July 26, 1932. A. H. THOMAS ET AL 1,869,229

TRUCK BOLSTER

Filed May 29, 1930

Fig. 1.

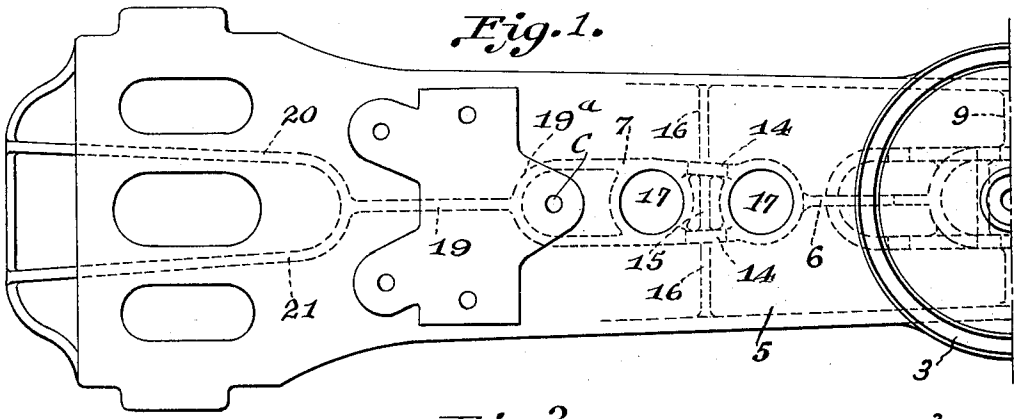


Fig. 2.

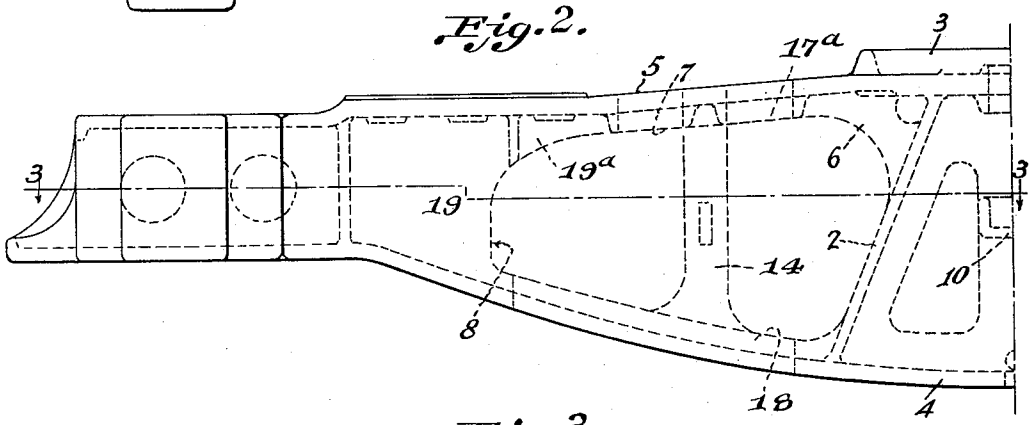
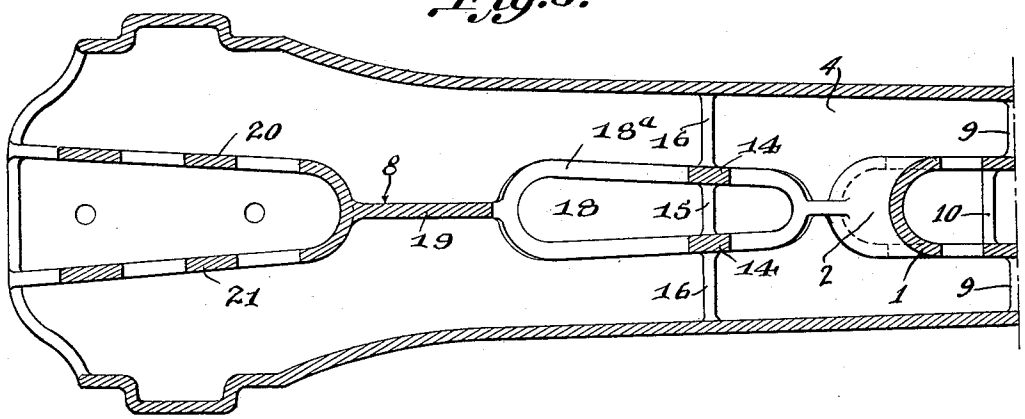


Fig. 3.



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UNITED STATES PATENT OFFICE

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TRUCK BOLSTER

Application filed May 29, 1930. Serial No. 457,308.

This invention relates to improvements in car truck bolsters, and more particularly to a novel center post and rib construction for such bolsters.

The railroads have periodically increased their requirements for design tests in an effort to get stronger castings to meet the more severe service required of freight cars and which reflects in the truck of which the bolster is a member.

Tests are made by supporting the bolster at its ends or spring seat portions in a test machine, and then applying known loads on the center plate or on a side bearing of the bolster. The deflection and permanent set determined under known loads are considered a "measuring stick" for the strength of the design. The results of tests and experiments, however, do not always follow the theoretical calculations, and it is necessary to supplement theory with modifications determined from results of experiment.

This may be more clearly understood when consideration is made of the fact that the usual procedure in designing bolsters is to calculate the sections in accordance with the theory of flexure of simple means. This theory is based on assumptions that work very well when a solid beam of rectangular cross section or, in other words, a simple beam is considered, but the further a member departs from the simple beam, such as the hollow box-like construction of a bolster, the less the beam theory holds, and practical modifications as mentioned above, have to be made to secure the proper strength.

