E. C. PRICE & G. S. SHAW.

RAILWAY FROG.

APPLICATION FILED OCT. 2, 1909.

946,560.

Patented Jan. 18, 1910.

3 SHEETS—SHEET 1.

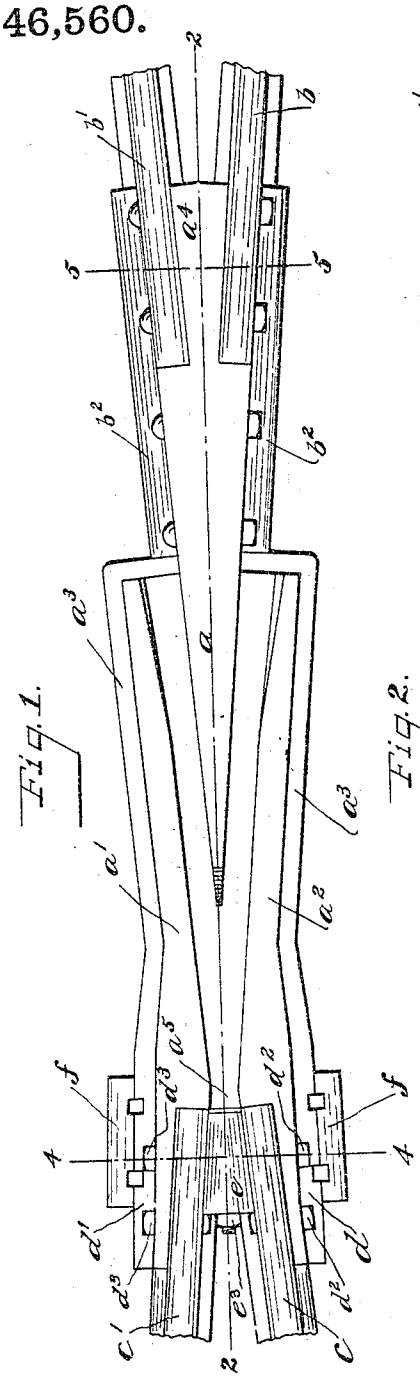

Fig. 1.

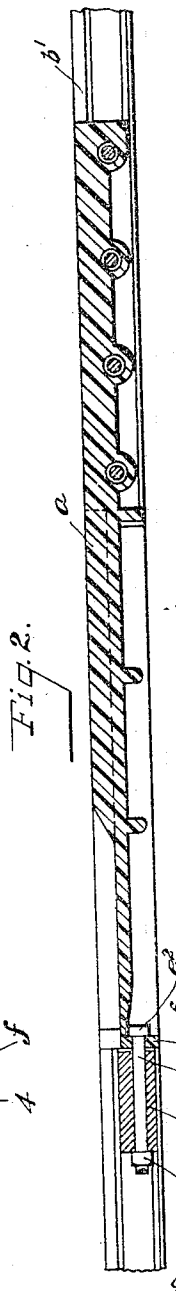

Fig. 2.

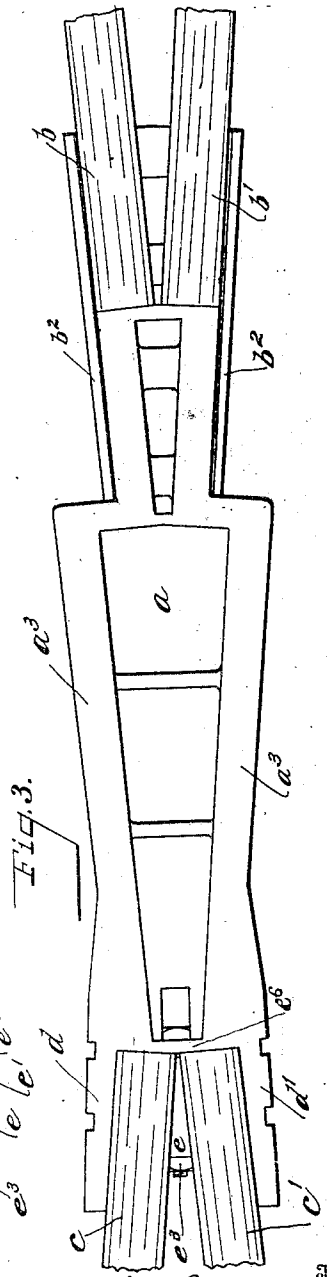

Fig. 3.

