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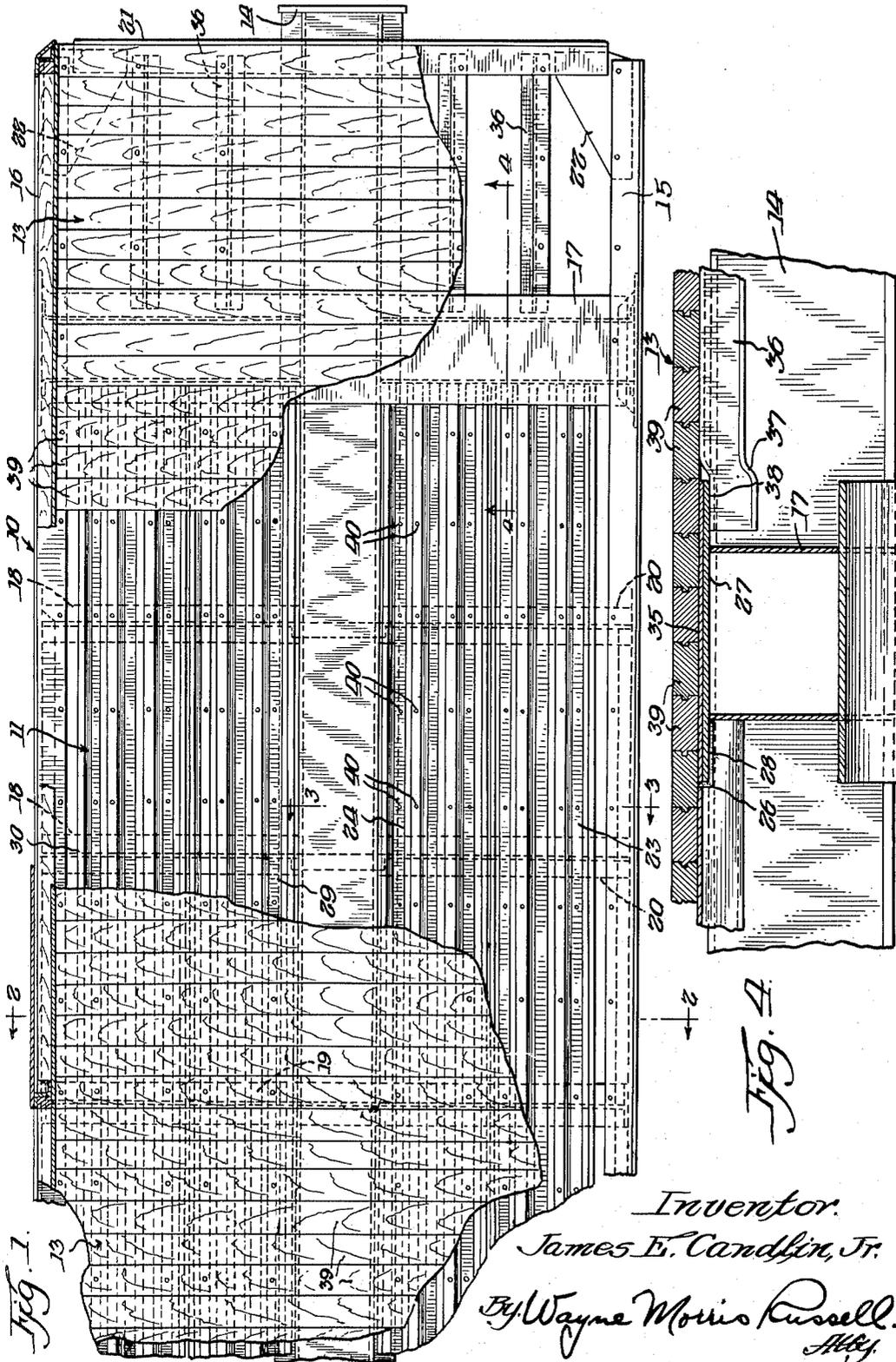
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2,752,865

