Oct. 29, 1935. W. J. HYMAN 2,018,854

RAILWAY CAR TRUCK

Filed Feb. 24, 1933 4 Sheets-Sheet 1

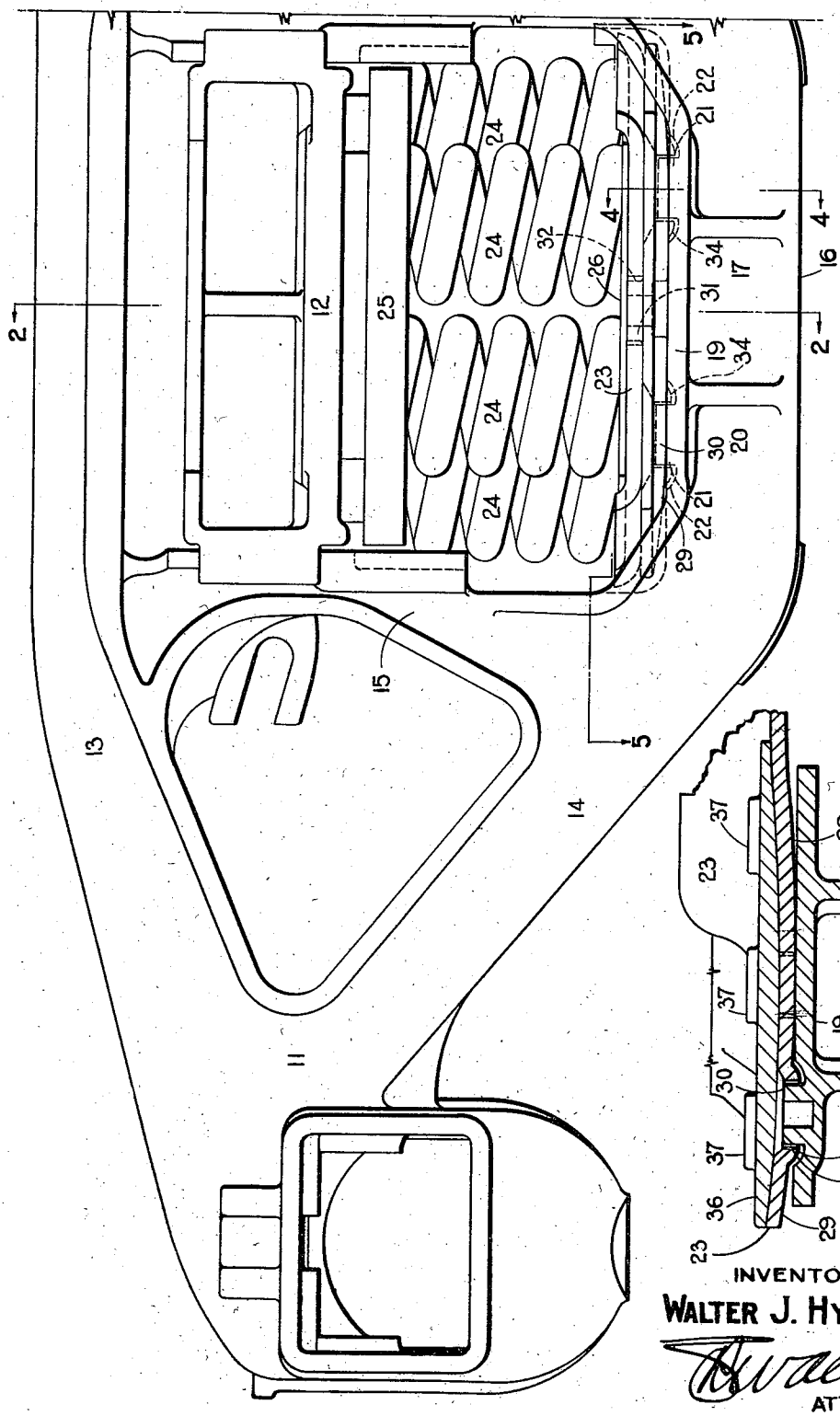


FIG. 1.

FIG. 8.

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Oct. 29, 1935. W. J. HYMAN 2,018,854