Witnesses

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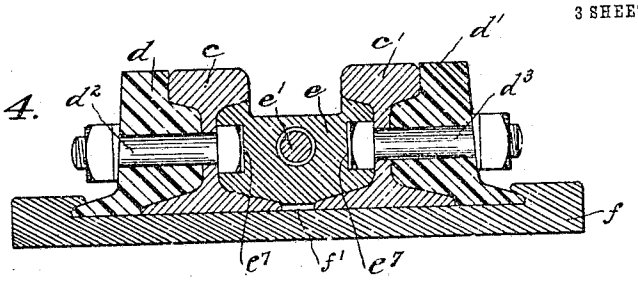
3 SHEETS—SHEET 2.

Fig. 4.



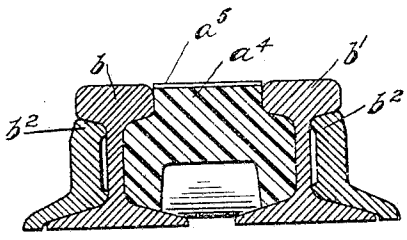


Fig. 5.

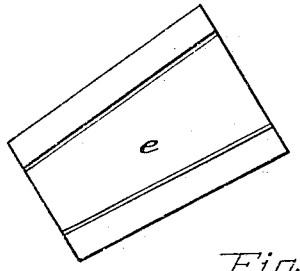
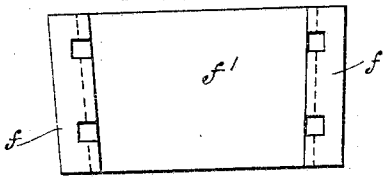


Fig. 6.

Fig. 8.



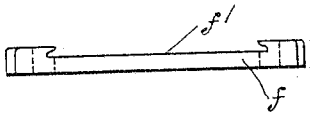


Fig. 9.

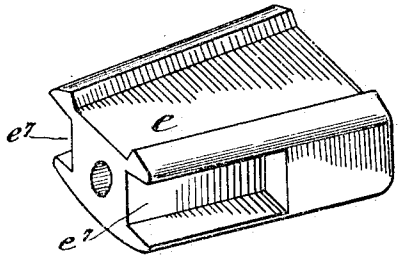


Fig. 7.

Witnesses
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RAILWAY FROG.

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3 SHEETS—SHEET 3.

Fig. 10.

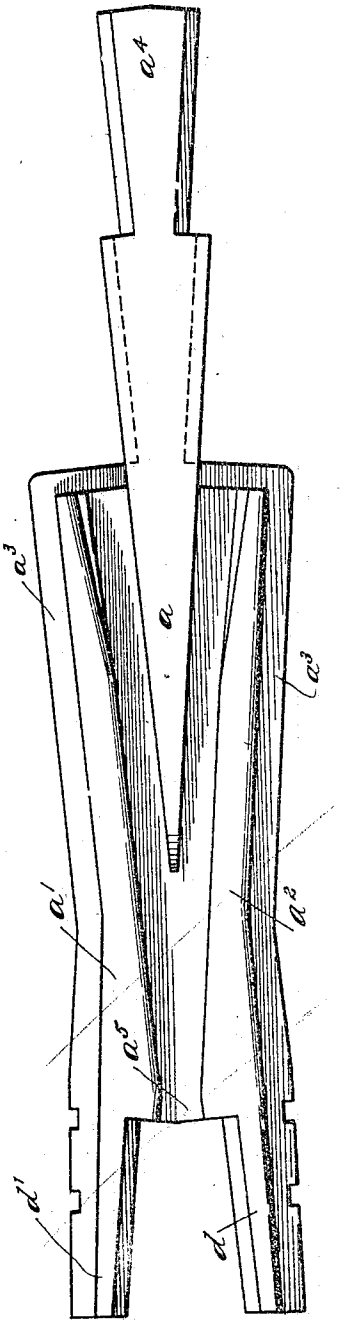
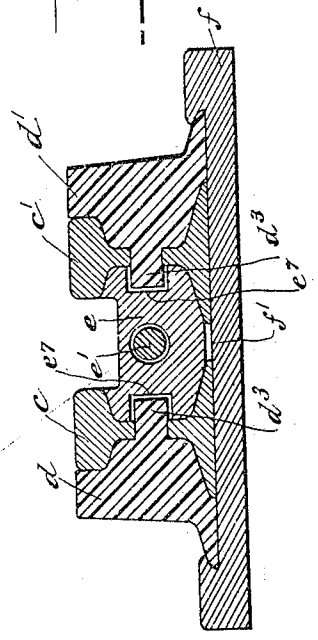


