(No Model.) 2 Sheets—Sheet 1.

D. TRACY.

RAILWAY SWITCH.

No. 249,423. Patented Nov. 8, 1881.

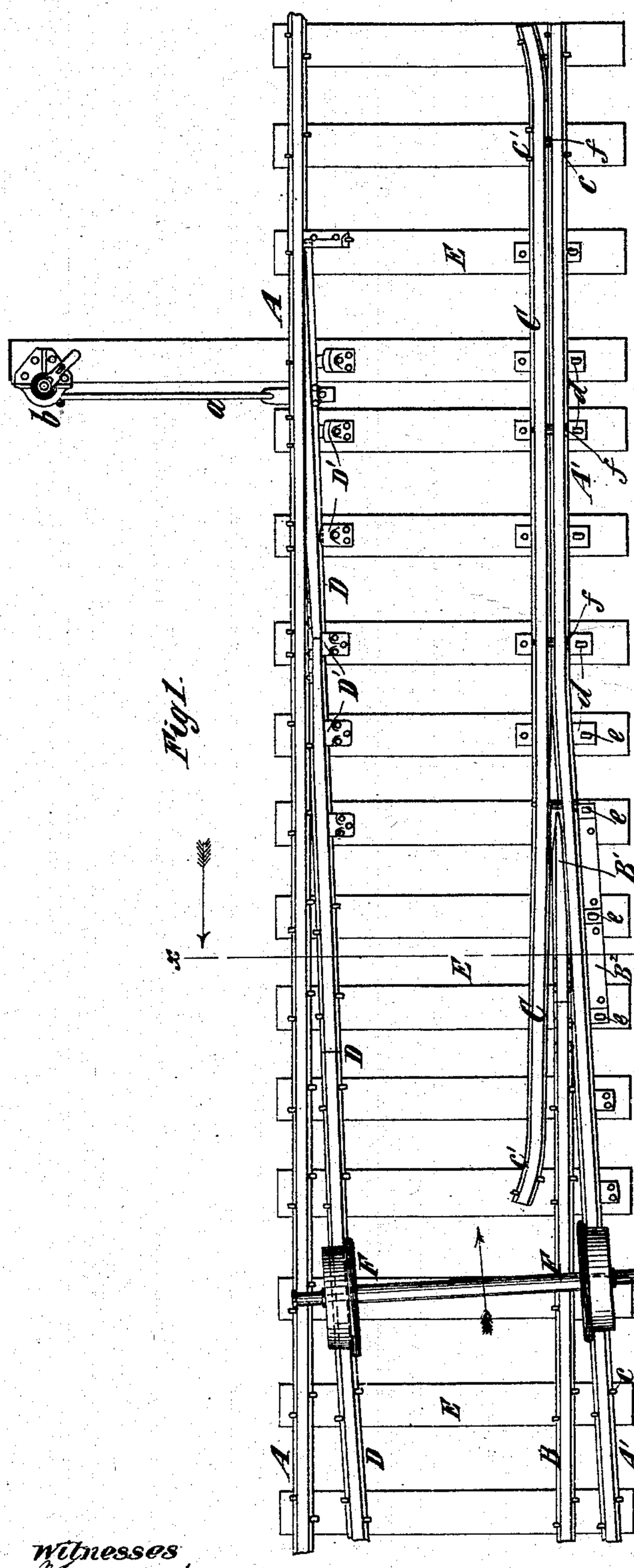

Fig. 1.

