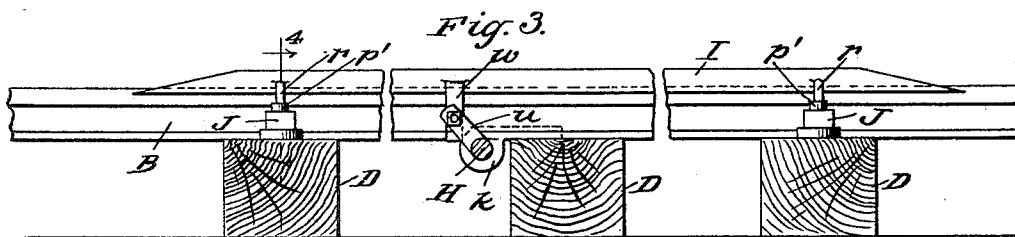
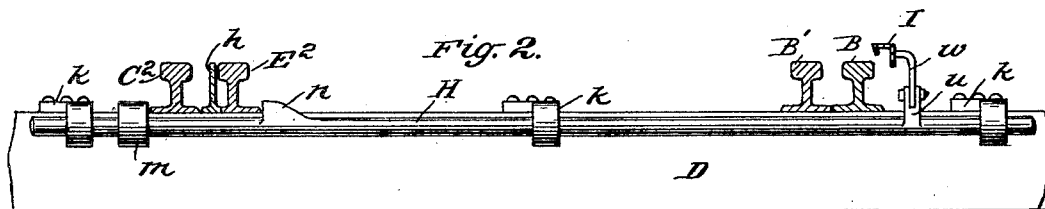
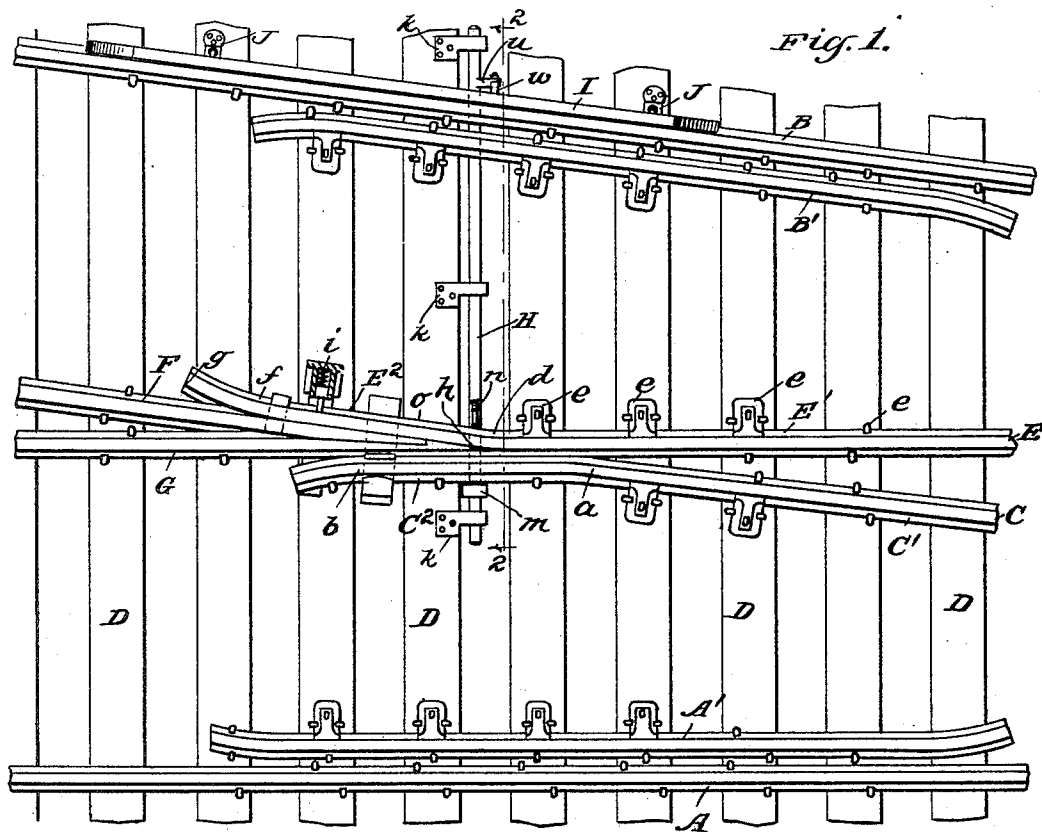


(No Model.)