Fig. 11.



Witnesses

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UNITED STATES PATENT OFFICE.

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RAILWAY-FROG.

946,560. Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed October 2, 1909. Serial No. 520,728.

To all whom it may concern:

Be it known that we, EVAN C. PRICE and GEORGE S. SHAW, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

Our invention relates to improvements in railway frogs and it particularly relates to that class of frogs which are constructed of a hard metal.

An object of the invention is to provide an integral frog structure which is constructed of a hard metal such as manganese steel which will have the maximum utility and at the same time be constructed at the minimum cost.

A further object of the invention is to provide a frog structure which will permit of the connection thereto of full length main track rails without in any way altering the rails at the point of connection.

A further object of the invention is to provide a frog structure which may be quickly and cheaply installed and also one which will permit the renewal of the main line rails without disturbing the frog structure itself.

A further object of the invention is to provide a structure which will have no unprotected joints between the structure itself and the main line rails, so that there will be no wear or wheel impact at the joints for a distance of a full standard rail length in either direction and on each converging rail from the frog structure.

A further object is to connect the structure to the main track rails with the use of but one pair of standard angle bar splices instead of four, as is common.

A further object of the invention is to provide an integral frog structure of hardened material which will be of the minimum length to admit of the connection thereto of the main track rails without in any way altering said rails.

The invention consists in the constructions and combinations of parts hereinafter described and set forth in the claims.

In the accompanying drawings: Figure 1 is a top plan view of a frog structure embodying our invention. Fig. 2 is a longitudinal section of the same on the line 2—2 of Fig. 1. Fig. 3 is a bottom plan view of the same. Fig. 4 is a vertical section on the line 4—4 of Fig. 1. Fig. 5 is a vertical section on the line 5—5 of Fig. 1. Fig. 6 is a detail view of the clamping block. Fig. 7 is a perspective view of the same. Fig. 8 is a top plan of the base plate. Fig. 9 is an end view of the base plate. Fig. 10 is a top plan view of the integral frog structure with rails detached. Fig. 11 is a vertical section showing a modification.

Like parts are represented by similar characters of reference in the several views.

The point a, wing rails a' a^2, base or filler a^3 and riser block or splicing extension a^4 are all formed in one integral structure of hardened metal, such as manganese steel. The point a, is extended rearwardly or toward the heel of the structure to a distance such that the width of its base will be substantially the same as the combined widths of the bases of the main track rails, b b', as shown in Fig. 3. The heel of the point on each side of the riser block or extension is shaped to conform to the ends of the standard main rails, which are connected thereto so that no altering of the abutting ends of the rails will be necessary. The sides of the riser block or extension a^4 are conformed to the shape of the converging main track rails, b b', and these rails are spliced to said block or extension by standard angle bar splices b^2, these splice bars being also extended along and connected to the sides of the point a, which sides are of the same contour as the sides of the main converging track rails. The riser block or extension is tapered or inclined to receive the treads of the wheels as shown at a^5, Fig. 5, and said block or extension at the point where it leaves the heel of the point is of sufficient width such as to prevent the false flanges of the wheels from running upon the opposite rail, this width being at least the width of the tread of the rail, although it may be greater. As shown in Fig. 1, the width of the tread of the point at its extreme rear end is substantially equal to the combined widths of the heads or treads of the two main track rails, b and b', and the width of the tread of the riser block a^4 where it leaves the point, is approximately three times the width of the tread of one of the rails.