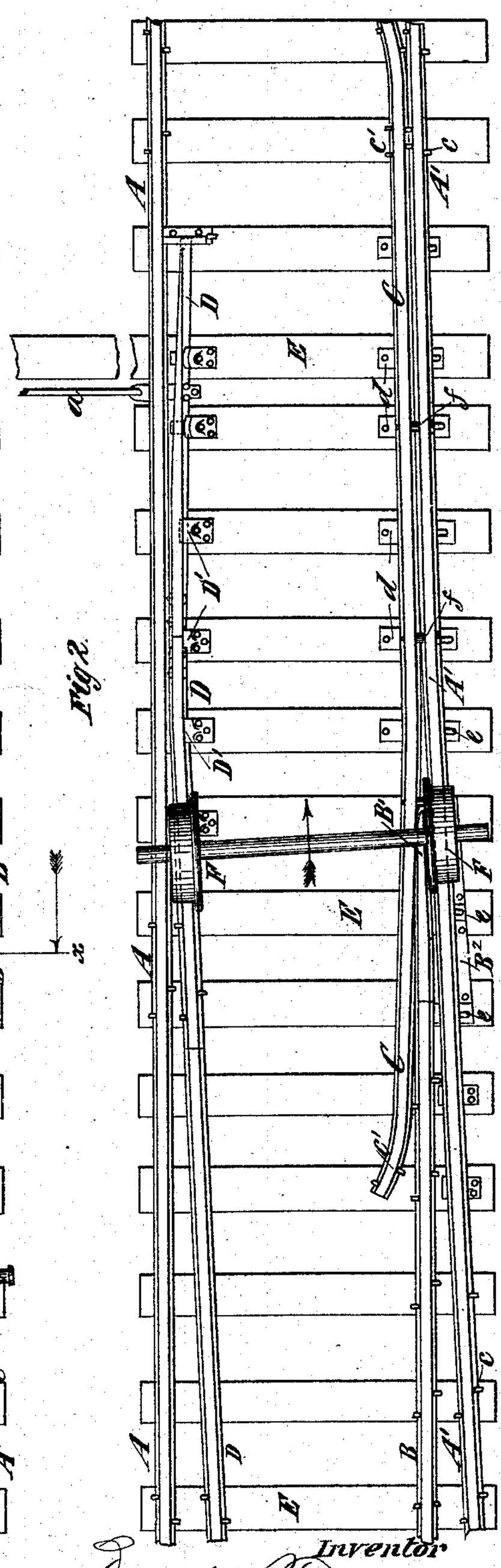

Fig. 2.

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(No Model.)

2 Sheets—Sheet 2.

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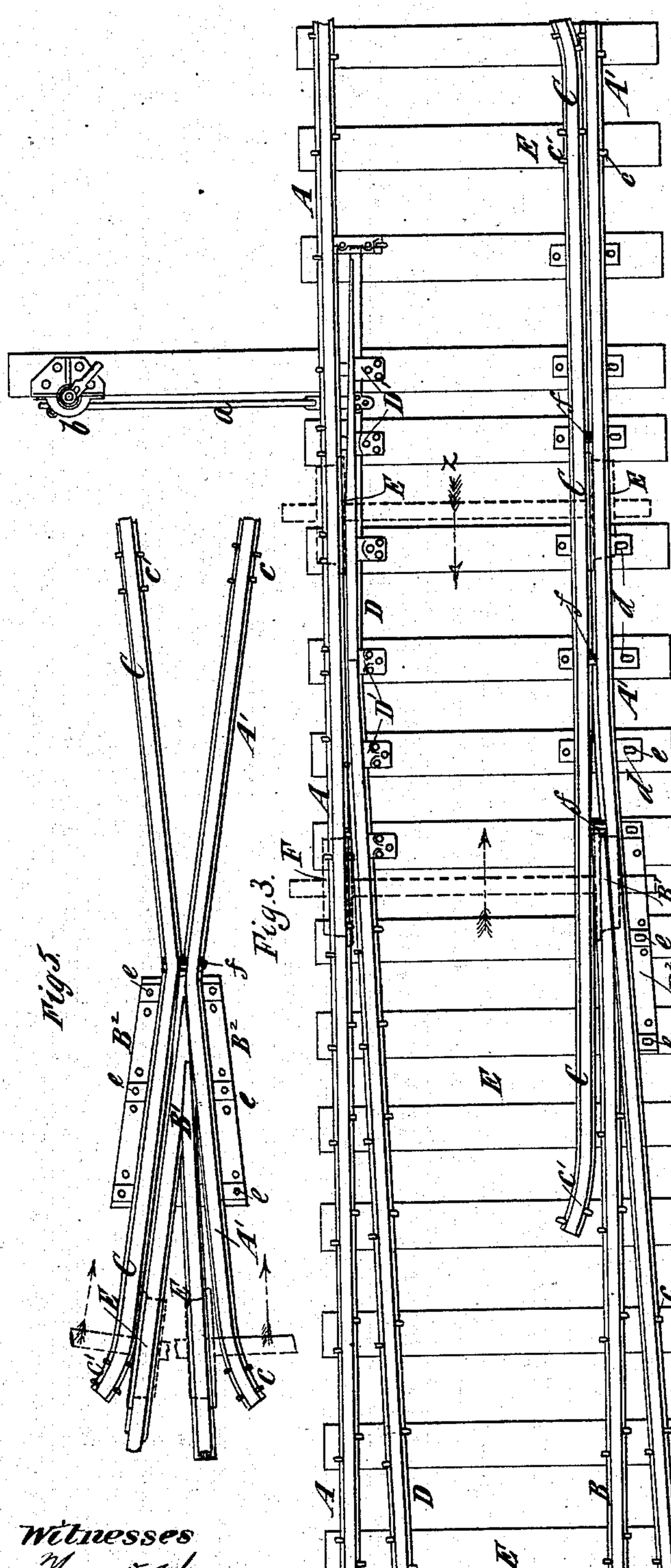

