Sept. 23, 1958 R. G. SIMMONS ET AL 2,853,260

RIGID TRACK FROG

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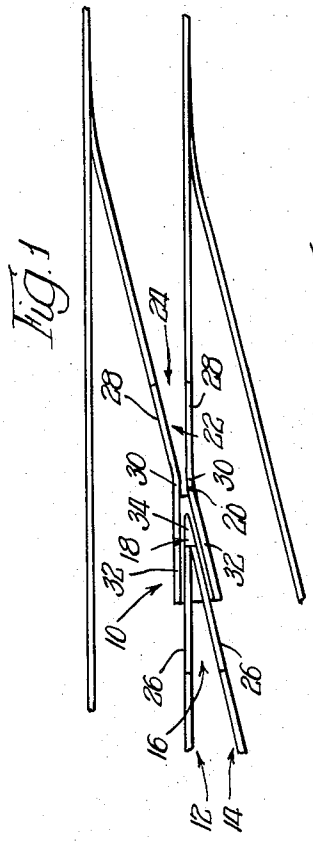

Fig. 1

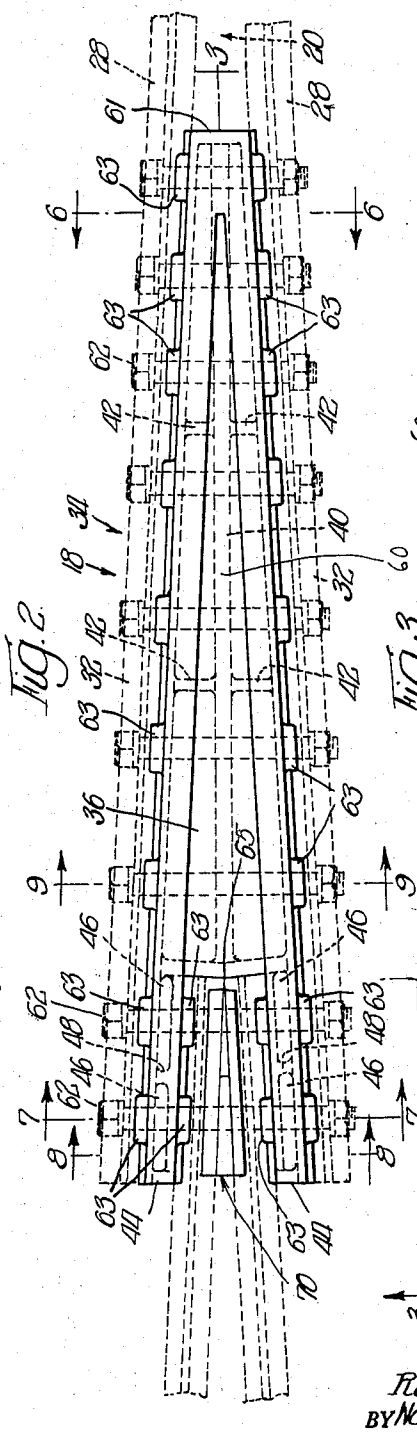

Fig. 2

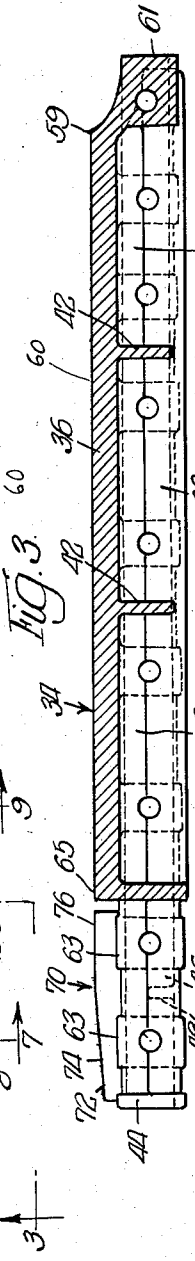

Fig. 3

Fig. 5

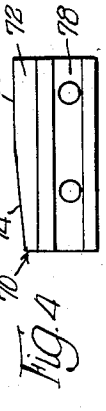

Fig. 4

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RIGID TRACK FROG

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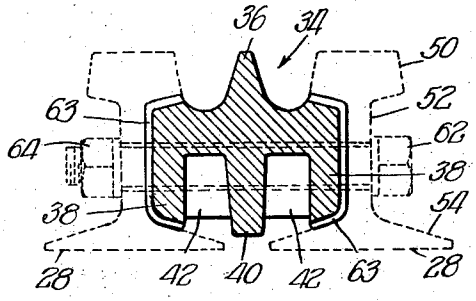