M. L. & H. W. BYERS.
LOCKING DEVICE FOR SPRING RAIL FROGS.

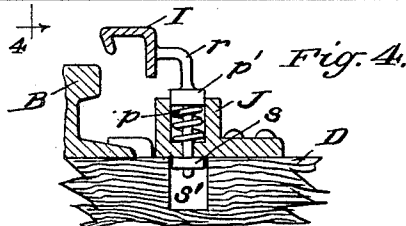
No. 462,201.

Patented Oct. 27, 1891.



WITNESSES:

J. H. Griswell.
to Sedgwick



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UNITED STATES PATENT OFFICE.

MORTON L. BYERS AND HENRY W. BYERS, OF NEW CASTLE, PENNSYLVANIA.

LOCKING DEVICE FOR SPRING-RAIL FROGS.

SPECIFICATION forming part of Letters Patent No. 462,201, dated October 27, 1891.

Application filed February 3, 1891. Serial No. 380,019. (No model.)

To all whom it may concern:

Be it known that we, MORTON L. BYERS and HENRY W. BYERS, both of New Castle, in the county of Lawrence and State of Pennsylvania, have invented a new and useful Locking Device for Spring-Rail Frogs, of which the following is a full, clear, and exact description.

This invention relates to an improvement in spring-rail frogs for railroads, usually employed and affording means for the passage of a car or cars from a siding to a main track.

As ordinarily constructed spring-rail frogs are defective from the want of a lateral support to the spring-rail opposite the frog-point, which rail may be forced out from the point of the frog sufficiently by a wheel worn to a double-flanged condition and running on the main line to allow said wheel to drop from the frog-point and break or dislodge the rails ahead, causing a wreck.

The object of our invention is to provide a simple and reliable attachment for an ordinary spring-rail frog, which will secure the spring-rail against lateral movement until the frog is used as a means for transferring cars from a side track to a main track, thereby assuring the continuity of the main track and avoidance of accidents which result from non-support of the elastic rail of a spring-frog.

To this end our invention consists in a spring-rail locking device, and further consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a plan view of a main track and an adjacent side track broken, a spring-rail frog in position to connect these tracks, and the locking device in locked adjustment thereon. Fig. 2 is a transverse section of the side track, taken on the line 2 2 in Fig. 1, viewed in the direction of the arrows. Fig. 3 is a side elevation of the outer side-track rail, broken, ends of cross-ties which support the rails, and a spring-supported tread-bar in pivotal connection with a transverse rock-shaft, (also shown;) and Fig. 4 is a cross-section of a side-track rail, broken, and other

details shown in Fig. 3, taken on the line 4 4 in said figure.

A is an outer main-track rail; A', a guard-rail adjacent to the rail A, commonly used to prevent lateral displacement of car-wheels while passing a frog. B is the outer rail of a side track, which approaches at an angle to the main track, intersecting the latter, and B' the guard-rail for the side track. The spring-frog is composed of four rails similar to the track-rails in weight, height, and form, with the exception, as relates to shape, that the rails forming the sides of the frog are bent and the pair forming the point of the frog are sloped off on one side near an adjoining end of each rail to produce the point proper.