Fig. 3.

Fig. 5.

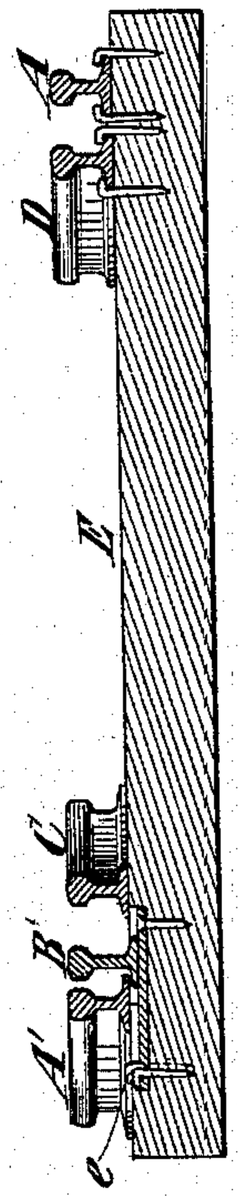

Fig. 4.

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UNITED STATES PATENT OFFICE.

DWIGHT TRACY, OF RIDGEWOOD, NEW JERSEY.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 249,423, dated November 8, 1881.

Application filed July 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, DWIGHT TRACY, of the town of Ridgewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Railway Switches and Frogs, of which the following is a specification.

My invention relates more particularly to that class of switches which are commonly known as "safety-switches," and that class of frogs known as "spring-frogs."

The invention consists in the combination of a switch-point forming one side of the turn-out and adapted to be moved mechanically, and a novel construction of frog in the other side of the turn-out, comprising an outer frog-rail and a guard-rail, which are arranged on opposite sides of the frog-point, and are adapted to yield laterally, and which are positively connected, so that a lateral movement of one will produce a corresponding movement of the other. The advantage of this construction and combination is that the outer frog-rail is drawn or moved inward against the outer side of the frog-point, and is held securely in such position by the wheels while a train is passing on the main track, and after being moved outward by a train entering the siding or turn-out the said outer frog-rail and guard-rail will move inward automatically; or, if they fail to act automatically, they will certainly be drawn inward, so as to give a continuous bearing for wheels running on the main track. The yielding outer frog-rail and guard-rail may be jointed or otherwise made flexible and have separate springs applied to them for moving them inward, or they may be so constructed and secured that they will themselves form springs having a constant inward tendency.