RAILWAY CAR TRUCK

Filed Feb. 24, 1933 4 Sheets-Sheet 2

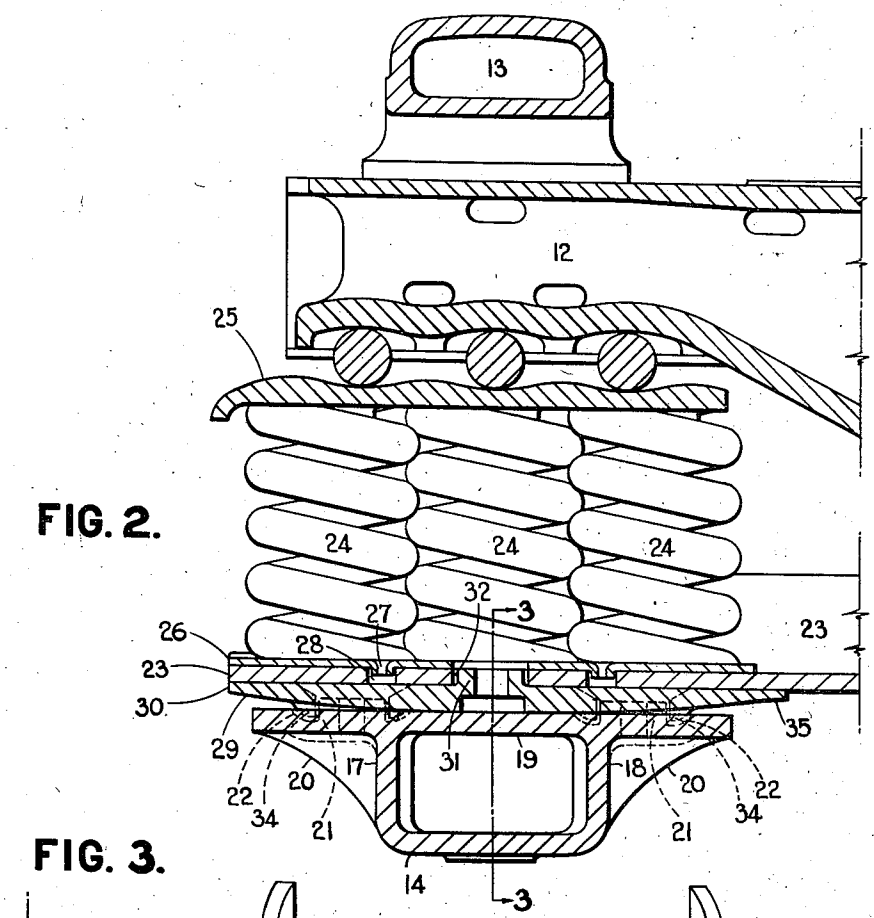
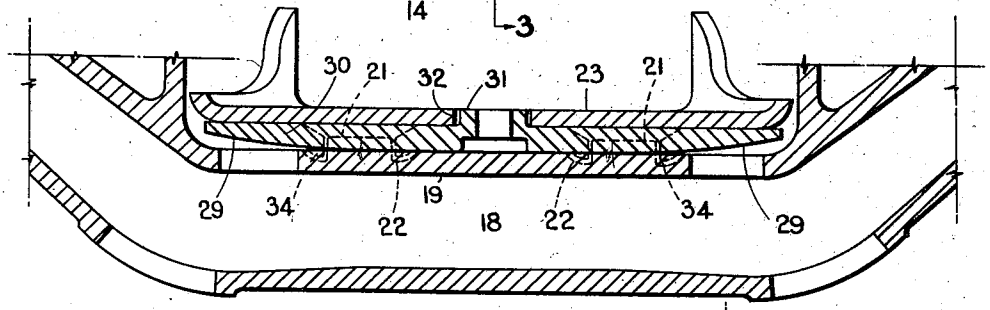


FIG. 2.

FIG. 3.



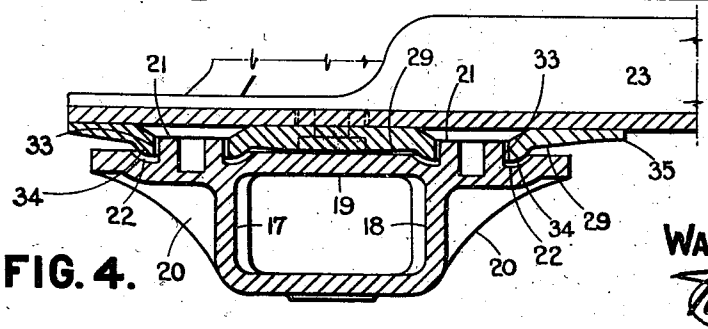


FIG. 4.

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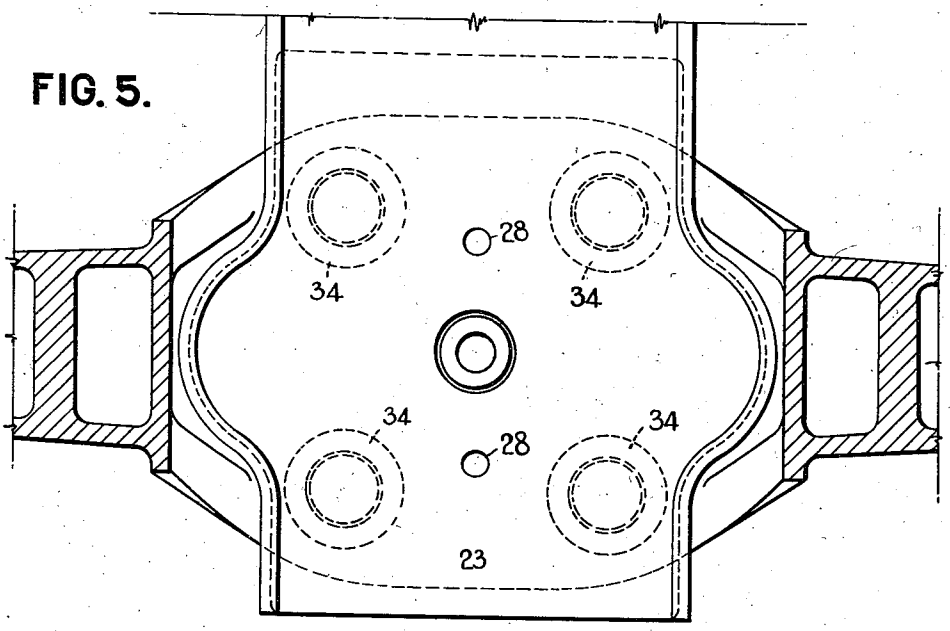
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Oct. 29, 1935. W. J. HYMAN 2,018,854

RAILWAY CAR TRUCK

Filed Feb. 24, 1933 4 Sheets-Sheet 3

FIG. 5.