RAILWAY CAR UNDERFRAME CONSTRUCTION

Filed Nov. 29, 1951

2 Sheets-Sheet 1



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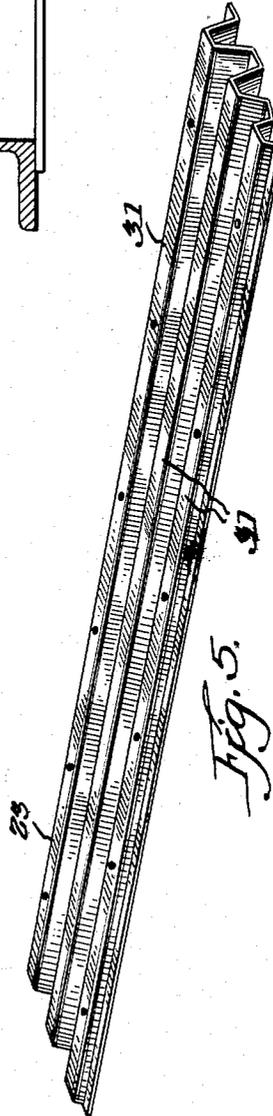
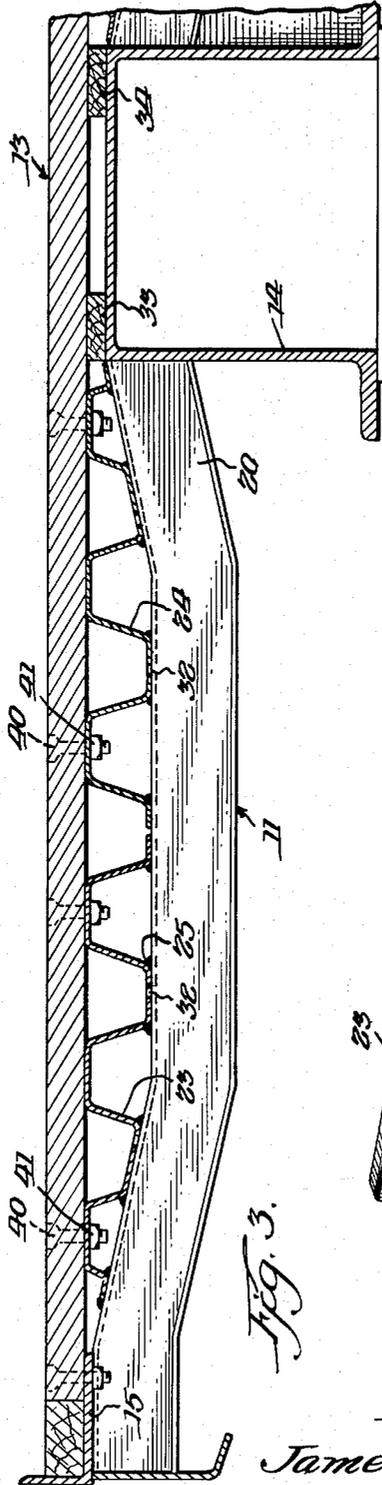
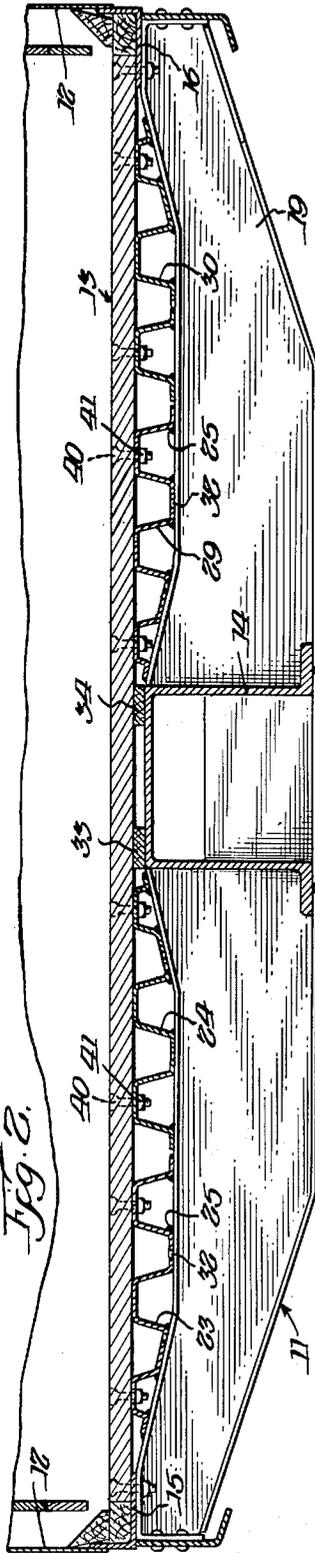
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RAILWAY CAR UNDERFRAME CONSTRUCTION