Where the frog above described is used for a crossing-frog of course the mechanically-moved switch-point would not be employed.

In the accompanying drawings, Figure 1 represents a plan of a switch embodying my invention, and a pair of car-wheels which are about to leave the siding for the main-track. Fig. 2 represents a similar plan of the switch with the wheels in a different position. Fig. 3 represents a similar plan of the switch with a pair of wheels shown in dotted outline as just passing the switch-point on the main track. Fig. 4 represents a transverse section of the switch upon the dotted line *x x*, Fig. 1, looking in the direction of the arrows; and Fig. 5 represents a plan of the frog as applied to a crossing.

Similar letters of reference represent corresponding parts in all the figures.

A designates one rail of the main track, which is continuous, and A′ designates the other rail thereof, which diverges from the rail A at the switch, so as to form one rail of the turn-out and the outer frog-rail.

B designates a rail, which is parallel with the rail A beyond the switch and forms therewith the main track. The rail B terminates in a frog-point, B′, and constitutes the frog-point rail. Opposite the frog-point B′ is a guard-rail, C; and D designates the switch-rail, which is moved by means of a rod, *a*, and switch-stand *b* to set the rail D so that the train will take the turn-out or keep to the main track. The continuation of the rail D forms with the rail A′ the turn-out. The rail B, which terminates in a frog-point, B′, is riveted to a plate, B^2, which is spiked rigidly to the ties E, but the rail A′ is spiked down in the ordinary manner at the points *c c*, and between said points is left free to move laterally upon chairs or plates *d*. The guard-rail C is likewise spiked down only at the points *c′ c′*, and between said points is free to move laterally like the rail A′, the amount of lateral movement of both said rails is limited by stops *e*, and they are positively and permanently connected together between the points *c c* and *c′ c′* by means of bolts or rivets *f* or by yokes, sleeves, or thimbles being placed upon the bolts between the rails for holding them at the required distance apart. The said rail A′, being secured at the points *c c*, acts like a bow-spring, and has a constant tendency inward, which holds it tightly against the frog-point B′, and thus forms a continuous track over the rail A′ to the frog-point B′, and thence over the rail B. The guard-rail C, being secured only at the points *c′ c′*, forms a spring which constantly tends inward, and because of its positive connection with the rail A′ holds the latter tightly against the frog-point B′.

In Fig. 1 I have represented an axle and a pair of wheels, F, upon the turn-out A′ D moving off the same in the direction indicated by

the arrow. The rail A′ is in its normal position against the frog-point B′. The flange of the wheel, which is upon the rail D, bears upon the inner side thereof, and as said rail is immovable the flange of the other wheel is crowded against the inner side of the rail A′ and acts upon the same with sufficient force to move the rail outward and permit the passage of the wheel-flange between the rail A′ and the frog-point B′, in which position the wheels are shown in Fig. 2. After the wheels have passed the frog-point B′ the resilience of the rail A′ and the guard-rail C causes the rail A′ to move inward to its normal position against the frog-point B′.

In Fig. 1 the switch-rail D is shown as set for the passage of a train onto the turn-out; but in Fig. 2 said rail is set for the passage of a train along the main track A A′ B. When the wheels F approach the end of the switch-rail D the spring-rail A′ will be brought against the stops *e e*, and consequently will force the flange of the wheel upon the rail D against the inner side of said rail with sufficient force to force it against the main rail A and open the switch, if the switch-stand is so constructed as to provide for such movement of the rail D. Such novel construction of the switch-stand forms the subject of a separate application, and is not here shown or described.

