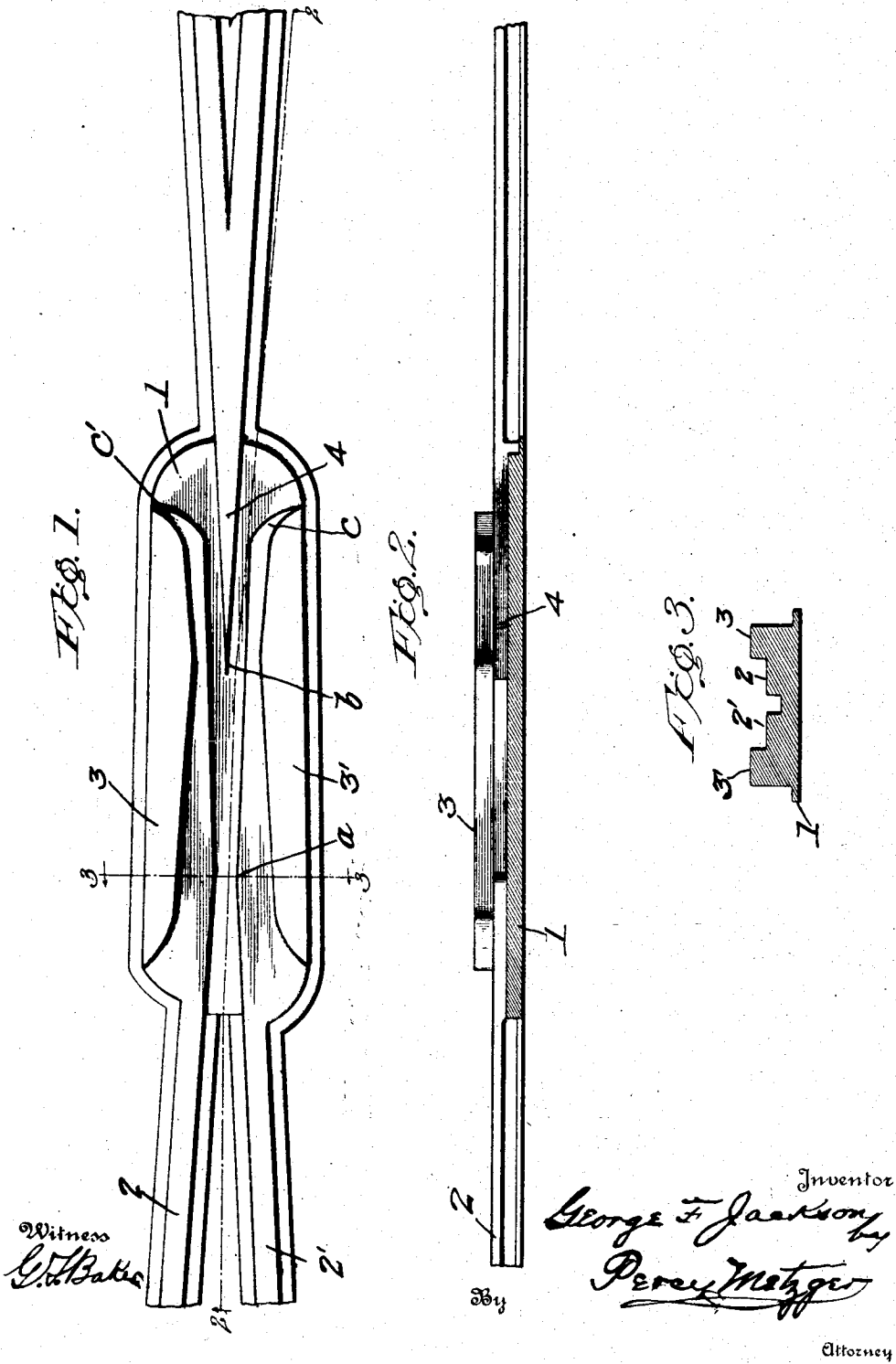


G. F. JACKSON.
RAILWAY FROG.
APPLICATION FILED FEB. 8, 1917.

1,274,050.

Patented July 30, 1918.



UNITED STATES PATENT OFFICE.

