

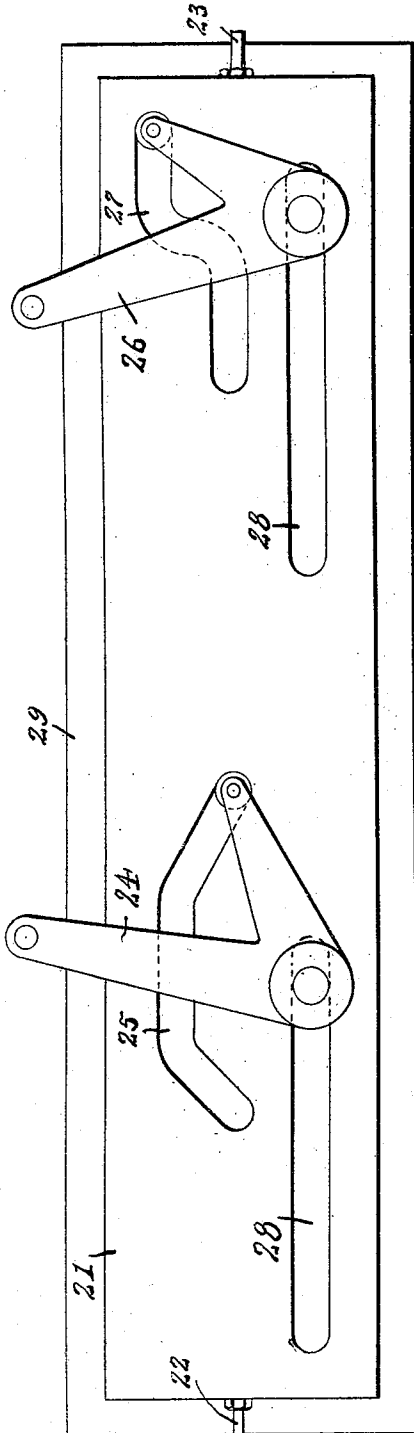
(No Model.)

2 Sheets—Sheet 1.

J. KUNZ.
RAILWAY FROG.

No. 554,702.

Patented Feb. 18, 1896.



Witnesses:
E. R. Shipley
M. S. Belden

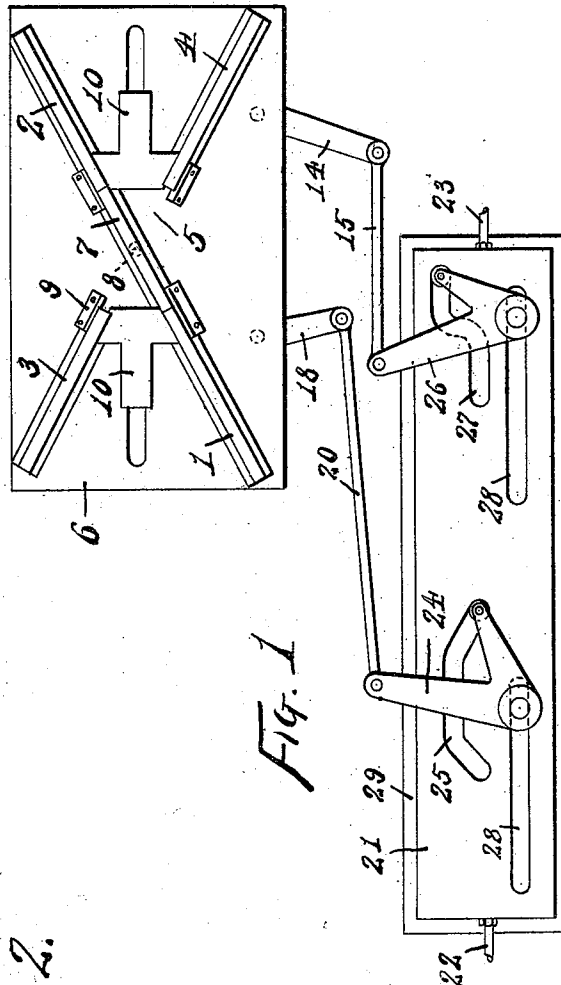


FIG. 1

FIG. 2.