The forward end of the main body of the integral structure is terminated at a point where the width of the base thereof is sub-

stantially equal to the combined widths of the main track rails, c and c', as shown in Fig. 3, and is so shaped as to receive the ends of the standard main line rails without in any way altering said rails. Extending forwardly on each side of the main body of the structure are flanges or extensions d and d' which form in effect continuations of portions of the base a^3 and the wing rails a' and a^2. The inner side of each of these extended flanges is conformed to the shape of the main rails and the main rails are connected thereto by bolts d^2 and d^3 preferably two or three bolts for each rail, spaced apart to agree with the ordinary splice bar holes in the rails, which bolts are intended more particularly to hold the said rails from longitudinal displacement or creeping. In order to secure the rails against inward lateral displacement we have provided a wedge-shaped block e, the outer sides of which are conformed to the shape of the rails. A rod e' extending longitudinally through a web e^6 at the end of the main frog structure and also through the block e and provided with a head e^2 adapted to bear against said web and with a nut e^3 on its outer end, provides the preferable means for drawing this block up tightly between the rails, although it is obvious the other means might be used for retaining or tightening this block. In order to allow for adjustment of the block, the block will be of such length as to leave a space between it and the main body of the structure as shown in Fig. 1. The sides of the wedge-shaped block, e, are recessed as shown at e^7 to receive the heads of the bolts d^2 and d^3, thus permitting the block to be drawn up tightly and also securely locking the bolts in position. In place of these bolts, lugs or bosses d^5 may be cast on the inner sides of the extensions d and d', so spaced apart as to engage the holes in the rail. The block and the main rails form in effect a continuation of the wing rails, a^5, and the throat of the main structure and the block also acts as a foot guard and throat filler. The joints between the main track rails and the frog structure are protected by the hard metal extensions d and d' which are slightly inclined from their forward ends rearwardly and take the false flanges of the wheels. We preferably provide a further clamping device in the nature of a base plate f, provided with a wedge-shaped recess f' to receive the base of the main structure, the sides of the recess being formed at the same angle as the sides of the base of the main structure and of the extended flanges d or d'. The base of the main structure and of the extension and also the base plate are provided with registered spike notches so that the plate, after it is driven to a tight wedge fit, can be secured by spikes, or otherwise, which plate acts as a tie plate for the ends of the main track rails. When this entire structure is mounted on a continuous wrought plate, this clamping tie plate may be dispensed with and the forward end of the continuous plate be provided with a wedge-shaped recess, acting in the same manner.

By the construction described it will be seen that the integral hard metal structure is terminated at such points, both at the rear and forward ends, where it will be just the necessary width to receive the main track rails without in any way altering the rails, so that the frog structure may be readily installed in the track without the necessity of having any short rail sections incorporated within the structure itself. Further, when it is necessary to renew the main rails, new rails may be connected to the frog structure without the necessity of shipping the same to the factory, as would be the case where the frog structure is provided with short main line sections of special construction in integral frog structures of this kind.

The demand for and desirability of a manganese frog structure depends greatly upon its reasonable first cost and a minimum expense for its up-keeping. It will, therefore, be seen that we have provided a manganese frog structure which will have a maximum utility and at the same time the cost of constructing the same and its up-keeping will be kept at minimum and the structure approaches as near as possible an integral hard metal structure as can be utilized. By providing the special splicing features described we are enabled to shorten the frog structure and thus eliminate all unnecessary amount of manganese steel. Further this construction makes a much safer and a more durable substantial joint, permitting the installation of the same in connection with the full length track rails and also reducing the number of splices required. This structure not only admits of quick installation, but also provides for ready repairing without the necessity of shipping the frog structure back to the factory for renewal of any parts such as specially constructed short main rail sections. A structure is also provided in which there are no unprotected joints for a distance of the full standard rail length in each direction from the frog.