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2 Claims. (Cl. 105—414)

This invention relates to floors for railway freight cars and is primarily concerned with a novel floor supporting arrangement for a railway freight car in which the floor supporting elements are interchangeable with each other.

The principal object of the invention is to provide in combination with a railway freight car underframe having a center sill and a side sill and cross members extending between the side sill and the center sill, a pair of stringers positioned in side by side relation and extending longitudinally of the underframe on the cross members, and wooden flooring extending transversely of the underframe positioned upon the stringers and secured thereto, the stringers being interchangeable with each other.

Another object of the invention is to provide in combination with a railway freight car underframe having a center sill and a side sill and cross members extending between the center sill and side sill, a pair of stringers positioned in side by side relation and extending longitudinally of the underframe on the cross members and secured thereto and provided with longitudinally extending corrugations therein, and wooden flooring extending transversely of the underframe upon the pair of stringers and secured thereto, the pair of stringers being interchangeable with each other.

An important object of the invention is to provide in combination with a railway freight car underframe having a center sill and a pair of side sills and cross members extending between the center sill and side sills, a pair of stringers positioned in side by side relation extending longitudinally of the underframe between one of the side sills and the center sill and secured to the cross members, a pair of stringers positioned in side by side relation with each other and longitudinally of the underframe between the center sill and the other side sill and secured to the cross members, and wooden flooring extending transversely of the underframe positioned upon the stringers and secured thereto, each of the stringers being interchangeable with the other.

A further object of the invention is to provide in combination with a railway freight car underframe having a center sill and a pair of side sills and cross members extending between the center sill and side sills, a pair of stringers positioned in side by side relation longitudinally of the underframe between one of the side sills and the center sill and secured to the cross members, a pair of stringers positioned in side by side relation and longitudinally of the underframe between the center sill and the other side sill and secured to the cross members, each of the stringers being provided with longitudinally extending corrugations therein, and wooden flooring extending transversely of the underframe upon the stringers and secured thereto, each of the stringers being interchangeable with the other.

A more specific object of the invention is to provide in combination with a railway freight car underframe having a center sill and a pair of side sills and a pair of spaced bolsters extending between the center sill and the

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side sills and cross members positioned between the bolsters and extending between the center and side sills, a pair of stringers each having one side positioned in side by side relation with respect to the other and extending longitudinally of the underframe between one of the side sills and the center sill and extending between the bolsters and secured to the cross members and the bolsters, a pair of stringers each having one side positioned in side by side relation with respect to the other and extending longitudinally of the underframe between the center sill and side sills and extending between the bolsters and secured to the cross members and the bolsters, each of the stringers being provided with longitudinally extending corrugations and the corrugations in each gradually decreasing in size from said one side thereof to the other, and wooden flooring extending transversely of the underframe positioned upon the stringers and secured thereto, each of the stringers being interchangeable with the other.

A still further object of the invention is to provide a stringer for the underframe of a railway freight car in the form of a plate having corrugations extending in one direction on the plate and decreasing in size in a direction transversely of the first named direction.

The foregoing and other objects of the invention are attained by the construction and arrangement illustrated in the accompanying drawings wherein—

Fig. 1 is a fragmentary horizontal sectional view of a railway box car taken through the lower part thereof and showing the flooring broken away to expose the floor supporting arrangement;

Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1 showing the floor supporting arrangement supported on one of the crossbearers;

Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 1 showing the floor supporting arrangement supported on one of the crossties;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1 through one of the bolsters; and

Fig. 5 is a perspective view of one of the corrugated stringers making up the floor supporting arrangement.

