June 1, 1926. 1,587,286

J. W. DALMAN

SIDE FRAME STRUCTURE

Filed Sept. 16, 1925

Fig. 1

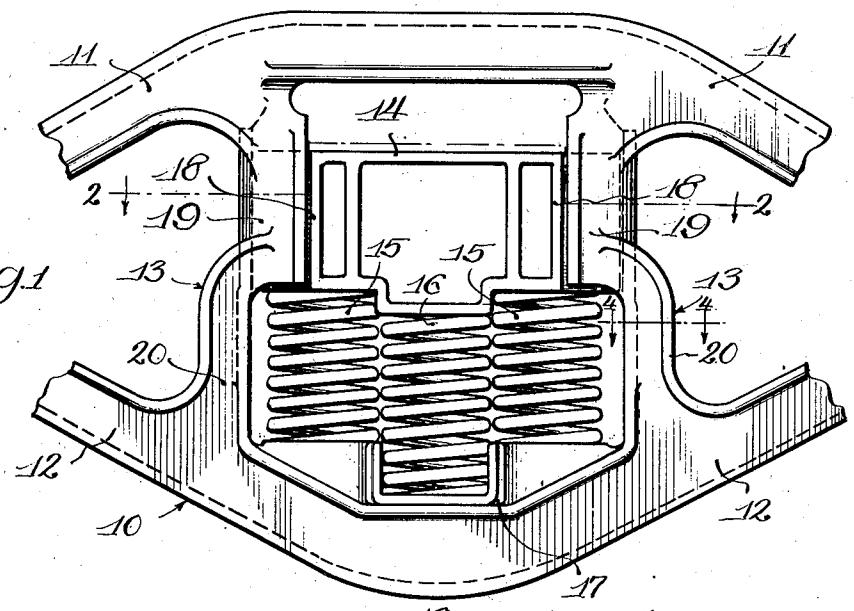


Fig. 2

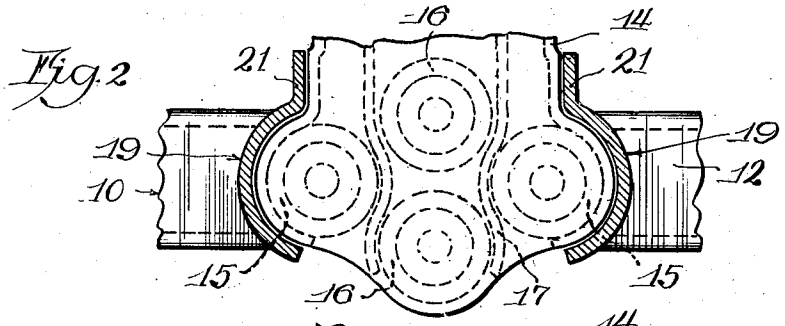


Fig. 3

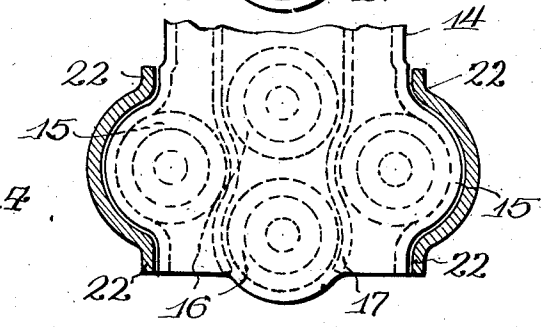


Fig. 4

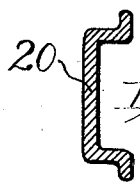
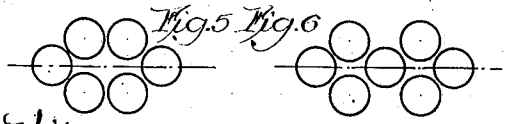


Fig. 5 Fig. 6



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UNITED STATES PATENT OFFICE.

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SIDE-FRAME STRUCTURE.

Application filed September 16, 1925. Serial No. 56,597.

My invention relates to improvements in construction of side frames and spring equipment used therewith in a railway truck, and is particularly adapted for use with cast steel side frames and bolsters, although fabricated parts may also be used with this construction.

The principal object of the invention is to improve the correlated parts of bolster and side frame, and more especially to conform with the shape of helical or coil springs used therewith so as to improve the distribution of metal involved in the construction of the bolster and side frame, to produce greater economy in weight and cost, and to secure greater strength and efficiency of the structure.

The invention may best be understood by reference to the accompanying drawing, in which—

Figure 1 is a fragmentary view in side elevation of a car truck constructed in accordance with my invention, with the journal boxes omitted.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 2 but showing a modified form of the invention.

Figure 4 is a frame section taken on line 4—4 of Figure 1.

Figures 5 and 6 are diagrams illustrating modified arrangements of springs which may be utilized in carrying out my invention.

It has heretofore been proposed to provide an end frame with a plurality of coil or helical springs grouped in various arrangements, an effort being made to provide as many springs as possible consistent with the space limits afforded in standard railway car truck specifications and requirements. One of the preferred arrangements of springs is that in which a single spring is disposed at each side of the bolster and is partially enclosed within the side bearing surfaces of the bolster which are guided for vertical movement between the columns of the side frame, while intermediate springs are arranged either in pairs or in staggered relation in the space between these single side springs.

As heretofore constructed, the coacting bearing surfaces of the bolster and side frame columns have been substantially U-shaped in form, and in addition, either the bolster or columns are provided with projecting flanges for withstanding thrusts acting longitudinally of the bolster, or laterally of the side frame.