Fig. 6

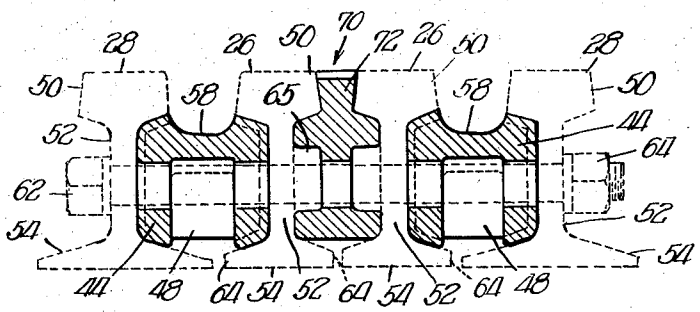

Fig. 7

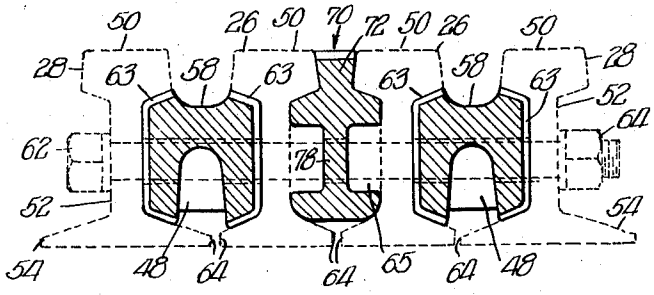

Fig. 8

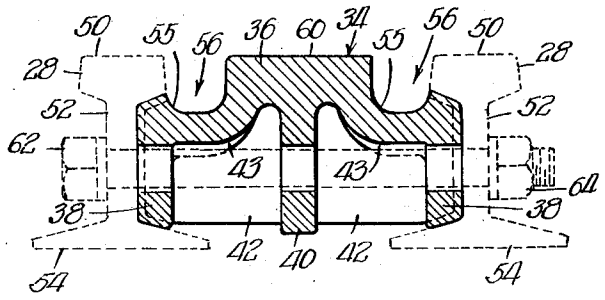

Fig. 9

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RIGID TRACK FROG

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2 Claims. (Cl. 246—468)

Our invention relates to a track frog of the rigid type, and more particularly, to a track frog of this type wherein the usual rail structure forming the tongue of the frog is replaced by an insert that performs all the functions of the frog tongue.

Conventional rigid track frogs generally comprise four pieces of rail properly shaped and rigidly held together by appropriate devices or means. The heel of the frog is formed by two of the rails, and the other two rails, which are known as wing rails, include portions that overlap and are on either side of the V formed by the heel forming rails, which merge into other portions that are aligned with the respective track, as is well known in the art. The heel forming rails are generally termed point pieces and both of these rails are planed or cut diagonally of the rail head to form the point of the frog tongue. One of the heel rails, known as the side or short point, is conventionally shorter than the other, and the longer rail, known as the main or long point, forms the point of the frog's tongue with the planed end of the side or short point rail abutting the side of said main or long point rail. The four rails are rigidly secured together to form the heel, tongue, throat, mouth, and toe of the frog.

A well known difficulty with frogs of this type is the failure of the frog tongue to stand up under heavy traffic. This is because the portions of the point pieces that form the tongue are weakened by being planed or otherwise formed into a point.

The principal object of our invention is to provide a rigid track frog including an insert in the form of a rigid unitary body that replaces the tapered portions of the point pieces that comprise the tongue of the frog.

Another important object of the invention is to provide a rigid track frog including a tongue made of a rigid unitary body to which the heel rails may be fixed and which eliminates the need for planing or otherwise cutting the heel rails to form tapered ends.

A further important object of the invention is to provide a rigid track frog including a tongue comprising a rigid unitary body which is readily adapted to be made fast to the heel rails and the wing rails.

Still a further important object of the invention is to provide a rigid bolted track frog including a rigid unitary body that forms the frog tongue and fillers of the frog, in which the elements of the frog are rigidly bolted together to unite the frog elements into an unusually strong, wear-resisting unit.

Other objects, uses and advantages will be obvious or become apparent from a consideration of the following description and the drawings.

In the drawings:

Figure 1 is a diagrammatic plan view illustrating a side track merging into a main track, with our invention applied thereto;

Figure 2 is a plan view of the insert that comprises the tongue of our track frog, with a filler element shown applied thereto and the flanges or bases and webs of the frog rails shown in dotted lines;

Figure 3 is a cross sectional view substantially along line 3—3 of Figure 2, with the frog rails and the central depending flange of the insert body omitted for clarity of illustration;

Figure 4 is a side elevational view of a filler element employed in our invention and shown in Figures 2 and 3;

Figure 5 is a cross sectional view of a further form of filler that may be employed in our invention;

Figure 6 is a cross sectional view along line 6—6 of Figure 2;

Figure 7 is a cross sectional view along line 7—7 of Figure 2;

Figure 8 is a cross sectional view along line 8—8 of Figure 2; and

Figure 9 is a cross sectional view along line 9—9 of Figure 2.