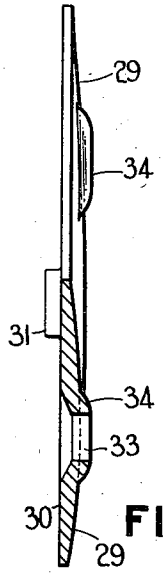


FIG. 7.

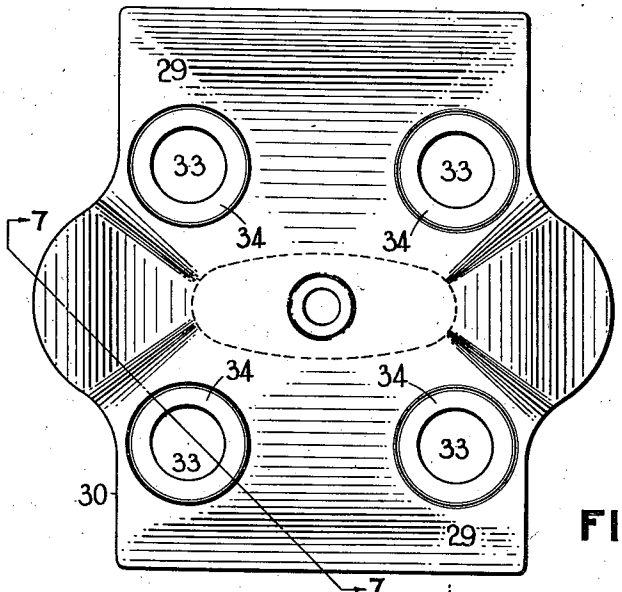


FIG. 6.

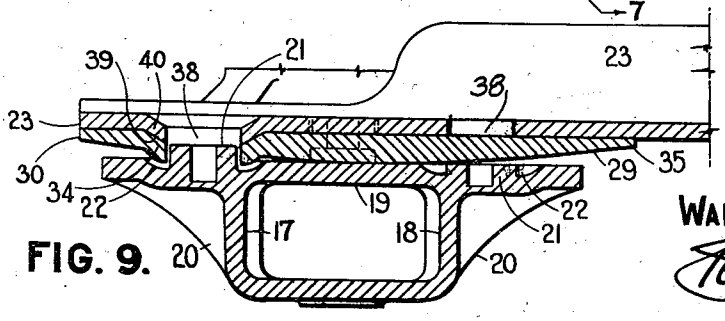


FIG. 9.

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Oct. 29, 1935. W. J. HYMAN 2,018,854

RAILWAY CAR TRUCK

Filed Feb. 24, 1933 4 Sheets-Sheet 4

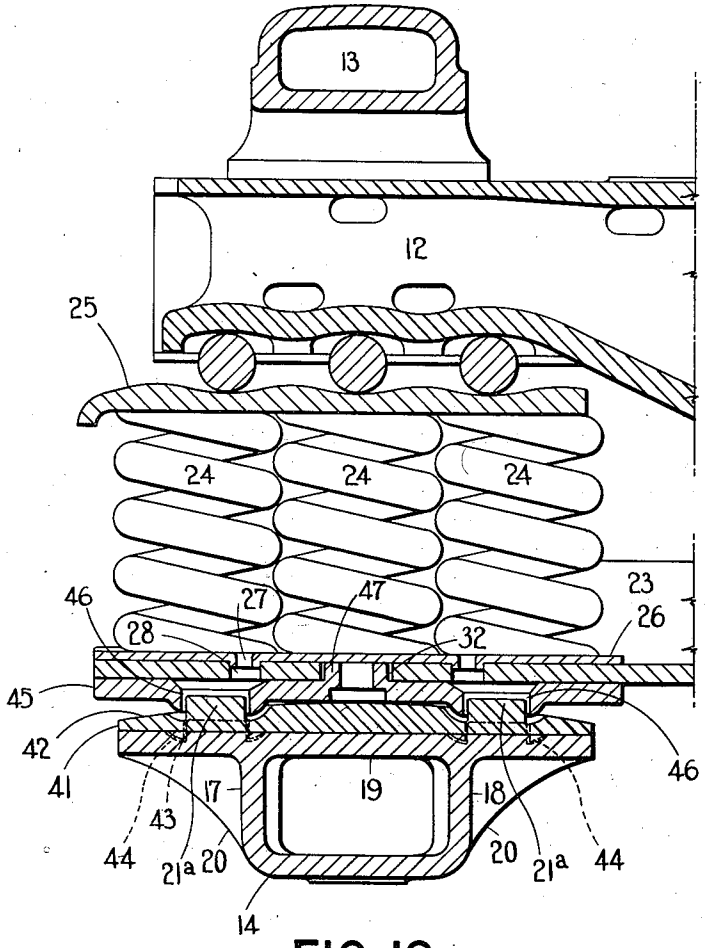


FIG. 10.