In the present invention, I provide a new form of truck bolster and side frame, wherein the sides of the bolster are shaped to conform substantially with the single coil springs at each side thereof, and a corresponding concave semi-cylindrical bearing surface is formed in the side frame to receive and provide a cooperating bearing surface for the sides of the bolster. The improved construction and advantages thereof are best illustrated and understood by reference to the drawing, in which one form of the invention is embodied.

The side frame 10 comprises upper compression members 11—11 and lower tension members 12—12 of the usual form having upright columns indicated generally at 13. The bolster is indicated at 14, the end only of the bolster being shown herein. A plurality of springs are interposed between the lower face of the bolster, in the usual spring seat on the side frame between the columns 13. In the form shown in Figures 1, 2 and 3, four springs are utilized, the two end springs 15—15, that is to say, the springs near the ends of the side frame, being arranged at a higher level than the intermediate springs 16—16, the latter resting on a spring plank 17. It will be understood, however, that my invention may be equally applicable to constructions in which all of the springs are arranged on the same level, and a spring plank may or may not be used, as desired.

Referring now specifically to the feature of novelty as embodied in the form illustrated in Figure 1, will be observed that the portion of the bolster 14 between the columns 13—13 of the side frame is provided with a pair of outwardly curved projections 18—18 having arcuate outer margins conforming substantially with but slightly larger than the end springs 15—15, the preferred arrangement being such that the radius of the curved portions 18—18 is substantially concentric with the respective coil springs immediately below said end portions 18 and upon which the latter are supported. The columns 13—13 on opposite sides of the bolster each consists of two parts, the upper part 19 having a curved

cross section, as shown in Figure 2 and providing a bearing and guiding surface for the adjacent part 18 of the bolster. The lower part 20 of the columns is offset laterally of the upper part 19 in the usual manner so as to permit the bolster 14 to be inserted endwise into registering position with the side frame when the apparatus is assembled. In the preferred form shown, the portions 20—20 may have the usual U-shaped section, as shown in Figure 4.

In the preferred form shown in Figure 2, the curved portions 19—19 of the columns 13—13 are provided with inwardly extending flanges 21—21 having bearing engagement with the side of the bolster thus providing increased bearing surface for engagement with the sides of the bolster, so as to provide the bearing surface area required by standard specifications. This form is preferable inasmuch as it permits the maximum economy in the manufacture, the bolster being of minimum length and requiring the smallest amount of metal in its construction.

In the modified form shown in Figure 3, extended bearing surfaces or flanges 22—22 are provided at both sides of the curved portions 19—19.

In the diagrams illustrated in Figures 5 and 6, modified arrangements of springs are suggested which are equally applicable to a side frame construction in which the sides of the bolster partially enclose and conform substantially with the shape of the single end springs as hereinabove described. In fact, it will be understood that my invention may be applied to any arrangement of springs wherein single end springs are utilized in substantial alinement with the side frame so as to be partially included in an arcuate bearing surface similar to curved portions 19—19 with which the sides of the bolster are engaged.

From the above description, it will be seen that I provide a structure having the advantage of maximum economy and distribution of metal whereby the bolster may be made lighter than heretofore constructed and wherein the cross-sectional area of the parts 19—19 of the column is also reduced to a minimum commensurate with the strength required. The improved structure is capable of withstanding end thrusts and without the use of additional thrust bearing flanges or the like.

I claim:

1. In a car truck, a side frame, a plurality of coil springs, a bolster supported on said springs, and cooperating bearing surfaces on each side of said bolster and said side frame substantially concentric with an adjacent spring having its axis disposed within the boundaries of said side frame.

2. In a car truck, a side frame having upper compression and lower tension members, a pair of columns extending vertically between said members, coil springs between said columns, and a bolster supported on said springs, said bolster having lateral bearing surfaces continuously curved in horizontal plane and engaging corresponding surfaces on said columns, each of said curved surfaces being substantially concentric with an adjacent coil spring at one side of said bolster.

3. In a car truck, a side frame having upper compression and lower tension members, a pair of columns extending vertically between said members, a bolster supported on said springs, each of said columns having an upper portion thereof continuously curved inwardly in a horizontal plane and having lateral bearing engagement with opposite sides of said bolster, and a plurality of coil springs between said columns, including a single spring disposed at each side of said bolster and partially included within the recess formed by said curved portions of said columns.

4. In a car truck, a side frame having upper compression and lower tension members, a pair of columns extending vertically between said members, a bolster supported on said springs, each of said columns having an upper portion thereof continuously curved inwardly in a horizontal plane and having lateral bearing engagement with opposite sides of said bolster, and a plurality of coil springs between said columns, including a single spring disposed at each side of said bolster and partially included within the recess formed by said curved portions of said columns, and flanged extensions integral with said curved portions and engaging opposite sides of said bolster.

5. In a car truck, a side frame having upper compression and lower tension members, a pair of columns extending vertically between said members, a bolster supported on said springs, each of said columns having an upper portion thereof continuously curved inwardly in a horizontal plane and having lateral bearing engagement with opposite sides of said bolster, and a plurality of coil springs between said columns, including a single spring disposed at each side of said bolster and partially included within the recess formed by said curved portions of said columns, and flanged extensions integral with said curved portions and engaging opposite sides of said bolster, on the inner side of said side frame.

Signed at Chicago this 10 day of Sept. 1925.

JOHN W. DALMAN.