Reference numeral 10 of Figure 1 generally indicates a preferred form of our track frog shown in the usual position astride the main track 12 and the side track 14. The heel of the frog is generally indicated at 16, the tongue of the frog is generally indicated at 18, the throat of the frog is generally indicated at 20, the mouth of the frog is generally indicated at 22, and the toe of the frog is generally indicated at 24. The rails of the frog, being conventional in configuration, are shown in dotted lines in Figures 2 and 6–9.

As is well known in the art, track frog 10 generally comprises a pair of heel rails or point pieces 26 and a pair of wing rails 28. Ordinarily, the heel rails 26 are planed or cut diagonally of the rail head at their ends extending toward the frog throat 20 to form the frog tongue. As described above, one of the rails 26, known as the side or short point, is conventionally shorter than the other, and the longer rail, known as the main or long point, forms the point of a frog's tongue, with the planed end of the side or short point rail abutting the side of said main or long point rail. The main or long point rail is aligned with the main track, and hence, frogs made in this way are known conventionally as right hand or left hand frogs, depending on whether the side point piece is on the right or left hand side as one faces the right of the frog. The wing rails are bent as at 30 to the angle illustrated and the angle portions 32 of the rail 28 overlap the rails 26 approximately as shown in Figure 1 to form wheel flange guard portions.

In rigid frogs of the illustrated type, all parts are rigidly connected together. In accordance with conventional practices, they may be connected together by placing fillers or filler blocks between the pieces of rails and holding them together with bolts passing through them and the webs of the rails, or by riveting the flanges of the rails to a plate and fixing the plate into position, or by employing clamps or clamps and wedges.

The illustrated frog is of the rigid bolt type, though the invention is applicable to other types of frogs.

In accordance with our invention, the portions of heel rails 26 that are tapered to form a tongue 18 of the frog are eliminated, and the rigid insert body 34 is employed or substituted for these tapered portions of rails 26.

The rigid body 34 is generally of inverted pan shape and comprises a tongue in the form of a roof or top 36 (see Figures 2, 6, and 9), depending straight-sided side walls 38, a longitudinally extending depending central support web or flange 40, and transversely extending webs or flanges 42 that interconnect the flange 40 and wall 38 as indicated in dotted lines in Figure 2. Ribs or webs 43 (see Figure 9) may be employed inside the body 34 for strengthening purposes. The body 34 has a generally wedged shaped configuration, and the frog heel end of this body terminates in a pair of outwardly extending projections or arms 44 that are respectively

parallel to the converging sides of the body 34. As shown in Figure 3, the arms 44 are formed with longitudinally extending recesses 46 separated by webs 48.

As seen in Figures 6–9, the side walls 38 and arms 44 are formed to conform to the internally recessed portion or web pocket defined by the heads 50, webs 52, and bases or flanges 54 of the frog rails 26 and 28. The top surfaces of the side walls 38 of body 34 merge into generally concave grooves 55 in the top of the body 34 that define flangeways 56 that receive the flanges of railroad car wheels. The arms or legs 44 are also formed with curved grooves 58 that likewise form flangeways for the same purpose. The relatively flat top of roof 36 forms a tread surface 60, which terminates at 59 to form the point of tongue. The flangeways merge at this point; it will be noted that the body 34 extends to the point of frog indicated on the drawings at 61.

As shown in the drawings, the illustrated body 34 including arms or legs 44 is formed with a plurality of bolt holes adapted to receive conventional bolts 62 which, together with nuts 64, rigidly bind the rails 26, 28, and body 34 together. In the embodiment illustrated, the body 34 is formed about its bolt holes with enlargements 63 which are the portions that contact rails 26 and 28, respectively.

In accordance with our invention, the shortened and squared off ends of rail 26 are received between arms 44, they being positioned so that the heads 50 of the two rails will abut each other adjacent the base 65 of body 34. It will be necessary to shear the bases 54 of these rails somewhat, as shown at 64 in Figures 7 and 8. We prefer to interpose a filler body 70 (see Figure 4) between the portions of rails 26 that are received between the arms 44. As shown in Figure 7, the filler 70 generally comprises an elongate element having a generally "I" shaped configuration with a ridge 72 extending from the top of the "I," which ridge 72 is formed with an upwardly inclined surface 74 that merges into a substantially level surface 76 in the direction of the frog tongue. The web 78 of element 70 is formed with appropriate bolt holes to receive the bolts 62 employed at this end of the device.

