails.

The arrows 3 3 indicate the course of the locomotive as the switch is set in Fig. 1.

What is claimed as new in this invention is—

1. The right and left locks or guard-rails L L′, independently journaled, and operated, in concert with the switch-rails C C′, by the rocking of the bed-frame A B B, substantially as described and represented.

2. The hand-switches shown in Figs. 3 and 4, for independent action on the switch-rails, without affecting the control of the same by the engineer of a subsequently-approaching train.

3. The switch-rails C C′, arranged to oscillate on the supporting-bars B B, as shown in Fig. 6.

4. In combination with the oscillating frame A B E E′ and switch-rails C C′, the arm *a*, mounted on a vertical axis in bearings *d e*, and adjustable in the manner shown, so as to place the roller *c* on either rail E or E′, as required.

FINNELLA M. ALEXANDER,
Administratrix.

Witnesses:
OCTAVIUS KNIGHT,
WALTER ALLEN.