No. 877,562. PATENTED JAN. 28, 1908.

J. E. GRAHAM.

DOUBLE SPRING FROG.

APPLICATION FILED JUNE 17, 1907.

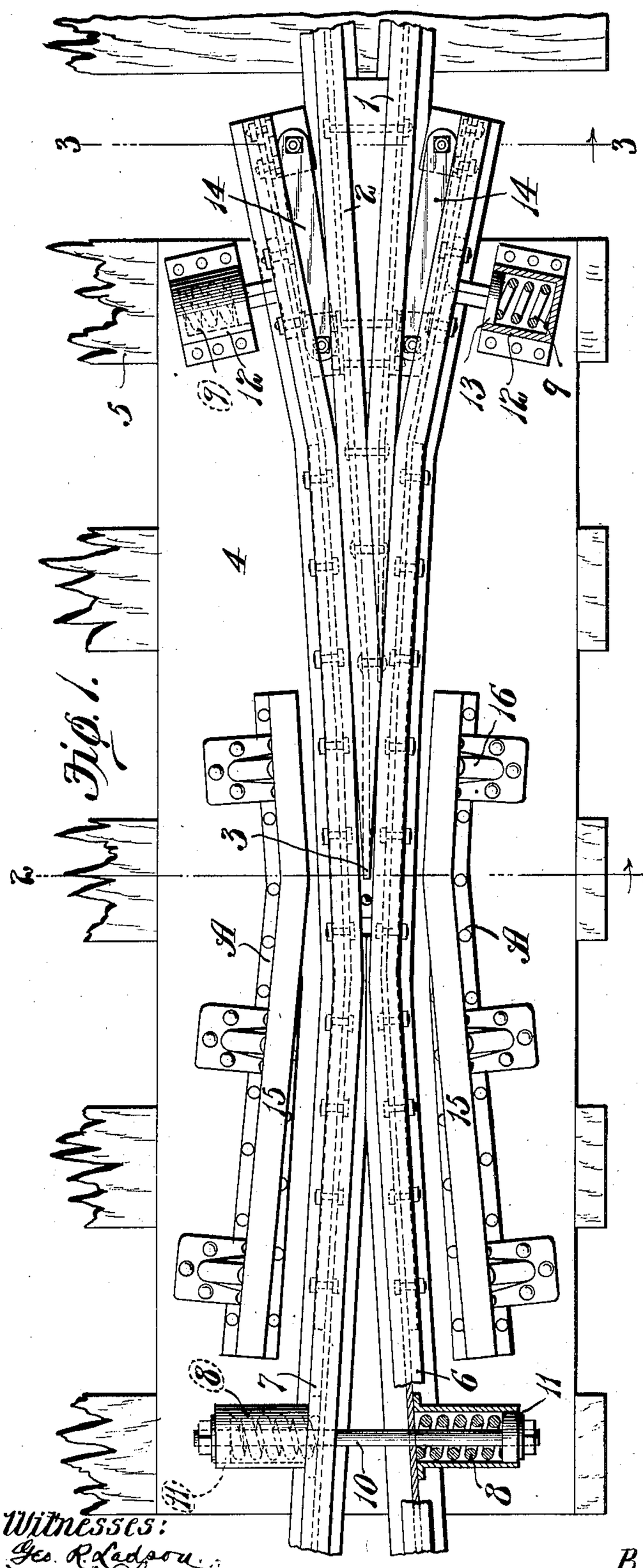

Fig. 1.