Having thus described our invention, we claim:

1. A railway frog structure consisting of an integrally formed base, point and wing rails, integral extensions on the forward end of said structure, and a wedge-shaped block for clamping the line rails to said extensions, substantially as specified.

2. A railway frog structure consisting of an integrally formed base, point and wing rails, integral extensions on the forward end of said structure, the inner sides of said ex-

tensions being shaped to conform to the contour of the line rails, and a wedge-shaped block for clamping said rails to said projecting portions, substantially as specified.

3. A railway frog structure consisting of an integrally formed base, point and wing rails, the forward end of said structure terminating at the point where the width of its base is substantially equal to the width of the converging line rails, an integral extension on either side of the forward end of said main body the inner sides of which are conformed to the shape of the line rails, and a wedge-shaped block for clamping said rails to said projecting portions, substantially as specified.

4. A railway frog structure consisting of an integrally formed base, point and wing rails, an integral extension on either side of the forward portion of said structure, engaging projections for said line rails on said extensions and a wedge-shaped block for clamping said rails on said extensions, substantially as specified.

5. A railway frog structure consisting of an integrally formed base, point and wing rails, an integral extension on either side of the forward portion of said structure, the inner sides of said extensions being conformed to the shape of the line rails, projections on said extensions for engaging with said rails, and a wedge-shaped block for clamping said rails to said extensions.

6. A railway frog structure consisting of an integrally formed base, point and wing rails, the main body of said structure terminating at a point where the width of its base is substantially equal to the widths of the two converging line rails, an integral extension on each side of the forward portion of said structure, the inner sides of said extension being conformed to the shape of the line rails, engaging projections on said extensions for said line rails, and a wedge-shaped block for clamping said rails to said extensions, substantially as specified.

7. A railway frog structure consisting of an integrally formed base, point and wing rails, an integral extension on each side of the forward portion of said structure, the inner sides of said extensions being conformed to the shape of the line rails, and a wedge-shaped block together with devices connected with said structure for drawing the same tightly between said rails to clamp the same to said extensions, substantially as specified.

8. A railway frog structure consisting of an integrally formed base, point and wing rails, an integral extension on either side of the forward portion of said structure, the inner sides of said extensions being conformed to the shape of the line rails, a wedge-shaped block together with devices connected with said structure for drawing the same tightly between said rails to clamp the same to said extensions, and projections on said extensions extending through said rails, substantially as specified.

9. A railway frog structure consisting of an integrally formed base, point and wing rails, said point being extended toward the heel of the structure to a place where the width of its base is substantially equal to the combined widths of the bases of the converging main line rails, the end of said point being conformed to the standard shape of said rails, a riser block integrally connected with said point and extending rearwardly therefrom between said rails, said block being of a width at the place where it leaves said point substantially equal to the width of the tread of the rail, substantially as specified.

10. A railway frog structure consisting of an integrally formed base, point and wing rails, said point being extended toward the heel of the structure to a place where the width of its base is substantially equal to the combined widths of the bases of the main converging line rails and being conformed to the standard shape of said rails, a riser block integrally connected with said point and extending rearwardly therefrom, said block being of a width at the place where it is connected to said point substantially equal to the width of the tread of a rail, and splice bars on each side of the point and connected to said point and to the rails for securing said rails to said riser block, substantially as specified.

11. A railway frog structure consisting of an integrally formed base, point and wing rails and an integral extension on each side of the forward portion of said structure, a wedge-shaped block insertible between said extensions to clamp the rails thereto, and a tie plate having a wedge-shaped recess, the sides of said recess being conformed to the shape of the sides of the forward base portion of said structure and of the said extensions and being adapted to be clamped directly thereto, substantially as specified.

In testimony whereof we have hereunto set our hands this 28th day of September 1909.

EVAN C. PRICE.
GEORGE S. SHAW.

Witnesses:
CHAS. I. WELCH,
WM. H. NUNNS.