GEORGE FERRIS JACKSON, OF MOUNT PLEASANT, TEXAS.

RAILWAY-FROG.

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Specification of Letters Patent.

Patented July 30, 1918.

Application filed February 8, 1917. Serial No. 147,416.

To all whom it may concern:

Be it known that GEORGE F. JACKSON, a citizen of the United States, residing at Mount Pleasant, in the county of Titus and State of Texas, has invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

My invention relates to that class of railway frogs in which the frog is cast in one solid, integral structure.

The object of my invention is to provide a frog that will tend to minimize the danger of train derailment at switch crossings, and thus insure safety in railway traffic. I attain this object by providing integral guards or shoulders in connection with the rail ribs of the frog, and by the other novel and useful features of construction which are hereinafter fully described.

In the accompanying drawing

Figure 1 is a top plan view of the frog.

Fig. 2, a vertical, longitudinal sectional view on the plane indicated by the broken line 2—2 of Fig. 1, and

Fig. 3, a vertical, transverse, sectional view on the plane indicated by the broken line 3—3 of Fig. 1.

Like reference characters mark the same parts on all of the figures of the drawing.

My device comprises a base plate 1, having bifurcations upon what will hereafter be known as its forward end. Upon these bifurcations are located the rail ribs 2 and 2', which conform in dimension and contour to ordinary railway rails. Rising from the body portion of the base plate, and extending longitudinally thereof are the guards 3 and 3'. The outer edges of these guards are cast in straight lines, which run parallel to the outer edges of the projecting base plate.

Near the other, or rear, end of the base plate, and formed integral therewith is the frog point 4. The divergent bifurcations of this frog point extend outward beyond the body portion of the base plate and these bifurcations are formed like the rail ribs 2 and 2' into the shape and with the dimensions of railway rails. The angle of divergence of the two outer sides of the frog point

is of the same degree as the angle of convergence of the two inner sides of the rail ribs 2 and 2'. The frog point is also so positioned upon the base plate that the outer edge of one of its sides is in direct line with the inner edge of one of the rail ribs, while the corresponding edge of its other side is likewise in direct line with the inner edge of the other rail rib, so that the flange of a railway train wheel moving forward along the inner face of the rail head of either rail rib will take the appropriate side of the frog point at the point of crossing without divergence from a direct line.

The rail ribs 2 and 2' converge from their outer extremities inward until a point *a*, located upon the body of the base plate is reached. Here their inner rail head faces are separated by a space of about two (2) inches. From this point onward they gradually diverge to their points of termination. Point *b* marks the beginning of the frog point, and here the now divergent rail ribs 2 and 2' are separated by a space of about four (4) inches. The points *a* and *b* mark respectively the spots where the flange of an approaching car wheel begins to cease to contact with the rail head of rib 2 or 2' and where it is brought in contact with the appropriate side of the frog point. The reverse is of course true of a wheel approaching in the opposite direction.

The guard portions 3 and 3' are in form of solid, longitudinal lugs or shoulders extending nearly the entire length of the base plate, and parallel to its outer edges. They rise to a height of about two (2) inches above the upper surface of the rail ribs 2 and 2' and of the frog point 4.

At the meeting points of the forward bifurcations and the base plate proper the rail ribs spread outward at *c* and *c'* forming laterally extended surfaces upon which are located the forward ends of the guards 3 and 3'. Starting from a rounded forward end the inner edge of each of these guards 3 and 3' cuts the upper tread surface of the rail ribs 2 and 2', respectively, at an angle, which from the point of beginning to a position opposite the point *b* gradually narrows,

until at this point, both by reason of the cut of the guards and because of the outward direction taken by the ribs after passing point *a*, the rail ribs and the integral guards
 5 are almost brought into coalescence. From point *b* the rail ribs, which are now quite narrow, and the guards slope outward to their rounded points of termination near the rear end of the base plate proper.

10 The base plate 1 extends, on all sides, outward beyond the other superimposed portions of the frog so as to form a flange, in which openings may be formed through which spikes may be driven for holding the
 15 frog in position upon the railway ties.

The outward ends of the rail ribs and of the bifurcations of the frog point may be formed or arranged in any proper way for connection with the meeting ends of the rail-
 20 way track rails. This meeting may be secured by splice bars, or fish plates or otherwise.