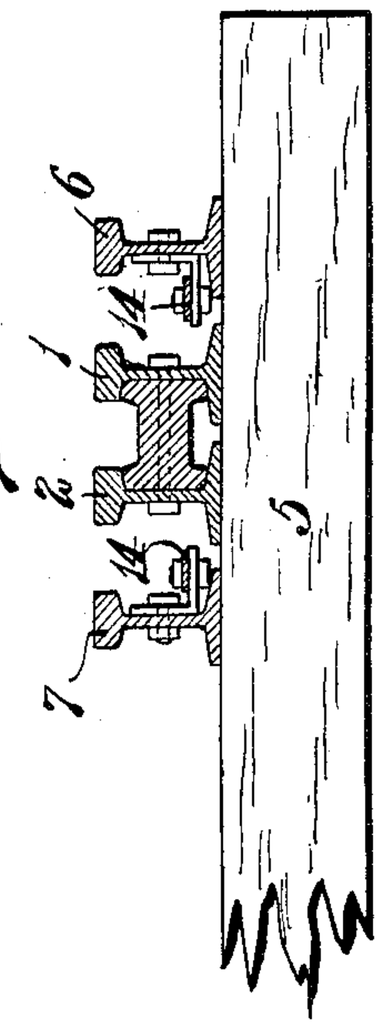

Fig. 3.

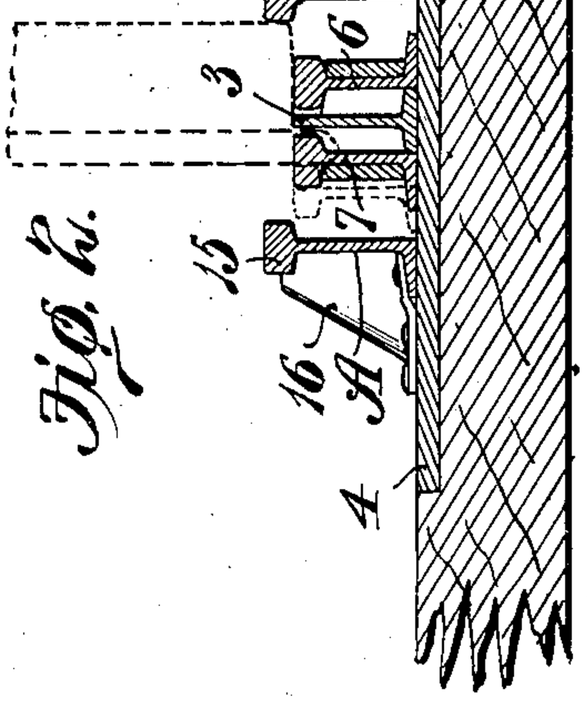

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN E. GRAHAM, OF SALEM, VIRGINIA, ASSIGNOR TO AMERICAN FLANGE FROG AND RAILWAY IMPROVEMENT COMPANY, OF GAINESVILLE, FLORIDA, A CORPORATION OF FLORIDA.

DOUBLE-SPRING FROG.

No. 877,562. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed June 17, 1907. Serial No. 379,440.

To all whom it may concern:

Be it known that I, JOHN E. GRAHAM, a citizen of the United States, residing at Salem, Virginia, have invented a certain new and useful Improvement in Double-Spring Frogs, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a double spring frog constructed in accordance with my invention; Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1; and Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 1.

This invention relates to railway track structures, and particularly to double spring frogs.

The main object of my invention is to provide a double spring frog provided with members arranged outside of the spring rails adjacent the point of the frog and having portions which lie in a higher horizontal plane than the treads of the spring rails for the purpose of engaging the outer edge of the tread rim of a wheel to guide the flange of the wheel safely past the point of the frog, thus overcoming the necessity of using "guard rails."

Another object of my invention is to provide a railway track structure comprising a frog point, a plurality of spring rails normally held against the opposite sides of the frog point and a member arranged outside of each spring rail and having a guiding portion which diverges from the spring rail or is disposed obliquely thereto so as to engage the edge of the tread rim of the wheel to gradually shift it laterally and thus positively force the opposite spring rail away from the frog point and guide the flange of the wheel past said frog point.

I have herein illustrated my invention in connection with a double spring frog of well-known construction but I do not wish to be understood as limiting my invention to this particular type of double spring frog as my idea could be embodied in double spring frogs of various constructions.