Referring, now, to Fig. 3, which shows in dotted outline a pair of wheels, F, which are running in the direction of the arrow *z* and are upon the main track A A′: When moving in such direction the flange of the wheel which is upon the rail A bears against the outer side of the switch-rail D and the continuation thereof, which are held against the inward movement by braces D′, and draws the flange of the other wheel against the outside of the guard-rail C. The guard-rail C, through its connection with the rail A′, draws the latter inward and holds it tightly against the frog-point B′, so that the wheels on that side will take the rail B and continue on the main track. If the switch-rail D were shifted so as to direct the wheels upon the turn-out D A′ the flange of one wheel would bear against the inner side of the rail D and the continuation thereof and would cause the flange of the other wheel to bear against the inner side of the rail A′ with sufficient force to press or move it away from the frog-point B′, so that the wheel would pass on the outside of the frog-point B′ and would continue upon the siding. In the latter case the guard-rail C would only serve to assist the return or inward movement of the rail A′ after the wheel has passed.

In Fig. 4 I have represented the frog-point B′ as deeper than the rail A′, so that the latter may pass over the flange of the former and bear against the frog-point.

It is obvious that instead of being constructed so as to form of itself a spring the rail A′ might be jointed in any suitable manner or otherwise made capable of yielding, and separate springs might be applied to it to automatically retain it to its normal position against the frog-point B′.

Referring, now, to Fig. 5, which represents my improvements as applied to a crossing-frog, B′ designates the frog-point, and A′ and C designate the two wings of the frog, which correspond with the outer frog-rail and guard-rail before described. The two wings A′ C are connected by bolts or rivets *f*, or by yokes, as above described, and sleeves or thimbles are employed to hold them at the proper distance. The two rails A′ C are secured so as to form springs, and the tendency is to keep the rail A′ tight against the frog-point B′, and thus afford a continuous bearing for the wheel E from the frog-point B′ onto the rail A′. When a train approaches on the crossing the flanges of the wheels E, acting upon the rail A′, draw the rail C tightly against the frog-point and afford a continuous bearing for the wheels onto a rail, C, and when a train approaches on the main track the flanges of the wheels act in a similar manner upon the rail C and draw the rail A′ tightly against the frog-point.

I am aware that it is old in railway-switches where a pointed switch-rail is employed, to make the said switch-rail and the adjacent main rail of such height relatively to each other that the flange of one may pass over the flange of the other to enable the pointed switch-rail to lie close against the main rail. This I do not claim as of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a switch, of a movable switch-rail forming one rail of the turn-out, a stationary frog-rail forming a portion of the opposite side of the main track, and a laterally-yielding outer frog-rail and a guard-rail placed upon opposite sides of said stationary frog-rail, and connected positively together, so as to move simultaneously, substantially as and for the purpose specified.

2. The combination, in a switch, of a movable switch-rail forming one rail of the turn-out, an outer frog-rail constructed and secured so as to form a laterally-yielding spring, and forming the other rail of the turn-out, and a continuation of the main rail, a stationary frog-rail upon the inner side of said outer frog-rail, and a guard-rail connected with said outer frog-rail, substantially as and for the purpose specified.

3. The combination, in a switch, of a movable switch-rail forming one rail of the turn-out, a stationary frog-rail forming a portion of the opposite side of the main track, and an outer frog-rail and a guard-rail arranged on opposite sides of said stationary frog-rail, both constructed and secured so as to form laterally-yielding springs, and connected positively together, so as to move simultaneously, substantially as and for the purpose specified.

4. The combination, in a switch, of a later-

ally-yielding outer frog-rail forming one rail of the turn-out and one rail of the main line, and a continuation of the main line adjacent to said turn-out rail, which is deeper than said outer frog-rail, and over the flange of which said outer frog-rail may be moved, substantially as specified.

5. The combination, with a fixed rail-point, of wing-rails rigidly secured to the sleepers at their ends, suitably spaced and secured together at their middle parts, and adapted to be sprung either way, so that one of said wing-rails shall be immediately adjacent to said rail-point, substantially as specified.

DWIGHT TRACY.

Witnesses:

CHANDLER HALL,

FREDK. HAYNES.