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UNITED STATES PATENT OFFICE

2,018,854

RAILWAY CAR TRUCK

Walter J. Hyman, Westmount, Quebec, Canada

Application February 24, 1933, Serial No. 658,309

29 Claims. (Cl. 105—208)

This invention relates broadly to railway car trucks and relates more particularly to the spring planks thereof and to the mounting of the spring planks in the truck side frames.

Heretofore considerable difficulty has been experienced in practice by reason of spring planks breaking transversely at or near their inner lines of support on the truck side frame or other supporting member. The breaks are believed to be due primarily to the weaving motion in the truck when in service combined with the great downward pressure of the springs, which pressure holds the ends of the spring planks against movement necessary to accommodate them to the weaving motion in the truck. In certain instances, breaking is attributable also to weakening of the spring planks adjacent the aforesaid inner lines of support by provision of apertures for reception of lugs or other means serving to anchor the spring plank to the side frame or other supporting member.

The primary object of this invention is to provide means, applicable to existing or to new construction, for anchoring or connecting spring planks to truck side frames or other supporting elements, with such capacity for movement relative to other elements of the trucks as will prevent concentration of stresses in the spring planks and fracture of the planks as aforesaid.

A further object is to provide means, applicable to new or to existing construction, for anchoring or connecting spring planks to truck side frames or other supporting elements, the said means being of such character as will obviate the necessity of weakening spring planks, in the region in which stresses have heretofore been concentrated, by provision of apertures for reception of anchoring lugs or the like.

A still further object is the provision of a novel form of a spring plank adapted to produce a novel operative relation of the planks, springs and truck side frames or other plank supporting elements, by which relation undesirable concentration of stresses in the spring planks is avoided.

Another object is to provide spring planks adapted to transmit load to the truck side frames or other plank supporting elements always at or near the central, longitudinal, vertical plane thereof and to prevent the transmission of load in suchwise as to create torsion stresses in the side frame or other plank supporting element.

Another object is to provide spring planks accomplishing the foregoing and other objects and applicable to existing car trucks of appropriate design without change in the trucks other than the substitution of new spring planks for old.

Still another object is to provide means for supporting and prolonging the life of existing spring planks.

An additional object is to provide means as aforesaid of simple, durable and inexpensive character, capable of easy application to car trucks.

Various other objects and the advantages of the invention may be ascertained from the following description and the accompanying drawings.

The invention is capable of a number of embodiments whereby it is applicable in a variety of ways to car trucks of various designs. For purposes of explanation, the invention will be described in its application to a car truck of one well known design, but it will be understood the invention is not thereby limited to association with the particular truck described or to the embodiments illustrated and described, but embraces all such other embodiments and modifications as fall within the scope of the appended claims.

Broadly speaking, the invention resides in provision of means to establish a rocking engagement between a spring plank and underlying supporting members, such as the tension members of truck side frames, and control of load transmission with reference both to the supporting members and to the truck springs. The foregoing is accomplished either by provision of a spring plank having the under surfaces of its end portions which bear upon the truck side frames, or other supporting members, convexly formed thereby to permit a limited rocking relation of the spring plank and truck side frame in directions longitudinal and/or transverse of the side frame, the said convex bearing surfaces being formed either integral with or separately from the plank proper; or by provision of similar convex surfaces on the truck side frames, either integral therewith or separately formed; or by provision of such surfaces on both the spring plank and the side frames. The convex formation of the bearing surfaces is such as to maintain contact with and load transmission to the truck side frame in or close to the central, vertical, longitudinal plane of the frame, thereby to avoid imposition of torsion stresses in the truck frame and concentration of bending and torsion streses in the spring plank at locations materially inward from said plane. The invention further resides in formation of the spring plank proper

of strength unimpaired at locations, spaced inwardly from said plane by provision of apertures or recesses for co-operation with anchoring means on the side frame. In greater detail, the invention resides in the features and combinations hereinafter or hereinbefore described or contemplated or illustrated in the accompanying drawings or falling within the scope of the claims.

In the accompanying drawings;—

Fig. 1 is a partial side elevation of a car truck of standard design illustrating the application thereto of a spring plank formed according to one embodiment of this invention.

Fig. 2 is a vertical cross-sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical longitudinal sectional view on the line 3—3 of Figure 2.

Fig. 4 is a fragmentary cross-sectional view on the line 4—4 of Fig. 1.

Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 1.

Fig. 6 is a bottom plan view of the bearing surface illustrated in Figs. 1 to 5.

Fig. 7 is a section on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary vertical cross-sectional view, similar to Fig. 4, illustrating a modification.

Fig. 9 is a view similar to Fig. 4 illustrating an embodiment of the invention enabling use of existing spring planks.

Fig. 10 is a view similar to Fig. 2 illustrating a further embodiment.

Referring more particularly to the accompanying drawings, 11 designates one of a pair of similar one-piece cast truck side frames, and 12 a one-piece cast truck bolster, all of well known design. The side frames comprise the usual compression and tension members 13 and 14, respectively, and the columns 15 between which the bolster ends engage. In the type of side frame illustrated, the tension members each include a horizontal central portion 16, extending between the columns and comprising outer and inner vertical webs 17 and 18, respectively, and a substantially flat top plate 19 which extends outwardly and inwardly of the webs and is supported by brackets 20. The plate 19 is normally provided with four upstanding lugs 21, each surrounded by an annular groove 22. A spring plank 23 is supported at its ends on the portions 16 of the side frames. Springs 24 are arranged between the bolster and spring plank, a side bearing 25 being interposed between the bolster and springs and a positioning plate 26 between the springs and spring plank. The spring plate is held against slipping on the spring plank by downwardly projecting lugs 27 on the plate engaging in apertures 28 in the spring plank.