The invention proposes a floor supporting arrangement for a railway freight car including longitudinal stringers in the form of plates having longitudinally extending corrugations therein and positioned on the cross members of the underframe of the car between the side sills and the center sill and extending between the bolsters and secured to the cross members and the bolsters. Wooden flooring extends transversely of the underframe and is positioned upon the stringers and is secured thereto. Each of the stringers is interchangeable with any of the others which makes the arrangement highly economical.

In the drawings, 10 generally designates a railway box car having an underframe 11, side walls 12, and a wood floor 13. The underframe 11 is comprised of a center sill 14 and a first side sill 15 is spaced from the center sill on one side thereof, and a second side sill 16 is spaced from the center sill on the other side thereof, and a pair of spaced bolsters 17 extend between the first side sill and the center sill and the second side sill and are secured to the side sills by riveting and to the center sill by welding. A plurality of spaced cross members 18 in the form of crossbearers 19 and crossties 20 are positioned between the pair of bolsters 17 and extend between the side sills 15 and 16 and the center sill 14 and are all secured to the side sills and center sill both, by welding. End sills 21 traverse the center sill and extend between the side sills and gusset plates 22 are welded to the end sills and side sills at their points of intersection to secure the side sills and end sills together.

A pair of stringers 23 and 24 each have one side positioned in side by side relation with respect to each other and are arranged longitudinally of the underframe

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11 on the crossbearers 19 and the cross ties 20 between the side sill 15 and the center sill 14 and extend between the bolsters 17 and are secured to the crossbearers and cross ties by welds 25. The stringers 23 and 24 are cut away at their ends as at 26 and are welded to the bolsters or more specifically to the bolster top cover plate 27 by welds 28. A second pair of stringers 29 and 30 similarly each have one side positioned in side by side relation with respect to each other and the stringers are arranged longitudinally of the underframe 11 on the crossbearers 19 and cross ties 20 between the center sill 14 and the side sill 16 and extend between the bolsters 17 and are secured to the crossbearers and cross ties by welds 25. The stringers 29 and 30, like the stringers 23 and 24 are cut away at their ends and welded to the top bolster cover plate 27 by welds 28.

Each of the stringers 23, 24, 29, and 30 is in the form of an elongated metal plate provided with longitudinally extending corrugations 31 extending continuously from one end of the plate to the other as best shown in Fig. 5. The corrugations in the stringer 23 which is adjacent the side sill 15 gradually decrease in size or depth from that side thereof adjacent the center sill to the other side thereof, and the corrugations in the stringer 24 which is adjacent the center sill 14 gradually decrease in size or depth from the side thereof adjacent the side sill 15 to the other side thereof, and the corrugations in the stringers 29 and 30 similarly gradually decrease in size or depth from one side thereof to the other. Each of the stringers 23, 24, 29, and 30 has a width approximately equal to one-half of the distance between the respective side sill and the center sill. The stringers 23, 24, 29, and 30 are all provided with drain holes 32 therein to drain off any moisture that may collect. Wood fillers 33 and 34 are positioned on the top of the center sill 14 and extend between the bolsters 17 and a wood filler 35 is positioned on the top of the center sill at the place where each bolster intersects the center sill and serve to support the floor 13.

A plurality of Z-shaped stringers 36 extend between each end sill 21 and the adjacent bolster 17 and are welded to the underface of the horizontal flange of the end sill and are offset at 37 and welded to the underface of the bolster top cover plate 27 by welds 38. The floor 13 is composed of a plurality of wooden boards 39 arranged in side by side abutting relation and extending transversely of the underframe 11 and supported upon the horizontal flange of the side sill 15, the stringers 23 and 24, the wood fillers 33, 34 and 35 on the center sill, the stringers 29 and 30, and upon the horizontal flange of the side sill 16. Floor bolts 40 extend through the boards 39 and the corrugations in the stringers 23, 24, 29, and 30 and nuts 41 are threaded onto the bolts. Some of the bolts 40 extend through the boards 39 and the horizontal flanges of the side sills while other of the bolts 40 extend through the boards and the horizontal flanges of the side sills and through the top flange of the crossbearers and still other of the bolts 40 extend through the boards and the stringers 36. The stringers 23, 24, 29, and 30 are interchangeable with each other. It is to be noted that the stringers 23, 24, 29, and 30 are supported directly upon and are in bearing contact with and are welded to the cross members and the floor rests upon all of the stringers.