Figure 5 illustrates another form of filler 80 comprising an elongate element having a generally H-shaped configuration in which the sides of the element are shaped to conform to the generally concave sides of rails 26. Element 80 is also appropriately formed with bolt holes to receive the necessary bolts 62 and in use is employed where body 70 is shown in Figures 2, 7 and 8.

In assembling frog 10, the rails 26 and 28 are positioned with respect to each other in the usual manner though, of course, the tapered portions of rail 26 are eliminated. The shortened ends of rail 26 with a filler 70 or 80 positioned therebetween are received between the arms or projections 44 of the body 34, and the body 34 is positioned between the angled portions 32 of wing rails 28 approximately as shown in Figure 2. The rails 26 and 28 are appropriately formed with bolt holes to receive bolts 62, and with nuts 64 applied as shown in the drawings, and drawn tight, the body 34, rail 28, the fillers 70 or 80, and the rail 26 are rigidly secured together to form a rigid unit. This unit may be laid in operating position in any conventional manner.

Our invention has a number of important advantages. For instance, no deformation of the heads of the rails making up our track frog is required; this is very important as the railroad car wheels bear directly on the rail heads and it is desirable to have as large a bearing area as possible. In our invention, this bearing surface is not reduced or cut down by deformation of the rail head.

The insert body 34 is a one piece element, and is not made up of separate elements that are rigidly united. The body 34 being a one piece element, is inherently much stronger than any two or more piece structure could be even though the pieces of such multi-piece structure are rigidly secured together. The cast insert body 34 of the illustrated embodiment takes the place of the tongue and channel filling or filler bars usually employed in rigid bolted frogs.

It will be noted that the apex of body 34 is in contact with both of the rails 28 adjacent the throat of the frog, which, together with the long line of contact of the body 34 with the portions 32 of rails 28, insure that if the wing rails are depressed at all under a load they are depressed together.

The central flange 40 of body 34 and the transverse flanges or webs 42 greatly strengthen the body 34 and eliminate the necessity of making the body 34 solid with consequent savings of material.

The rails 26 and 28 may be standard track rails, and the body 34 preferably comprises a cast alloy steel element. The fillers 70 and 80 may be rolled or cast steel bodies. And, as already indicated, the main portion of the body 34 preferably is of sufficient length to extend between the ends of rails 26 and the point of frog, or the theoretical point.

Our track frog provides an extremely strong unit which is particularly adapted for yard service, where heavy switching occurs twenty-four hours a day. Tests have shown that frogs made in accordance with our invention have stood up several times longer than conventional frogs.

The foregoing description and the drawings are given merely to explain and illustrate our invention, and the invention is not to be limited thereto, except insofar as the appended claims are so limited since those skilled in the art who have our disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

We claim:

1. An insert, for combination with a track frog arrangement that conventionally defines a point and a heel, said arrangement including a pair of generally lengthwise extending heel rails converging toward the point of said frog and terminating adjacent the heel of said frog in substantially transverse end faces having full width head sections, and a pair of wing rails extending generally oppositely of said heel rails and having intermediate length portions converging toward said frog point and having end portions thereof extending beyond said frog point and diverging to extend in generally parallel flanking relation with said pair of heel rails, each wing rail having a head and a flange interconnected by a vertical web to define lengthwise extending web pockets; said insert comprising a rigid, generally wedge-shaped body of inverted pan construction having an upraised lengthwise extending central frog tongue providing a tread surface at substantially the same elevation as that of the heel rails, said tongue having a heel end and a pointed toe end, said insert including a lengthwise extending internal reinforcing web supporting said tongue, said insert including filler webs disposed adjacent and beneath the upper extremity of said tongue and each terminating transversely in a straight-sided depending wall adapted for reception in the web pocket of the end portion of one of said wing rails for spacing the same uniformly from said tongue to define a flangeway bordered on one side by said tongue and on the other side by at least a part of said last-mentioned end portion, said filler webs being in merging flanking relation to said tongue, said tongue terminating at the heel end thereof in a vertical abutment surface adapted for flush abutting engagement with the end faces of said heel rails, and said insert including integral extensions of said filler webs and said depending walls at the heel end of said tongue, each extension also including a second depending wall integral with the filler web thereof and in parallel spaced relationship to the other depending wall thereof, said extensions extending between and transversely spacing said wing and heel rails to form a flange-

way between each heel rail and the wing rail adjacent thereto, with each of said last-mentioned flangeways being bordered on one side by one of said wing rails and on the other side by one of said heel rails.

2. The insert of claim 1 wherein said rigid body includes a plurality of longitudinally spaced, generally transversely extending, internal reinforcing webs between said depending walls and said tongue.

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