According to this invention, the spring plank 23 (of which only one end is shown) is provided at each end, on its lower side, with a convex bearing surface 29, which engages the top plate 19 of the side frame tension member. This bearing surface may be formed separately from the spring plank, as shown in Figs. 1 to 4, or may be formed integral with the spring plank as shown in Fig. 8. When dealing with alterations or repairs to an existing truck, the convex bearing surface may be provided by interposing a rocker plate 30 between the existing spring plank and the side frame tension member top plate 19, shown in Fig. 9, the lower surface of the rocker plate being formed as hereinafter described to provide the desired curvature. Alternatively, a new spring plank may be inserted, as shown in Figs. 1 to 7, or the existing plank may be reformed, as suggested in Fig. 8, or a new plank of this form provided. In dealing with existing trucks the anchor lugs 21 may be allowed to remain or the two inner lugs may be cut off. In the case of a new spring plank, it is for some reasons preferable to form the bearing surface separately from the plank proper by provision of a rocker plate, for example as shown in Figures 1 to 7, but it will be understood the separate formation is, in this instance, only a matter of possible convenience or manufacturing expediency and that the bearing surface may be, and in some instances is preferably, formed integral with the spring plank proper.

The convex bearing surface 29, whether formed integral with or separately from the spring plank, is preferably continuously curved transversely of the central vertical longitudinal plane of the tension member, which is indicated by the line 3—3 in Fig. 2, the curvature being clearly shown in this figure. In the longitudinal direction of the tension member, the central portion of the bearing surface is flat and the end portions only are curved, as clearly shown in Fig. 3. Theoretically, the surface curvature just described will provide a line bearing on the tread plate 19 but as the radius of the transverse curvature is considerable, there results in practice a contact surface of considerable width, as will be evident from Fig. 2. The normal effective contact surface is roughly elliptical, as indicated in Fig. 6. The lateral and longitudinal curvatures merge into one another and do not form sharply defined edges but rather a surface tending to ellipsoidal curvature as shown by Figs. 6 and 7. The normal effective contact surface affords ample bearing for transmission of all loads to be dealt with and the continuous lateral curvature enables a smooth rocking relation between the spring plank and truck side frame upon relative movement such as would vary the angle between the plane of the side frame and the plane of the spring plank. The curvature of the rocker plate longitudinally of the truck provides for a rocking relation between the side frame and spring plank upon relative movement of the two resulting from oscillation of the side frame in its plane or from twisting stress applied to the spring plank.

The location of the bearing surface 29 relatively to the side frame is such that the normal contact area of the bearing surface and the tread plate 19 is midway between the side frame webs 18 and midway between the outer and inner rows of springs 24, so that the load is concentrated along the vertical, longitudinal, central plane of the side frame and equally distributed between the outer and inner springs. The continuous lateral curvature is such that, upon the maximum change of angle between the plane of the side frame and the plane of the spring plank, the contact area of the bearing surface and tread plate is not moved wholly outside the outer web 17 nor wholly inside the inner web 18. Thus, the load is maintained in or adjacent the central vertical longitudinal plane of the side frame, and is not applied at the outer or inner edges of the plate 19 where it would set up torsion stresses in the tension member and tend to break off the outer or inner extending portions of the plate which are supported by the brackets 20.

The curved bearing surface 29, by maintaining the load transmitting area within the space limits above defined, relieves the spring plank of severe bending stress, such as would occur at the inner edge of the plate 19 if the plank had a flat bearing on the plate entirely across the latter.

It will be apparent from Fig. 2 that as long as the load transmitting area of the bearing surface 29 is between the outer and inner rows of springs, the spring plank is a lever fulcrumed between the springs which are opposed to one another. The bending stress in the spring plank above the inner edge of the plate 19 is then merely the unbalanced pressure of the outer and inner springs. This stress is much less than would result at the same point if the spring plank had a flat bearing entirely across the plate 19, as the stress would then be the pressures of both outer and inner springs acting through their distance from the inner edge of the plate 19.

In a manner similar to that just described, the curvature of the bearing surface longitudinally of the side frame ensures lower torsion stresses in the spring plank than would occur if the plank had a flat bearing across its entire width on the plate 19. The curvature of the bearing surface 29 longitudinally of the side frame is not as important when only four springs are used as when the plank is widened, as shown in Fig. 5, to accommodate six springs, but even with the narrower plank considerable reduction in torsion stress may be realized by curvature of the bearing surface for a relatively short distance inwardly from the edges of the plank.

The spring planks heretofore used with side frames of the form illustrated have been of the same plan contour as the spring plank illustrated in Fig. 5 and have been weakened seriously by provision of apertures to receive the inner pair of frame lugs 21, as will be apparent from inspection of Figure 5. The weakening of the plank causes strain due to torsion stress to occur at the point of weakness, and as the line of weakness and strain is in such close proximity to the line of maximum bending stress, over the inner edge of the plate 19, the combined action of bending and torsion stresses causes fracture of the planks along the line of weakness.