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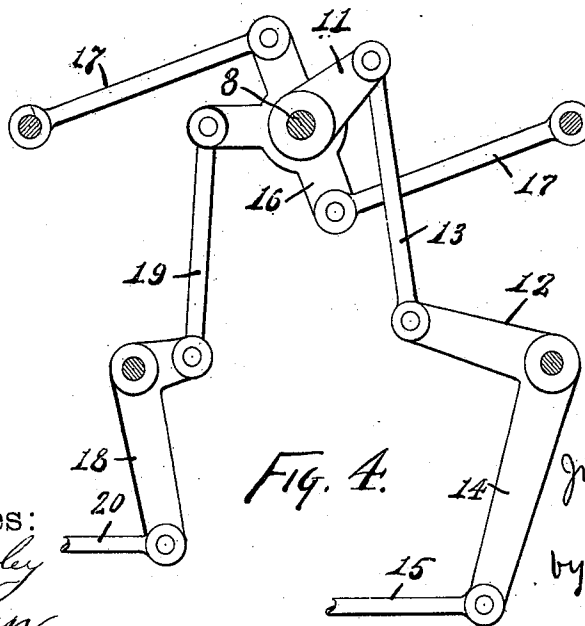
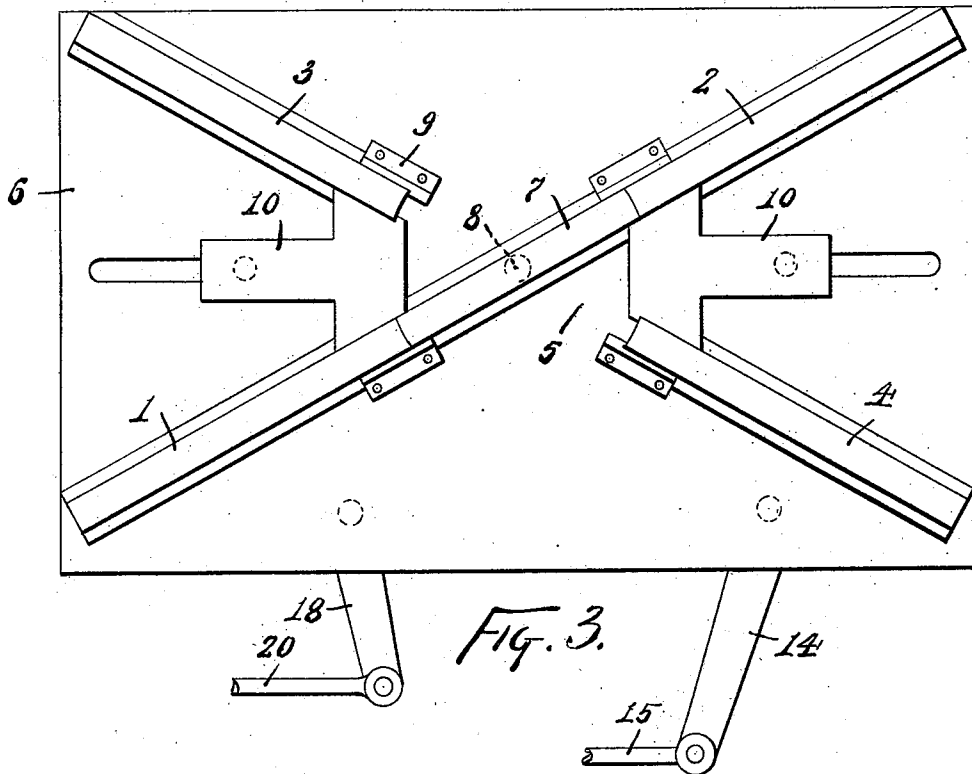
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UNITED STATES PATENT OFFICE.