Referring to the drawings which illustrate one form of my invention, 1 and 2 designate rails that are disposed at an acute angle to each other and rigidly connected together to form the point 3 of the frog, said rails being secured to a base plate 4 which is fastened to the ties 5. The movable rails 6 and 7 or "spring rails" which are hinged or pivotally connected to the main rails or running rails, are normally forced toward the point 3 of the frog by means of springs 8 located adjacent the mouth of the frog, and springs 9 located adjacent the heel of the frog. The springs 8 surround a guide-rod 10 which extends through the webs of the spring rails and is provided at its ends with followers 11 against which the outer ends of said springs bear, the inner ends of said springs bearing against the outside faces of the webs of their respective spring rails and thus forcing the spring rails toward each other.

The springs 9, which are located adjacent the heel of the frog, are mounted in boxes or casings 12 having one end closed and being rigidly secured to the base plate 4, and the inner ends of said springs bear against followers 13 secured to the spring rails, the springs 8 and 9 operating to hold the spring rails normally against the opposite sides of the frog point so that a wheel in passing over the frog on either track will have practically a continuous tread or bearing surface to travel on. The free ends of the spring rails are fastened to the base plate 4 by means of guiding links 14.

The construction just described is a well-known type of double spring frog that has been used extensively but prior to my invention "guard rails" have always been arranged adjacent the continuous rails or outside rails for the purpose of engaging the flange of the outside wheel so as to guide the flange of the inside wheel; namely, that wheel which travels over the frog, past the point of the frog. This is also true of all types of double spring frogs which have heretofore been used, and the main object of my invention is to provide a double spring frog having guard members or guiding members attached to or combined with the frog proper for the purpose of engaging the outside edge of the rim of a wheel so as to guide the flange of the wheel past the point of the frog, said guiding means being arranged in a higher horizontal plane than the tread of the spring rail.

As shown in Fig. 1, two members A are arranged outside of the spring rails adjacent

the point of the frog, said members having guiding portions 15 which lie in a higher horizontal plane than the treads of the spring rails 6 and 7 so that the outside edge of the tread rim of a wheel which enters the frog will engage the portion 15 and thus be guided safely past the point 3 of the frog. Preferably, the members A are so disposed relatively to the spring rails that the guiding portions 15 of said members will diverge from the spring rails or extend obliquely to said rails. The advantage of having these guiding portions 15 disposed obliquely to the treads of the spring rails is that the wheel on entering the frog will gradually engage the guiding portion of the member A arranged outside of the spring rail on which said wheel is traveling, thus preventing the wheel and guiding portion from receiving a sudden shock, said obliquely disposed guiding portion also operating to gradually shift the wheel laterally so that its flange will be guided safely past the point of the frog. The guard members A are riveted or otherwise secured to the base plate 4, and braces 16 are provided for imparting additional strength to the members A and also to aid in anchoring them to the base plate.

I have herein shown the members A as consisting of T-trails which are heavier or of greater depth than the spring rails 6 and 7 so that the heads or guiding portions 15 of the members A will lie in a higher horizontal plane than the treads of the spring rails. I do not wish it to be understood, however, that I consider my invention limited to guard members of this particular construction as said members could be cast, or, if desired, light-weight T-rails mounted on fillers or blocks could be used, the essential feature of the guard members being a guiding portion arranged in a higher horizontal plane than the treads of the spring rails and preferably disposed obliquely to said treads so as to prevent the wheels and the guiding member from receiving a sudden shock or jar and also to gradually shift the wheel laterally.

With a double spring frog of the construction shown in Fig. 1, when a wheel enters the frog on the spring rail 6 the outside edge of the tread rim of said wheel will come into contact with the guiding portion 15 of the member A arranged adjacent said spring rail, and said guiding portion will gradually shift the wheel laterally so that its flange will pass the point of the frog, as shown in broken lines in Fig. 2, the spring rail 7 being moved laterally by the flange of the wheel to carry said rail away from the frog point. A wheel entering the frog on the spring rail 7 will be shifted laterally by the guiding portion 15 of the member A which is arranged outside of said spring rail, and as said wheel moves laterally its flange will move the spring rail 6 away from the frog point so that the flange of the wheel can pass between the frog point and the spring rail 6.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A railway track structure comprising a frog point, a pair of spring rails, and members arranged outside of the spring rails and having guiding portions located in a higher horizontal plane than the treads of the spring rails to engage the outer edge of the tread rim of the wheel to guide the flange of the wheel past the point of the frog; substantially as described.