According to this invention, the spring plank is imperforate in the region of former weakness and this in combination with the convex bearing surface ensures against fracture as heretofore.

One method of avoiding undesirable apertures in the spring plank is the provision of the rocker plates 30 beneath the spring planks and operatively connected thereto, either permanently or separably, by any suitable means such as an approximately centrally disposed upstanding lug 31 on each plate engaging in an aperture 32 in the spring plank. The upper surfaces of the plates are formed to conform to the lower surfaces of the spring planks so as to have extended engagement therewith and the plan profiles of the plates preferably correspond to the plan profiles of the plank end portions. The plates are provided with apertures 33 for reception of the frame lugs 21, and these apertures may, if desired, be surrounded by depending flanges 34 entering the grooves 22 to ensure a greater depth of bearing against the lugs. The apertures 33 and flanges 34 are so proportioned to the lugs 21 and grooves 22 as not to interfere with free relative rocking movement of the plates 30 and 19. As long as the plate 30 and spring plank are connected, the plate apertures provide in effect merely recesses and any recessed formation of a bearing surface integral with the spring plank, serving the same purpose, is to be regarded as merely a mechanical equivalent for the structure illustrated.

In addition to enabling elimination of undesirable apertures in the spring plank, the plates 30 afford support to the spring plank where it is subjected to the greatest stresses and, with a view to increasing the support thus afforded, the rocker plates are preferably extended some distance inwardly of the inner edges of the frame tension member top plates 19, as shown at 35 in Fig. 2.

Another embodiment of the invention is illustrated in Fig. 8 and discloses the convex bearing surfaces 29 formed integral with the spring plank proper. In this arrangement, the apertures 33 for reception of the outer pair of frame lugs 21 are formed in the spring plank itself but weakening of the plank, as previously described, is avoided by omitting apertures for the inner pair of frame lugs. In applying a spring plank of this construction to an existing truck, it will be necessary to cut off the inner pair of lugs, but in new construction, the inner pair of lugs may be omitted as shown, the outer pair being sufficient to hold the plank against sliding. In this embodiment, the spring plank, instead of being supported by an underlying plate as in the first described embodiment, is supported by an overlying plate 36 which may be formed with spring positioning means 37 and may thus replace the spring plate 26. The convex bearing surfaces 29 may, conveniently, be formed by pressing portions of the spring plank from the plane of the remainder, thus providing a concave upper surface. In such case, the lower surface of the plate 36 will be formed in conformity with the upper surface of the spring plank. The plate may be permanently or separably attached to the spring plank.

Obviously, in constructions otherwise as illustrated in Figs. 1 to 7, the inner pair of lugs 21 may be cut off or, in new construction, omitted and the rocker plates formed without the inner pair of apertures 33, as illustrated in Fig. 8.

A further embodiment of the invention is illustrated in Fig. 9 and presents a modification of the rocker plates of Figs. 1 to 7 to adapt them to existing spring planks, having apertures 38 therein for reception of the frame lugs 21, the modification consisting in providing the upper surfaces of the rocker plates with recesses 39 for reception of the downstruck flanges 40 on the plank, which flanges are designed for entry into the grooves 22. The rocker plates of this embodiment may be formed for engagement with all four lugs 21 of the frame or may be imperforate above the inner lugs, as shown; the lugs being cut off and the inner flanges 40 of the plank flattened out. The rocker plate according to this embodiment, while it cannot repair the weakness of the spring plank, affords such support thereto and relief from bending and torsion stresses that the life of the plank will be much longer than if used without the rocker plate. The above supporting effect will be materially increased if the rocker plates are permanently connected to the spring planks as by riveting or welding.

In Fig. 10 there is illustrated a further embodiment of the invention according to which the convex bearing surfaces are provided on the truck side frames. In this embodiment, as illustrated, a plate 41, having its upper or bearing surface 42 curved similarly to the surface 29 of the plate 30, is mounted on the top plate 19 of the side frame tension member and held against sliding thereon by any suitable means, such as openings 43 receiving the side frame lugs 21 and, if desired, flanges 44 around these openings en-

tering the grooves 22 of the side frame. In order to reinforce an existing spring plank or a new similar plank against bending under the concentration of load caused by the convex bearing surface 42, a plate such as the plate 30 may be provided between the spring plank and the plate 41, or the reinforcement may be effected by means of a flat surfaced plate 45 or by suitably stiff spring plate 26. Obviously, when new spring planks are provided, these may be of sufficient strength to enable elimination of additional plates, such as the plates 30 or 45. Any suitable means may be provided to hold the plates 30 or 45 against sliding on the plate 41, for example, lugs 21a on the plate 41 similar to the lugs 21 of the side frame and engaging in the openings 38 in the plates 30 or in similar openings 46 in the plates 45. Any suitable means, such as a lug 47 engaging in the plank opening 32, may be provided to hold the plank against slipping on the plate 45, or the plate 45 may be welded or riveted to the plank. While the bearing surface 42 has been shown and described as formed separately from the side frame, it will be obvious this surface 42 may be formed integral with the side frame.