JOHN KUNZ, MIDDLETOWN, OHIO.

RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 554,702, dated February 18, 1896.

Application filed June 10, 1895. Serial No. 552,221. (No model.)

To all whom it may concern:

Be it known that I, JOHN KUNZ, of Middletown, Butler county, Ohio, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

In railway-frogs, whether there be a single frog, as at a turn-out, or four frogs, as at a crossing, there must be a gap or notch to permit of the passage of the wheel-flange, and this gap or notch, if prominent, is productive of destructive blows as the wheels pass, resulting in damage to rolling-stock, in rapid destruction of frogs, and in discomfort to passengers. In my improved frog the gap is present for the passage of the wheel-flange, but the particular rail in use is continuous, or without gap, the result being accomplished by swiveling a section of the rail so as to make practically continuous whichever of the rails is to be used.

My improvement will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan of a frog exemplifying my invention; Fig. 2, an enlarged plan of the operating-cam; Fig. 3, an enlarged view of the frog proper, and Fig. 4 a plan of the operating mechanism disposed below the rails at the frog.

In the drawings, 1 indicates a fixed rail end near the frog-point or point of intersection of rails; 2, the continuation of this rail beyond the intersection, there being quite a space between the inner ends of rails 1 and 2; 3, one of the rail ends of the other intersecting rail; 4, the continuation of this second rail; 5, the space between the inner ends of rail ends 3 and 4, this space amounting to a foot or two, and there being a similar space between the inner ends of rails 1 and 2, the two rail-lines therefore intersecting at the center of a gap toward which the four rail ends focus; 6, a base-plate to which the four rail ends are rigidly secured, the plate in turn being made rigid by being secured to the usual ties; 7, a short section of rail adapted to fill the gap formed between the inner end of rails 1 and 2 or, alternatively, by being turned between rail ends 3 and 4; 8, a pivot-pin to which swiveling rail-section 7 is rigidly

secured in any suitable manner, this pin being at the intersection of the two rail-lines; 9, stops at the outer sides of the inner ends of four rails to limit the angular motion of swiveling rail-section 7, these stops also preferably forming chairs for giving side support to the inner ends of the rails; 10, locking-blocks sliding in the angles formed between the converging rails, the sides of these blocks fitting against the inner sides of the rails, the inner ends of the blocks projecting beyond the inner ends of the rails, the blocks being capable of motion outwardly so as to suppress such projection of their inner ends; 11, Fig. 4, an arm fast on the lower end of pivot-pin 8 below base-plate 6; 12, a bell-crank lever pivoted below the base-plate; 13, a link connecting one arm of lever 12 with lever 11; 14, the outwardly-projecting arm of lever 12; 15, link connecting arm 14 with the cam mechanism which is to give motion to the swiveled rail-section 7; 16, a three-armed lever loose on pivot-pin 8 below base-plate 6; 17, links connecting lever 16 with lock-blocks 10 so that as lever 16 is turned one way or the other through part of a circle the lock-blocks 10 will be moved inwardly or outwardly; 18, a bell-crank lever pivoted under base-plate 6; 19, a link connecting one arm of this lever with an arm of lever 16; 20, a link connecting the outwardly-projecting arm of lever 18 with the cam mechanism which is to give motion to the lock-blocks; 21, a cam-plate; 22, rod connected with this cam-plate to serve in giving it motion, this rod to be operated from any suitable sort of a lever at switch-stand or in switch-tower; 23, rod by which the cam-plate can be connected to any of the usual switch-throwing devices in case the frog is used in connection with a switch; 24, a lever pivoted on a fixed pivot at or near the cam-plate 21 and having an arm connected with link 20; 25, a cam-slot in the cam-plate, engaging a roller on lever 24, and having such form that when the cam-plate is at either extremity of its throw the transmitting-arm of lever 24 will be at one extremity of its motion, and that at an intermediate stroke of the cam-plate the actuating-arm will go to and dwell at the other extremity of its throw, the latter extremity of the throw of the actuating-arm representing the open or unlocked posi-

