

April 16, 1940.

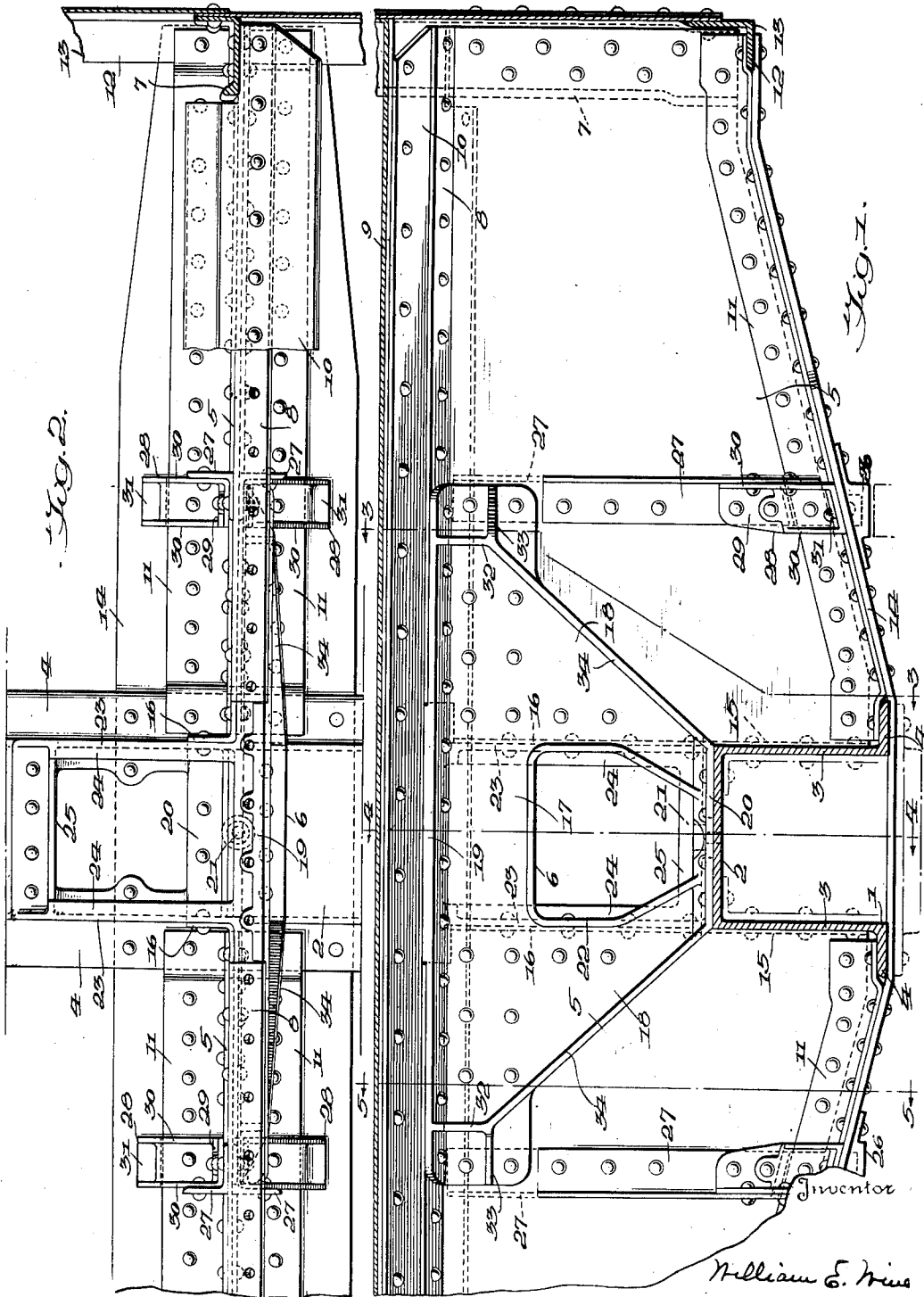
W. E. WINE

2,197,443

RAILWAY HOPPER CAR

Filed May 12, 1936

2 Sheets-Sheet 1



Ritter, Macdon, O'Neill & Meier

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Fig. 5.

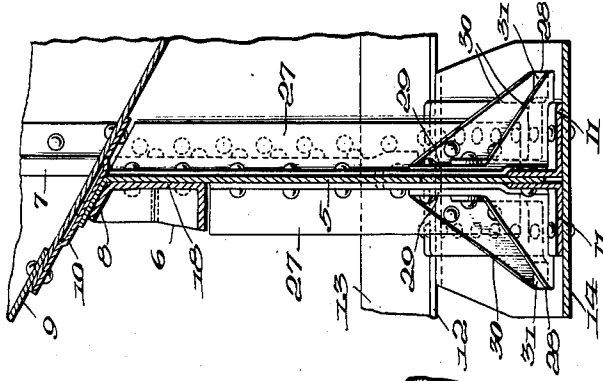


Fig. 4.