From the foregoing description, it will be apparent that, as compared with spring planks heretofore in use, the present invention provides for material reduction in the torsion and bending stresses in spring planks and that the invention is applicable to existing car trucks either as a repair or alteration to the spring planks or side frames thereof or by way of replacement of old spring planks with new planks embodying the invention. While modification of the truck side frames by removal of the inner pair of anchor lugs 21 in existing frames, or their omission in new construction, is preferable, such removal or omission is not necessary and these lugs may be dealt with as may be expedient in each case. It will also be apparent that the stress reducing features of the invention may be realized equally by association of suitably formed separate rocker plates with existing or new spring planks, or with existing or new truck side frames, or with both planks and side frames, or by formation of the spring planks or side frames, or both, to provide integral rocker bearing surfaces. In other words, the spring planks and side frames may be either one-piece structures or composed of separable parts, as desired, the choice depending upon circumstances. For this reason, in the claims, where the context permits, the plates 30 or 36 and 41 are to be regarded as parts of the spring plank, or side frames, respectively, though not necessarily integral parts.

It will likewise be understood the invention is not limited to use with the particular form of truck illustrated, particularly in respect of the relation of the spring plank to the side frame tension members, springs and anchor lugs, but extends to use with other forms of trucks and with other arrangements of springs and anchor lugs and other arrangements for spring plank support.

While the convex formation has been described as resulting from provision of curved surfaces, it will be understood the curvature is not necessarily circular and that the convexity may result from provision of a plurality of plane surfaces arranged at slight inclinations to one another.

Having thus described my invention, what I claim is:—

1. A spring plank for railway car trucks having on the under side of its end portions convex bearing surfaces formed in their central portions without curvature transversely of the plank and curved between said central portions and the edges of the plank.

2. A spring plank for railway car trucks having on the under side of its end portions convex bearing surfaces continuously curved in the longitudinal direction of the plank and substantially flat transversely of the plank in the central portion thereof and curved from said central portion to the edges of the plank.

3. A spring plank for railway car trucks having convex bearing surfaces at its end portions on the under sides thereof, said bearing surfaces including a substantially flat, substantially elliptical normal bearing portion, the major axis of which extends transversely of the plank.

4. A spring plank for railway car trucks having bearing surfaces of substantially ellipsoidal curvature on the under side of its end portions, the major axis of curvature being substantially greater than the minor axis thereof.

5. A spring plank for railway car trucks having on the under side thereof at each end a bearing surface including a substantially central, substantially flat normal bearing portion, the maximum dimension of which extends transversely of the plank, and a surrounding bearing portion sloping upwardly from said normal bearing portion longitudinally and transversely of the plank.

6. A spring plank for railway car trucks having the end portions thereof of greater thickness than the intermediate portion and adapted for rocking engagement, longitudinally and transversely of said plank, with an underlying supporting member.

7. A spring plank for railway car trucks having the end portions thereof of greater thickness than the intermediate portion, said end portions being formed to provide a substantially central, substantially flat normal bearing surface, the maximum dimension of which extends transversely of the plank, and a surrounding bearing portion which slopes upwardly from said normal bearing portion toward the sides and ends of the plank.

8. A spring plank for railway car trucks comprising a body and separately formed bearing plates disposed beneath and connected to the end portions of said body, the lower surfaces of said plates being in their central portions substantially flat transversely of the body and sloping longitudinally and transversely of the body upwardly from said central portions to the edges of the plates.

9. A spring plank for railway car trucks comprising a body and separately formed bearing plates disposed beneath and connected to the end portions of said body, the lower surfaces of said plates being continuously curved longitudinally of the body, and having curved portions extending transversely of the body from the edges part way to the longitudinal axes of the plates, the lower surface of the plate being straight, transversely thereof, between said latter curved portions.

10. A spring plank for railway car trucks comprising a body and separately formed bearing plates disposed beneath and connected to the end portions of said body, the lower surfaces of said plates being formed to each present a substantially flat normal bearing portion, the greatest dimension of which extends transversely of the body and a surrounding bearing surface which

slopes upwardly from said normal bearing portion to the edges of the plate.

11. In a railway car truck, in combination, truck side frames presenting spring plank seats and including upstanding spring plank anchor lugs disposed eccentrically of said seats; a spring plank provided at its ends with convex bearing portions resting on said side frame seats and formed with upwardly extending recesses for reception of said lugs, said recesses being adjacent the peripheries of the bearing portions whereby the central most used parts thereof are unimpaired.

12. In a railway car truck, in combination, truck side frames presenting spring plank seats and including upstanding spring plank anchor lugs disposed eccentrically of said seats; a spring plank formed imperforate in vertical alignment with said lugs and separately formed bearing plates connected to the end portions of said spring plank and apertured for reception of said lugs, said apertures being adjacent the peripheries of the bearing plates whereby the central most used parts thereof are unimpaired.

13. In a railway car truck, in combination, truck side frames presenting substantially flat spring plank bearings and each formed with a spring plank anchor lug projecting upwardly from said bearing and disposed outwardly of the central, vertical, longitudinal plane of the frame and characterized by absence of spring plank anchor lugs projecting above said bearing surface inwardly of said plane; and a spring plank having on the lower surface thereof at each end a convex bearing surface for engagement with said frame bearing surface and formed with a recess adapted to loosely receive the upwardly projecting frame anchor lug.