C is one of the side rails of the spring-frog, which is bent at *a*, forming an obtuse angle, laterally considered, said rail being secured to the cross-ties D, so that its principal portion C' will lie in a plane parallel with the outer rail B of the side track, and thus constitute a mating side-track rail. The other end portion C² of the side rail C is bent toward the guard-rail A' of the main track. Said portion of the rigidly-secured frog side rail C extending between the points *a* and *b* on the same lies in a plane parallel with the main-track outer rail A. The remaining side rail E of the frog is bent laterally at *d*, and has one portion E' firmly attached by suitable devices, as at *e*, to the cross-ties D, this portion of the side rail E of the frog being located parallel to the main-track rail A and a proper distance from it to provide an opposite main-track rail at this point. The portion E² of the frog side rail E diverges from the portion C² of the other frog side rail C a proper degree to render it parallel with the outer side-track rail B, and is placed upon the cross-ties D without attachment, so that from the point *d* to the terminal end *g* of the rail portion E² said rail portion may be caused by lateral pressure to yield elastically. The end portion between *f* and *g* of the rail portion E² is bent toward the guard-rail B', and thus forms a throat between said end and the point-rail F, which latter is secured parallel to the outer rail B of the side track, the other point-rail G being located parallel to the main-track rail A, both point-rails being

shaped to cause them to converge and produce a thin wedge-shaped terminal end h . The composite frog-point extends between the divergent end portions $C^2 E^2$ of the frog side rails C and E and has the side of the point-rail F engaged by the inner side of the spring portion E^2 of the frog side rail E , said contact being enforced by the supplementary spring i , that is adapted to force a pusher-bar against the adjacent side of the rail portion E^2 and hold it normally in contact with the side of the point-rail named. There is a proper space afforded between the side of the point-rail G and the portion C^2 of the fixed rail C , so as to permit the free travel of car-wheel flanges through said channel, the treads of which wheels roll upon the frog-side-rail portion E' and point-rail G , the opposite car-wheels resting and rolling upon the main-track rail A . As the formation of the frog-point and its relative position affords a continuous support for the wheels that travel upon the frog and main-track rail, the jar incidental to frogs not provided with a spring-rail is obviated. In transferring a train or single car from the side track to the main track the flanges of the wheels of the car on the side nearest to the frog will enter the throat between the end g of the spring-rail portion E^2 and crowd the elastic rail-piece away from the adjacent frog-point rail F sufficient to allow the car or train to pass from the side track diagonally across, and farther on to engage a switch that will align it with the main track. (Not shown.)

Along with the advantages that pertain to the use of a spring-rail frog, which are avoidance of jar and increased durability, owing to the bridging of the space between the frog-point and rail continuation, so as to prevent an impinge directly against the frog-point, there is a serious defect consisting in the liability of cars suffering derailment while crossing the frog. This contingency of accident is due to the yielding of the spring-rail portion E^2 , which being forced laterally by an engagement with it of a badly-worn wheel that is so grooved on its tread as to produce a false flange on the outer edge of the same, which, when running in the direction from G to E , causes the false flange to impinge on the inner edge of the spring-rail E^2 at or near the point f , thereby forcing it out instead of rolling upon its top, as is the case with a car-wheel in an unworn condition. When a channeled and consequently double-flanged wheel spreads the spring-rail E^2 , as just explained, it will drop from the frog-point to the ground and so damage the track ahead as to cause a wreck.

The locking attachment for the spring-rail E consists of a transverse rock-shaft H , supported below the track-rails and frog by bracket-boxes k , that are secured on the cross-tie D at a point which will locate the body of the shaft near to or directly below the point h of the frog and near the point d where the

laterally-elastic portion E^2 of the spring-rail E commences. The shaft H extends beyond the side rail C of the frog a proper distance, and is supported near this terminal by a bracket-box k , there being a collar m formed upon or secured to the rock-shaft at a point which will cause it to have contact with the base-flange of the frog side rail C . Upon the rock-shaft H a locking-lug n is formed, preferably integral with it, which is so relatively placed that it will when located in an upright position, as shown in Figs. 1 and 2, have its vertical face in close contact with the edge of the base-flange o of the spring-rail E close to the angle d and point of the frog, thus locking the spring-rail when it is against the frog-point h . Preferably the locking action effected by the collar m and lug n of the rock-shaft H is accomplished automatically, there being a tread-bar I provided for this purpose, said bar being of such a proportionate length that it will be adapted to receive the impact of a locomotive or car wheel before the frog is engaged by a mating wheel.

