

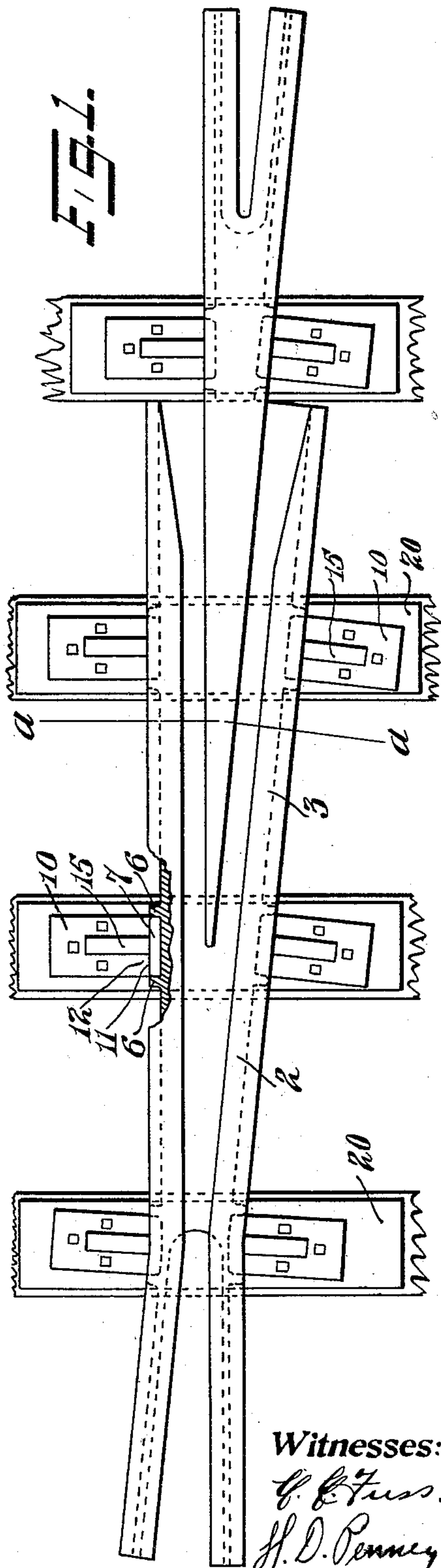
W. H. DOTTER & R. S. HAYS.

REVERSIBLE FROG.

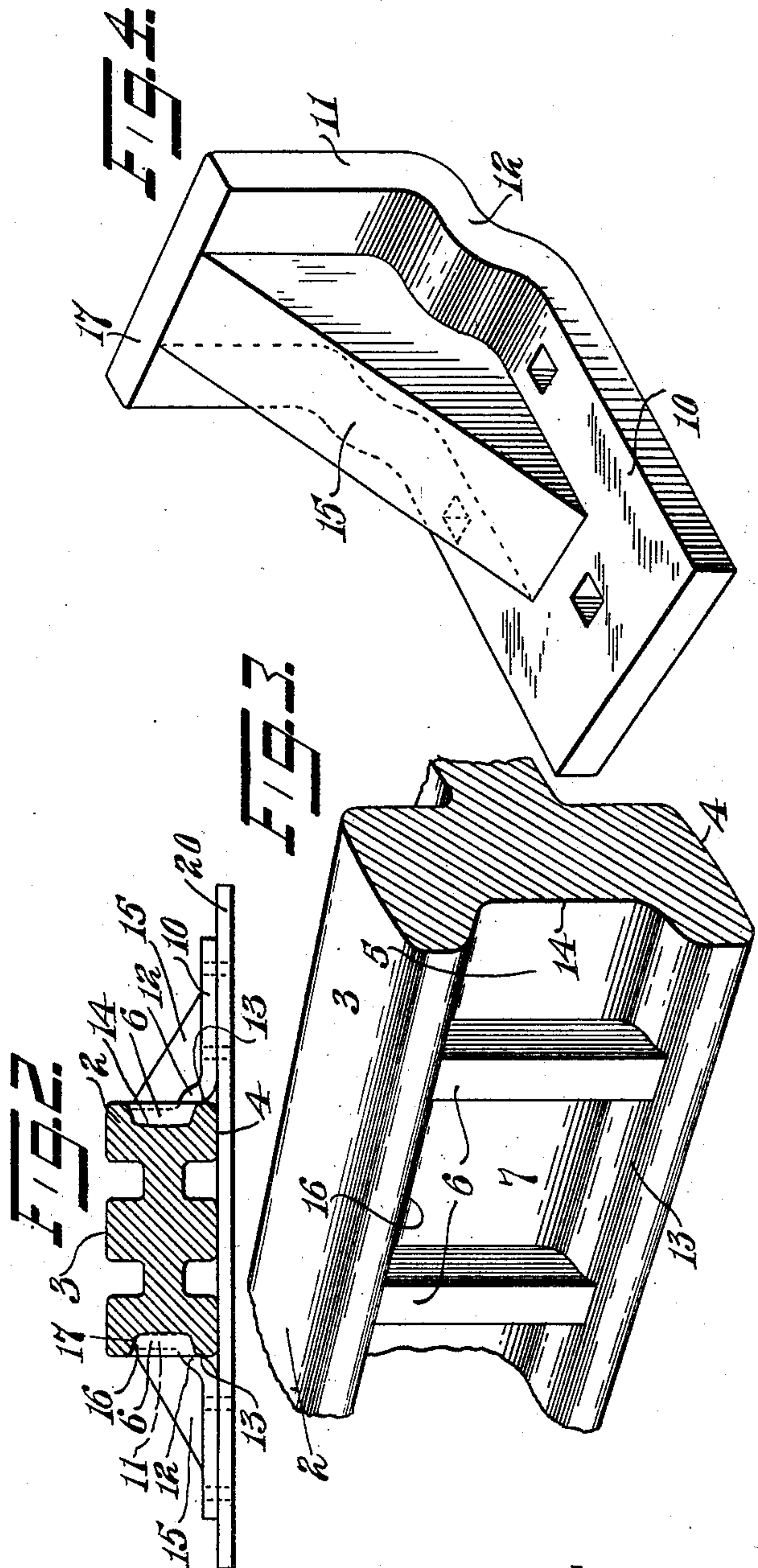
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UNITED STATES PATENT OFFICE.