tion of lock-blocks 10 and the former position representing their locked condition; 26, another pivoted lever similar to lever 24, but connected with link 15; 27, a cam in the cam-plate engaging a roller on an arm of lever 26, and having such form that at one extremity of the stroke of the cam-plate swiveling rail-section 7 will take position in line of rails 1 and 2, as shown in the drawings, while at the other extremity of stroke of the cam-plate the rail-section will swivel into line with rails 3 and 4, the intermediate portions of this cam serving to produce the proper motion of lever 26 and give it dwells at end portions of the cam-stroke; 28, guide-slots for the cam-plate; and 29, a base-plate for the cam-plate, serving to support it and the pivots for levers 24 and 26.

Referring to Fig. 1, let it be understood that lever 24 operates the locking device and lever 26 operates the swiveling rail-rection. Assume the parts to be in the position shown in Fig. 1, cam-plate 21 being at the leftward extremity of its stroke. Under these conditions the line of rail ends 1 and 2 is completed by swiveling rail-section 7, and a wheel running over these rail ends will find continuous rail across the gap. At the same time there is freedom at each side of the rail for the passage of the wheel-flange. This is the condition of parts when the line represented by rail ends 1 and 2 is to be used. This line may be the main track at a switch or one of the rails of one of the tracks at a crossing, whether the crossing be square or diagonal. Let it be noticed that swiveled rail-section 7 is firmly locked at each end by being clamped between lock-blocks 10 and slots 9.

Assume, now, that rail-line represented by rails 3 and 4 is to be used. Cam-block 21 must be moved to the right. As this movement of the cam-plate takes place the next effect is rocking of lever 24 to the left its full stroke. This withdraws lock-blocks 10 and leaves swiveled rail-section 7 free. During this initial motion of the cam-plate the dwell at the end of cam 27 gives no motion to lever 26 and, consequently, has no effect on the swiveled rail-section. The next effect of the moving cam-plate is to swing lever 26 to its extreme right, which causes swiveled rail-section 7 to take up position in line with rail ends 3 and 4. While arm 26 is doing this work the dwell in cam 25 maintains the lock-

blocks in open position. The third effect of the movement of the cam-plate is to restore arm 25 to its normal locking position and bring lock-blocks 10 again to locking position and lock the swiveled rail-section in its new position. During this final motion of the cam-plate the final dwell in cam 27 renders lever 26 idle. When the swiveled rail-section is to be again put in line with rail ends 1 and 2 the cam-plate is moved to the left, thus reversing the operation just described. In this way the swiveled rail-section is firmly locked in position to form a bridge for a selected rail-line and can be quickly unlocked and moved to bridge the other selected rail-line and again firmly locked.

At a switch there will be but one of these frogs at the usual frog-point and the cam-plate may be operated by the same mechanism that throws the switch. At a crossing, whether square or diagonal, there will be four of the frogs, one at each rail intersection, the four swiveled rail-sections being connected to operate simultaneously, as by connecting all of their transmitting-links 15 to a common actuating-lever 26.

I claim as my invention—

1. The combination, substantially as set forth, of a pair of interrupted rails with their lines intersecting, pivoted rail-section 7, locking-blocks 10, lever 16, links 17 connecting the lever with the locking-blocks, and link 19 connecting said lever with actuating mechanism for moving said locking-blocks to and from each other.

2. The combination, substantially as set forth, of a pair of interrupted rails with their lines intersecting, a swiveled rail-section pivoted at the intersection of said rail-lines and adapted to bridge said interruptions, sliding lock-blocks engaging the rail ends and said swiveled rail-section, a lock-lever and connecting mechanism to slide said lock-blocks, a swiveling-lever and connecting mechanism to turn said swiveled rail-section, and cams adapted to move said lock-lever from one extremity of its stroke to the other and then movesaid swiveling-lever from one extremity of its stroke to the other and then move said lock-lever back to normal position.

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