14. In a railway car truck, in combination, truck side frames presenting substantially flat spring plank bearings and each formed with a spring plank anchor lug projecting upwardly from said bearing and disposed outwardly of the central, vertical, longitudinal plane of the frame and characterized by absence of spring plank anchor lugs projecting above said bearing surface inwardly of said plane; and a spring plank having at the ends thereof separately formed bearing plates adapted to rest on the frame bearing surfaces, said plates having convex lower surfaces and being apertured for reception of the frame lugs.

15. In a railway car truck, in combination, side frames each including upstanding spring plank anchor lugs disposed inwardly and outwardly of the central, vertical, longitudinal plane of the frame, a spring plank apertured for reception of said lugs and including underlying end reinforcing plates traversing the plank apertures in alignment with those lugs which are disposed inwardly of said frame planes.

16. In a railway car truck, in combination, a side frame including outer and inner spaced vertical webs and a plate connecting said webs and constituting a spring plank bearing; and a spring plank having a bearing surface engaging the side frame bearing surface, one of said bearing surfaces being substantially flat and the other of said bearing surfaces being curved in the longitudinal direction of the plank and providing a normal bearing portion adapted to normally engage said substantially flat bearing surface midway between the vertical planes of said webs, the curvature of said curved bearing surfaces being such that upon relative rocking of the spring plank and side frame due to weaving movement in the truck, the contact of the plank bearing with the frame bearing will be maintained substantially between the outer vertical plane of the outer web and the inner vertical plane of the inner web.

17. In a railway car truck, in combination, a side frame and a spring plank resting at its ends on said side frame, said plank and side frame having engaging bearing portions one of which is substantially flat and the other of which is curved longitudinally of the plank, the curvature of said bearing surfaces being such as to maintain the transmission of load from the plank to the side frames in or adjacent the central, vertical, longitudinal planes of the frames.

18. In a railway car truck, in combination, side frames each including outer and inner spaced vertical webs and a plate connecting said webs and constituting a spring plank seat; a spring plank including bearing plates thereunder resting on said seats and extending inwardly from the inner edges of said seats, the lower surfaces of said plates being curved in the longitudinal direction of the plank in suchwise as to maintain the contact of said plates with frame seats spaced materially from the outer and inner edges of the seats during relative rocking of the plank and frames due to weaving movement in the truck.

19. In a railway truck, in combination, a side frame and a spring plank resting at an end on said side frame and outer and inner springs resting upon the end of said plank, said plank and frame having engaging bearing surfaces one of which is substantially flat and the other of which is curved in the longitudinal direction of the plank, the curvature of said curved bearing surface being such as to maintain the load transmitting contact of the plank and side frame substantially between the vertical axes of the outer and inner springs above said bearing surface during relative rocking of the plank and frame due to weaving movement in the truck.

20. In a railway car truck, in combination, side frames and a spring plank resting at its ends on said side frames and outer and inner springs resting upon each end of said plank, said plank including at its ends separately formed underlying bearing plates convexly curved on their lower surfaces in the longitudinal direction of the plank in suchwise as to maintain their load transmitting contact with the frames substantially between the vertical axes of the outer and inner springs above, said plates extending material distances inwardly of said inner springs.

21. In a railway car truck, in combination, side frames and a spring plank supported at its ends on the side frames, the contacting surfaces of said frames and plank being formed to provide rocking bearings for the spring plank adapted for rocking movement in directions longitudinal and transverse of the plank.

22. In a railway car truck, in combination, a side frame member and a spring plank member, one of said members having a convex surface curved longitudinally and transversely for engagement by the other member which is substantially flat thereby to provide rocking engagement of the members.

23. In a railway car truck, in combination, a side frame member; a spring plank member; and a bearing plate interposed between said members and formed with a convex surface rockingly engaging a substantially flat portion of one of said members.

24. In a railway car truck, in combination, a side frame having a convex bearing surface curved longitudinally and transversely of the frame and a spring plank engaging said convex surface and formed to have free rocking engagement therewith.

25. In a railway car truck, a side frame having a convex spring plank supporting surface curved longitudinally and transversely of the frame and adapted for free rocking engagement with a spring plank.

26. A spring plank bearing plate formed with an opening to receive an anchor lug and with a convex bearing surface, said opening being disposed within the periphery of the bearing surface and eccentrically of said bearing surface whereby the central, most used part of said bearing surface is unimpaired.

27. A spring plank bearing plate having one surface thereof continuously curved in its longitudinal direction and in its transverse direction curved from the edges part way to the central longitudinal axis and straight intermediate said latter curved portions.

28. A spring plank bearing plate having one surface thereof curved longitudinally thereby to enable relative rocking engagement with a complementary member, said plate being apertured on one side of its transverse axis for engagement with anchoring lugs and being imperforate on the opposite side of its transverse axis.

29. In a car truck, in combination, a side frame including a spring plank seat, a spring plank and a bearing plate interposed between the spring plank and said seat and adapted for movement relatively to the side frame when in service, interengaging means on said seat, plank and bearing plate whereby the plank and bearing plate are held against movement in their edgewise direction relatively to the side frame, said interengaging means being freely separable upon such limited relative vertical movement of the plank and side frame as may be effected without dismembering the truck and permitting removal of the plate in its edgewise direction, one of said seat and plate having a convex bearing surface and the other having a substantially flat bearing surface.

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