WILLIAM H. DOTTER AND RAPHAEL S. HAYS, OF CARLISLE, PENNSYLVANIA, ASSIGNORS TO THE FROG, SWITCH & MANUFACTURING COMPANY, OF CARLISLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

REVERSIBLE FROG.

940,440.

Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that we, WILLIAM H. DOTTER and RAPHAEL S. HAYS, citizens of the United States, residing at Carlisle, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Reversible Frogs, of which the following is a specification.

The present improvement relates to reversible frogs and means for bracing the same, the object of the invention being to provide an improved reversible frog and brace therefor whereby the frog will not only be effectively braced against endwise as well as lateral movement or play, but is so connected to the ties that the frog can be readily reversed when wear on one side necessitates this.

In the drawings accompanying and forming a part of this specification, Figure 1 is a top view of this improved reversible frog, a part thereof in section, shown connected by these improved braces to a series of ties; Fig. 2 is a cross sectional view taken in line *a-a*, Fig. 1, looking toward the right; Fig. 3 is a perspective view of one portion of this improved frog; and Fig. 4 is a perspective view of this improved brace specially adapted for use with this improved frog.

Similar characters of reference indicate corresponding parts throughout the figures of the drawings.

In the embodiment shown the frog 2, which is preferably made of hard metal, such for instance as manganese steel, and of an integral structure, has its upper and lower rail or tread surfaces, 3 and 4 respectively, similarly formed, so that when the upper rail surface has become so much worn as to be unfit for further use the frog can be reversed. In the present embodiment the top and bottom rail surfaces, as stated, are the same in shape and size throughout, and this therefore produces a differently shaped recess or space 5 between such top and bottom rail surfaces from those which are ordinarily found in standard rails between the head and the base. Therefore, in order to properly brace the frog, we have provided it at each side, between the heads 3 and 4, and at proper intervals along the same, with ribs 6 cast integral with the

frogs. These ribs are spaced apart to form recesses 7 at intervals along the sides of the rail portions of the frog and at the outer sides of such frog. The ribs on one side of the frog in the present embodiment are shown located opposite to the ribs on the other side of the frog, whereby both sides of the frog may be braced to the same tie.

The braces in the present instance comprise a bottom plate 10 and an upright plate 11, connected together by a curved or rounded portion 12 conforming to the curved surface 13 of the rail at the inner side of the tread surface thereof, thereby to permit the upright plate 11 to fit snugly in its recess 7 between the ribs, which latter are shown as flush with the outer side faces 14 of the rail portions. The two plates of this angle iron brace are connected or braced by an inclined member or rib 15 formed or cast with such plates, the brace being preferably made of malleable iron.

By the construction described it will be observed that when the compromise splice bars connecting the frogs to the standard rails are removed it will be necessary only to take off the braces at one side of the frog in order to reverse the frog, and that, furthermore, by this improved construction of frog and brace the endwise movement or play, as well as lateral movement or play of the frog is prevented, since the braces, fitting snugly into the recesses formed by the ribs, are practically seated in sockets, each socket made up of a pair of ribs and the opposing faces 13 and 16 of the tread surfaces of the rail. Thus these braces not only act to prevent the endwise as well as lateral play, but by their mode of connection with the rails materially assist in supporting the rails, since the end surface 17 of the upper plate is in contact with the under wall 16 of the tread surface of the rail, and thus very materially tends to support and brace the same. Furthermore, these ribs not only form recesses or sockets for the braces, but they also reinforce and strengthen the rails, thus furnishing a much stronger and more durable rail than heretofore.