The interchangeability of the stringers 23, 24, 29, and 30 makes the floor supporting arrangement highly economical and since the stringers bear directly upon the cross members an improvement in floor strength is gained over existing constructions in that the wooden flooring is supported at more closely spaced locations. The floor is supported by the horizontal flanges of the side sills, the center sill, and by every corrugation in all of the stringers and the distances between the side sills and the stringers and between the center sill and the stringers are small and the large number of corrugations provided by the four stringers means that the floor is supported at

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a greater number of places as compared to the number of supports in existing constructions. It is to be noted that the floor, the stringers, the cross members, the center sill, and the side sills, are all interconnected and due to this interconnection of all parts it is possible to distribute concentrated loads to more of the adjacent structure of the car than is now possible, all of which effects a further improvement in strength of the underframe construction and floor. The edges of the supporting surfaces, meaning the edges of the corrugations, are inherently rounded as a natural result of their manufacture thereby eliminating sharp corners which would imbed into and weaken the wooden flooring. Each of the stringers may be easily pressed from a flat sheet of metal.

From the foregoing it will be seen that there has been provided a novel floor supporting arrangement for a railway freight car which has the floor supporting elements interchangeable with each other, thus assuring a highly economical arrangement, which supports the floor at a greater number of locations and consequently over shorter spacings than existing constructions, which has all parts interconnected enabling the distribution of a substantial part of the concentrated loads to the adjacent structure of the car effecting a further improvement in strength, which has all supporting surfaces rounded thus eliminating sharp corners which might imbed into and weaken the wooden flooring, and which has floor supporting elements that can be easily pressed from a flat sheet of metal.

What is claimed is:

1. In a railway freight car having an underframe including a center sill, a side sill spaced from the center sill, and a plurality of longitudinally spaced cross members extending between and secured to the side and center sills, each of said cross members having an upper surface which is concavely curved symmetrically on opposite sides of its central vertical plane, a pair of identical stringers positioned in side by side relation with one side of each adjacent to a side of the other, said stringers being arranged longitudinally of the underframe on said surface of the cross members between the side and center sills and secured to the cross members, each of said stringers being provided with longitudinally extending corrugations, the corrugations in the stringer adjacent said side sill gradually decreasing in depth from said one side thereof to the other side and the corrugations in the stringer adjacent the center sill gradually decreasing in depth from said one side to the other side thereof, and a plurality of flooring members arranged in side by side relation with and extending transversely of said underframe upon said stringers and secured thereto, said pair of stringers being interchangeable.

2. In a railway freight car having an underframe including a center sill, side sills spaced respectively from opposite sides of said center sill, a pair of spaced bolsters extending between the side sills and the center sill and secured thereto and a plurality of longitudinally spaced cross members positioned between the bolsters and extending between the center sill and said side sills and secured thereto, each of said cross members having an upper surface which is concavely curved symmetrically on opposite sides of its central vertical plane, a pair of identical stringers positioned in side by side relation arranged longitudinally of the underframe on said surface of the cross members between the center sill and one of the side sills and extending between the bolsters and secured to the cross members and bolsters with one side of each adjacent to a side of the other, a second pair of stringers identical with said first pair positioned in side by side relation arranged longitudinally of the underframe on said surface of the cross members between the center sill and the other side sill and extending between the bolsters and secured to the cross members and the bolsters with one side of each adjacent to a side of the other and each of the stringers having a width approximately equal

to one-half the distance between the respective side sills and the center sill, each of said stringers being provided with longitudinally extending corrugations therein and the corrugations in the stringers decreasing in depth from said one side thereof to the other side thereof, and a plurality of flooring members arranged in side by side relation extending transversely of the underframe upon said stringers and secured thereto, all of the stringers being interchangeable with each other.

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