Foundry practice is also a limiting factor in bolster design.

The primary object of the present invention is to provide a bolster that can be made stronger in a much greater proportion than can be obtained with the same amount of metal used in the ordinary box section bolster.

With the foregoing object outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims.

In the drawing,

Fig. 1 is a top plan view of one-half of a bolster made in accordance with the invention.

Fig. 2 is a side elevation of the same.

Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 2.

Referring to the embodiment of the invention illustrated, it may be seen that our proposed center post construction 1 is arranged to better distribute the load on the center plate to the bottom member, and is accomplished by making the center post more of a truss like construction than a strut. It will be noted that the end walls 2 of the center post, diverge from the center plate 3 to the bottom 4, which will have the effect of relieving the concentration of the load on the center plate when carried by the bottom of the bolster. Ribs 9 at each side of the center post, tie that member to the side walls of the bolster, and in connection with the king-pin seat 10, prevent buckling of the center post and also the side walls in the vicinity of the center of the bolster.

To further strengthen the bolster, we have reinforced the top member 5 by means of ribs 6 which are continuations of the side walls of the center post, and extend away from said post. These ribs merge into the top, and they also merge into a depending flange 7 of annular formation. Other ribs 8 connect the top and bottom of the bolster, and extend from the flange 7 to the end of the bolster. When the bolster is subjected to load, its top has a tendency to cave in, in the region of the openings 17, which openings are desirable from the standpoint of foundry practice, and as this caving in produces deformation of the bolster, the rib and flange construction described above, prevents such deformation from taking place.

Since the top 5 tends to cave downwardly, and the bottom 4 tends to move upwardly under load, an internal reinforcing construction is used. In this instance, to prevent the coming together of the top and bottom of the bolster under load, we have added the vertical columns 14 which are subjected to compression. To keep these columns from buckling,

we have added the tie 15 which joins the columns together, and to prevent the side walls from bulging outwardly, we join the columns to the side walls by ties 16.

We also eliminate unnecessary metal by making the flanges or reinforcements around the openings 17 and 18 in the top and bottom respectively, shallow and narrow, for when the columns 14 are used, heavy reinforcement is not required. In this form of the invention, the reinforcements 17*a* and 18*a* are joined by ribs at their inner ends to the center post, and merge at their outer ends into a vertical rib 19 of the rib structure 8, which rib 19 is located along the medial longitudinal line of the bolster. We bifurcate the rib 19 near the spring seat to reinforce the spring seat member, and extend the bifurcations or ribs 20 and 21 to the end of the bolster. The rib 19 is also bifurcated at its inner end, as shown at 19*a* to accommodate passing a rivet through the hole C, but this is only necessary when there is a rivet hole on the longitudinal center line.

The main advantage of the construction illustrated is that deflection and permanent set of the bolster under load are reduced, and the bolster is able to carry a much greater load without permanent deformation. The above can be accomplished with no addition in weight or with a slight addition in weight much less in proportion to the advantage gained.

While we have disclosed what we now consider to be preferred embodiments of the invention in such manner that the same may be readily understood by those skilled in the art, we are aware that changes may be made in the details disclosed, without departing from the spirit of the invention, as expressed in the claims.

What we claim and desire to secure by Letters Patent is:

1. A car truck bolster of hollow form having an internal downwardly flaring center post merging at its ends into the top and bottom of the bolster, said bolster having openings in its top and bottom arranged between the center post and the end of the bolster, and internal reinforcements within the bolster for reinforcing the portions of the top and bottom where said openings are located, said internal reinforcements including vertical posts connecting the top and bottom where said openings are located, and a tie joining said vertical posts.

2. A car truck bolster of hollow form having an internal downwardly flaring center post merging at its ends into the top and bottom of the bolster, said bolster having openings in its top and bottom arranged between the center post and the end of the bolster, and internal reinforcements within the bolster for reinforcing the portions of the top and bottom where said openings are located, said reinforcements including internal flanges surrounding the openings, vertical posts connecting the last mentioned flanges, and a tie joining said vertical posts.

3. A car truck bolster of hollow form having an internal downwardly flaring center post merging at its ends into the top and bottom of the bolster, said bolster having openings in its top and bottom arranged between the center post and the end of the bolster, and internal reinforcements within the bolster for reinforcing the portions of the top and bottom where said openings are located, said reinforcements including internal flanges surrounding the openings, ribs joining said flanges to the post, vertical posts connecting said flanges, and a tie joining said vertical posts.

4. A car truck bolster of hollow form, having an internal center post and openings in its top and bottom arranged between the center post and the end of the bolster, vertical posts connecting the top and bottom where said openings are located, a tie joining said vertical posts, and other ties joining said posts to the sides of the bolster.

5. A car truck bolster of hollow form having an internal downwardly flaring center post merging at its ends into the top and bottom of the bolster, said bolster having openings in its top and bottom arranged between the center post and the end of the bolster, and internal reinforcements within the bolster for reinforcing the portions of the top and bottom where said openings are located, said reinforcements including vertical posts connecting the top and bottom, a tie joining said vertical posts, and other ties joining said vertical posts to the sides of the bolster.

6. A car truck bolster of hollow form having an internal downwardly flaring center post merging at its ends into the top and bottom of the bolster, said bolster having openings in its top and bottom arranged between the center post and the end of the bolster, internal flanges surrounding the openings, a vertical bifurcated rib connecting the top and bottom of the bolster and merging into said flanges, the tines of the bifurcated rib projecting toward the end of the bolster.

In testimony whereof, we have signed this specification.

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