The tread-bar I may be made solid or in skeleton form, as is indicated in cross-section, (see Figs. 1 and 4,) and is supported in a plane parallel with the outer side-track rail B by the bracket-stands J , which are seated on and secured to the cross-ties D , each bracket-stand having an inclosed spring p , that engages a collar p' on the arm r . Said arms projecting from the side of the tread-bar are bent at a right angle, so as to align the collars p' and permit them to slide in the spring-cavities of the bracket-stands. A check-collar s is placed and secured upon the end portions of the arms r , that project through perforations in the bases of the bracket-stands J , which stands are fastened in place above recesses s' in the cross-ties they are seated upon, so as to permit the tread-bar I to have a limited vertical movement at each end. There is a short crank-arm u formed upon or secured to the rock-shaft H , which is pivotally engaged with a depending arm w , that is projected from the tread-bar I , the crank-arm being thus adapted to receive a rocking motion when either of the ends of the tread-bar are depressed, it being necessary for the proper action of the device that the tread-bar should be somewhat higher than the top face of the head of the side-track rail B and each end portion sloped downwardly to provide an inclined plane for an engagement of car-wheels.

The normal position of the spring-rail portion E^2 , as before stated, is as indicated in Figs. 1 and 2, the spring of the rail and the re-enforcing action of the supplementary spring i causing it to lie against the frog-point terminal portion h , as shown in the last figure named, and the springs p by their tensional force hold the tread-bar I normally elevated and the lug n in a vertical position. Hence the spring-rail will be prevented from outward yielding movement until a rolling

wheel impinges either end of the tread-bar, which will be thereby depressed sufficiently to rock the lug *n* from an upright to a horizontal plane and release the spring-rail for the passage of a wheel-flange between the spring-rail portion *E*² and the frog-rail point *h*.

The rock-shaft *H* may be located nearer the end *g* of the spring-rail *E*, if this is deemed expedient, and other means than the tread-bar may be utilized to rock the shaft *H*, while it is preferred to use said tread-bar as being a simple and practical automatic actuator for the locking device, that is the essential feature of our invention.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent—

1. A locking device for a spring-rail frog, composed of a transverse rock-shaft, which is revolubly supported, a collar on the shaft engaging the rigidly-secured side rail of the frog, and a lug on the shaft, which is adapted to lock or release the spring-rail when the shaft is rocked, substantially as set forth.

2. The combination, with a frog having a rigid side rail and a spring side rail, of a transverse rock-shaft having a lug on it adapted to engage the spring-rail, means to revolubly support the shaft, and a device to rock the shaft, substantially as set forth.

3. The combination, with a frog having a rigid side rail and a spring side rail, of a transverse rock-shaft having a spaced collar and lug on it, means to revolubly support the shaft, and a device to rock the shaft, substantially as set forth.

4. The combination, with a frog having a spring-rail, of a transverse rock-shaft, a collar on the shaft, a lug thereon which is adapted to engage the side of the spring-rail and lock it when the frog is in closed condition, and a device which will rock the shaft and release the spring-rail, substantially as set forth.

5. The combination, with a frog having one spring-rail and a supplementary spring for said spring-rail, of a transverse rock-shaft, bracket-boxes that support the shaft to rock, a collar on the shaft that bears upon the fixed side rail of the frog, a lug on the shaft that locks the spring-rail in closed condition, and a tread-bar spring-supported and adapted to rock the shaft and remove its lug from the spring-rail when said bar is depressed at either end, substantially as set forth.

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Witnesses:

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