In practice the flat plates of the braces may be spiked through a supporting plate 20 secured to each tie, whereby the braces

of each tie will rest flatly and evenly in position upon the metal plate which extends under the frog.

We claim as our invention:

- 5 1. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving recess.
- 10 2. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving recess and each substantially flush with the
- 15 side faces of the tread surfaces of the rails.
3. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving
- 20 recess, and braces each having a part thereof fitting within one of said recesses.
4. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving
- 25 recess and each substantially flush with the side faces of the tread surfaces of the rails, and braces each having a part thereof fitting within one of said recesses.
- 30 5. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving recess, and braces each having a part thereof
- 35 fitting within one of said recesses, each of said braces comprising a bottom plate and an upright plate having a part shaped to conform to the curved inner surfaces of the rail portions and connected by ribs.
- 40 6. A reversible frog having along its rail portion reinforcing integral ribs located in pairs at intervals, the ribs of each pair being spaced apart to form a brace receiving recess and each substantially flush with the
- 45 side faces of the tread surfaces of the rail, and braces each having a part thereof fitting within one of said recesses, each of said braces comprising a bottom plate and an upright plate having a part shaped to con-
- 50 form to the curved inner surface of the rail portion and connected by a rib.
7. A hard metal reversible frog having duplicate rail head surfaces and provided at intervals along the same with reinforcing
- 55 integral ribs, each pair thereof spaced apart to form a brace receiving recess.
8. A hard metal reversible frog having duplicate rail head surfaces and provided at intervals along the same with reinforcing
- 60 integral ribs, each pair thereof spaced apart to form a brace receiving recess, and a brace for each of said recesses and comprising a bottom plate and an upright plate, the latter fitting snugly between said ribs.
9. A hard metal reversible frog having 65 duplicate rail head surfaces and provided at intervals along the same with reinforcing integral ribs, each pair thereof spaced apart to form a brace receiving recess, and a brace for each of said recesses and compris-
- 70 ing a bottom plate and an upright plate, the latter fitting snugly between said ribs and having its top edge in juxtaposition to the under surface of the rail head.
10. A hard metal reversible frog having 75 duplicate rail head surfaces and provided at intervals along the same with reinforcing integral ribs, each pair thereof spaced apart to form a brace receiving recess, and a brace for each of said recesses and comprising a
- 80 bottom plate and an upright plate, the latter fitting snugly between said ribs, the brace having its plates connected by an inclined brace rib.
11. A hard metal reversible frog having 85 duplicate rail head surfaces and provided at intervals along the same with reinforcing integral ribs, each pair thereof spaced apart to form a brace receiving recess, and a brace for each of said recesses and comprising a
- 90 bottom plate and an upright plate connected together by an inclined brace rib, the upright plate fitting snugly between said ribs and having its top edge in juxtaposition to the under surface of the rail head. 95
12. A hard metal reversible frog having each of its rails provided with duplicate heads and having at intervals along the
- outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of 100 each pair being spaced apart to form a brace receiving recess.
13. A hard metal reversible frog having each of its rails provided with duplicate heads and having at intervals along the 105 outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of each pair being spaced apart to form a brace receiving recess, and braces each having a part snugly fitting one of said recesses be-
- 110 tween each pair of ribs.
14. A hard metal reversible frog having each of its rails provided with duplicate heads and having at intervals along the 115 outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of each pair being spaced apart to form a brace receiving recess, and braces each having a part snugly fitting one of said recesses between each pair of ribs, each of said braces 120 comprising a bottom and an upright plate connected by a reinforcing rib.
15. A hard metal reversible frog having each of its rails provided with duplicate heads and having at intervals along the 125 outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of each pair being spaced apart to form a brace

receiving recess, the recesses at one side of the frog being opposite the recesses at the other side thereof.

5 16. A hard metal reversible frog having each of its rails provided with duplicate heads and having at intervals along the outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of each pair being spaced apart to form a brace
10 receiving recess, and braces each having a part snugly fitting one of said recesses between each pair of ribs, the recesses at one side of the frog being opposite the recesses at the other side thereof.

15 17. A hard metal reversible frog having each of its rails provided with duplicate

heads and having at intervals along the outer side of each rail portion a series of pairs of reinforcing integral ribs, the ribs of each pair being spaced apart to form a brace 20 receiving recess, and braces each having a part snugly fitting one of said recesses between each pair of ribs, each of said braces comprising a bottom and an upright plate connected by a reinforcing rib, the recesses 25 at one side of the frog being opposite the recesses at the other side thereof.

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