2. A railway track structure comprising a frog point, a pair of spring rails, means for forcing said spring rails toward the frog point, and members arranged outside of the spring rails and adjacent the frog point and having guiding portions which lie in a higher horizontal plane than the treads of the spring rails; substantially as described.

3. A railway track structure comprising a frog point, a pair of movable rails, yielding means for holding said movable rails normally against the opposite sides of the frog point, and members arranged outside of the spring rails and having guiding portions which diverge from the spring rails for engaging the edge of the tread rim of the wheel to shift it laterally past the point of the frog; substantially as described.

4. A railway track structure comprising a rigid frog point, a pair of spring rails embracing said frog point, and rigid members arranged outside of the spring rails and having guiding portions which lie in a higher horizontal plane than the treads of the spring rails to engage the outer edge of the wheel rim to guide it past the point of the frog; substantially as described.

5. A railway track structure comprising a rigid frog point, a pair of spring rails normally engaging the opposite sides of said frog point, and rigid members arranged outside of the spring rails and having guiding portions which lie in a higher horizontal plane than the tread faces of the spring rails and are disposed obliquely to said treads; substantially as described.

6. A railway track structure comprising a frog point, a pair of spring rails, and guard members arranged outside of the spring rails adjacent to the frog point and consisting of T-rails having heads which lie in a higher horizontal plane than the treads of the spring rails; substantially as described.

7. A railway track structure comprising a frog point, a pair of spring rails, and guard members arranged outside of the spring rails adjacent the frog point and consisting of T-rails having their heads lying in a higher horizontal plane than the treads of the spring rails and diverging from said treads; substantially as described.

8. A railway track structure comprising a base plate, a frog point connected thereto, a pair of movable spring rails embracing the opposite sides of said frog point, and members arranged outside of the spring rails adjacent the frog point and permanently connected to said base plate, said members having guiding portions which lie in a higher horizontal plane than the treads of the spring rails and are disposed obliquely to said treads; substantially as described.

9. A railway track structure comprising a base plate, a frog point connected to said base plate, a pair of movable spring rails, and guard members arranged outside of the spring rails adjacent the frog point and consisting of T-rails which have their heads projecting above the heads of the spring rails and disposed obliquely to said spring rails, and means for bracing said guard rails and permanently securing them to the base plate; substantially as described.

10. A railway track structure comprising a frog point, a pair of spring rails, springs acting on said spring rails adjacent the mouth and the toe of the frog to force said rails toward the frog point, and members arranged outside of said spring rails adjacent the frog point and having portions which lie in a higher horizontal plane than the treads of the spring rails to engage the outer edge of the tread rim of the wheel to guide its flange past the point of the frog; substantially as described.

11. A railway track structure comprising a base plate, a frog point connected thereto, spring rails embracing the opposite sides of said frog point, a guide-rod extending through the webs of the spring rails adjacent the mouth of the frog and having followers secured to the ends thereof, coiled springs surrounding said guide-rod and interposed between the followers on said rod and the webs of the spring rails, boxes secured to the base plate adjacent the heel of the frog, springs mounted in said boxes and acting upon the spring rails to force them toward the point of the frog, and members arranged outside of the spring rails and connected to the base plate and provided with guiding portions which are disposed obliquely to the spring rails; substantially as described.

12. A railway track structure comprising a frog point, a pair of spring rails, and members arranged outside of the spring rails and adjacent the frog point for engaging the outer edge of the tread rim of a wheel to gradually shift the wheel laterally and thus guide it past the point of the frog; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twelfth day of June, 1907.

JOHN E. GRAHAM.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.