From the foregoing description the use and application of my device will be readily
 25 understood.

In approaching what has been designated as the forward end of the frog, a train running upon the track rail which connects with either of the rail ribs 2 or 2' will necessarily
 30 have the flange of a wheel running on that track so positioned that on reaching the frog this flange will pass between its bifurcations and into the channel formed above the body plate proper by the opposed ribs 2
 35 and 2'. As the progress of this wheel continues and after the point *a* is reached, the contacting surfaces of this rib and of the tread of the wheel will gradually grow less as the rail rib slants outward. At last, on
 40 reaching the point *b* the rail rib will have so narrowed that the tread of the wheel will entirely leave the rail rib, but will immediately be transferred to the frog point 4, which, as already explained, has its outer
 45 edges in direct line with the forward inner edges of the respective rail ribs. The flange of this wheel will now pass along the appropriate side of the frog point, and the wheel will travel on to the track rail joined
 50 with the frog point.

It is the office of the guards 3 and 3' to insure the accurate and safe passage of the train wheels across the frog, and to provide a sure means for shifting the wheel flange
 55 out of contact with the rail rib upon which the wheel is traveling and into position upon the proper side of the frog point 4 at the point of transfer.

As the train wheel moves forward beyond
 60 the point *a* the contact of its flange with the vertical side of the rail head of the rib upon which the wheel is traveling ceases and there is nothing to guide this wheel, or its

mate traveling upon the opposite track, except the direct inertia of forward motion. 65 Unless some means is provided to take the place of the guiding contact of the rail head a lateral shift is possible on the part of these wheels, which may, and often does, cause train derailments through failure of 70 the wheel to pass directly from the rail head to the frog point in the proper manner. Ordinarily this danger is provided against by the use of an extra guard rail but the numerous accidents which have occurred at 75 switch crossings prove how unreliable such a means of safety is.

In my invention this guard rail is sup-
 planted by the guards 3 and 3'. Rising vertically above the treads of the rail ribs 80 with which they are formed, they act as shoulders against whose inner faces the outer sides of a wheel will bear as a result of any tendency on the part of the wheel to shift outward after point *a* is passed. The 85 vertical faces of these shoulders serve as guides and a train wheel in crossing the frog will be kept in proper position and will also be gradually, safely and without shock deflected from the rail ribs onto the frog 90 point. This latter result is accomplished by reason of the fact that at point 6 the inner vertical faces of the guards 3 and 3' are sufficiently near to the center of the frog to force the flange of a wheel whose outer 95 side may bear against either of these faces into a position where this flange must pass directly to one or the other sides of the frog point.

In the foregoing description the opera- 100 tion of my device has been set forth only in connection with a train approaching toward the forward end of the frog and from the rail ribs on to the frog point, but it is apparent without detailed description that the 105 offices of the various parts of this device are equally well performed when a train passes from the frog point on to one or the other of the rail ribs. In either case the shoulders of the portions 3 and 3' will hold the wheels 110 in proper relation to the ribs and frog point. So that there may be no danger of sudden contact between a wheel approaching over the frog point, and either the track ribs or the guarding shoulders, both the ribs 115 and the parts 3 and 3' slope outward after passing point *b*, as illustrated.

Having now fully described my invention, what I claim is—

A railway frog comprising in one integral 120 structure, a body portion, a frog point, divergent bifurcations extending from the body portion, rail ribs formed upon the bifurcations and upon the body portion, and guiding members also upon the bifurcations 125 disposed adjacent to the rail ribs and

adapted to prevent a lateral shift of train
wheels traveling upon the rail ribs, the rail
ribs converging to a point in advance of the
frog point, and diverging from this point
5 parallel with the sides of the frog point, and
the guiding members converging to a point
opposite the point of the frog point, and di-
verging from said point parallel with the
sides of the frog point, both the rail ribs and

guiding members being curved outwardly to 10
a common point at their forward ends.

In testimony whereof I affix my signature
in the presence of two witnesses.

GEORGE FERRIS JACKSON.

Witnesses:

S. P. POUNDERS,

JOHN A. COOK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."