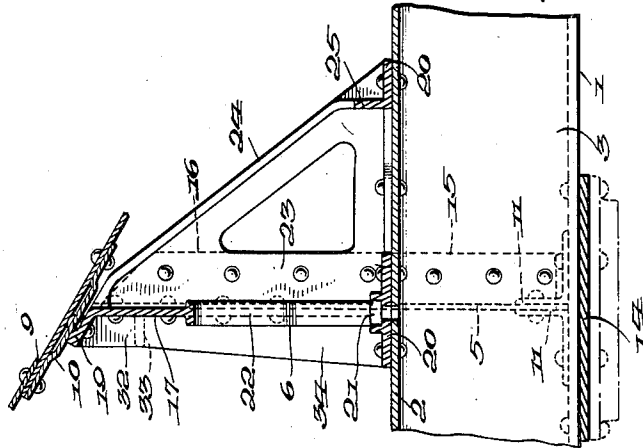
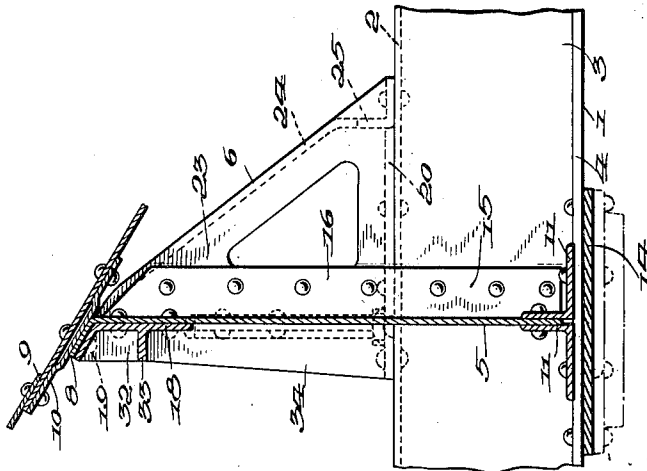


Fig. 3.



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UNITED STATES PATENT OFFICE

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RAILWAY HOPPER CAR

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Application May 12, 1936, Serial No. 79,361

6 Claims. (Cl. 105—414)

My invention relates to railway hopper cars and more particularly to improvements in the body bolsters of such cars.

The principal object of the invention is to provide a body bolster partly of cast metal and partly of sheet metal, which possesses substantially the same strength and rigidity as a bolster formed entirely of cast metal but which is less expensive than such bolsters and is more adaptable to the many different designs of railway car construction.

A primary feature of the invention consists in providing a railway hopper car with a body bolster having substantially vertical plates arranged on opposite sides of the center sill of the car and a cast metal member disposed above the center sill for connecting the plates, the cast metal member being provided with a base overlappingly secured to the top of the center sill and with portions projecting laterally of the sill overlappingly secured to the plates.

Another feature of the invention consists in providing the cast metal member of the body bolster with portions extending transversely of the center sill and with portions extending longitudinally thereof, whereby angularly disposed portions of each of the plate members of the bolster may be rigidly secured thereto.

Another feature of the invention consists in providing the plate members of the body bolster with reinforcing members which extend upwardly from adjacent the side bearing wear plates of the bolster and are secured adjacent their upper ends to the outer ends of the cast metal member.

Other and more specific features of the invention, residing in advantageous forms, combinations and relations of parts, will hereinafter appear and be pointed out in the claims.

In the drawings, illustrating a preferred embodiment of the invention,

Figure 1 is a vertical sectional view of the major portion of a railway hopper car, the body bolster being shown in side elevation.

Figure 2 is a fragmentary horizontal sectional view of the hopper car adjacent the body bolster, the floor of the car being omitted and the bolster being seen in plan.

Figures 3, 4 and 5 are vertical sectional views taken on lines 3—3, 4—4 and 5—5, respectively, of Figure 1.

Referring more particularly to the drawings, 1 designates the center sill which is of the integral type having a top wall 2 and side walls 3 which terminate in laterally projecting flanges 4. This particular type of center sill has been chosen for

illustrative purposes only and it will, of course, be understood that the invention is not limited in its use to cars having such sills.

The body bolster consists in the main of two substantially vertical plates 5 arranged on opposite sides of the center sill and a cast metal member 6 which is disposed above the center sill and rigidly connects the plates.

Each of the plates is preferably secured at its outer end to an adjacent inside side stake 7 of the car side and along its upper edge it is formed with an inclined flange 8 for connection to the inclined floor 9 of the car. The top flange 8 may, if desired, be directly secured to the inclined floor or, instead, it may, as shown, be secured to a metal strip 10 which extends continuously from one side of the car to the other and is, in turn, rigidly secured to the car floor. Extending along opposite sides of the lower edge of each of the bolster plates are reinforcing angles 11, the inner ends thereof being rigidly secured to the flanges 4 of the center sill and the outer ends to an inwardly extending flange 12 of a side sill 13. The reinforcing angles 11 of the two plates are secured to a bottom cover plate 14 which preferably extends continuously from one side of the car to the other beneath the center sill and is connected at its outer ends to the side sills 13.

The inner end of each plate 5 is preferably offset to provide flanged portions 15 and 16, respectively, the portion 15 being rigidly secured to an adjacent side 3 of the center sill and the portion 16 extending above the top of the sill. While it may be desirable in some cases to laterally offset the flanged portions 15 and 16 of each plate one from the other or to dispose them in divergent planes, it is preferable that they be disposed, as shown, in the same vertical plane so as to constitute one continuous and uninterrupted flange.

The cast metal member 6, which is interposed between the center sill and the inclined floor 9 of the car and supportingly cooperates with the latter, is formed with a main web or plate-like portion 17 having portions 18, preferably of substantially triangular shape, projecting laterally beyond the sides of the center sill and respectively secured in overlapping relation to adjacent portions of the plates 5. Along its upper edge, the web 17 is formed with an inclined flange 19, the central portion of which is secured directly to the strip 10 and the end portions of which, in addition to being secured to the strip 10, are secured to adjacent portions of the flanges 8 of the plates 5.

The lower edge of the web 17 is formed in-

tegrally with the base 20 which extends between the inner ends of the plates 5 and is overlappingly secured to the top wall 2 of the center sill on opposite sides of the web. In vertical alignment with the adjacent center or king pin (not shown) of the car, the base 20 as well as the top wall of the center sill may advantageously be apertured, as indicated at 21, to receive the reciprocating element of a control device of an empty-load brake mechanism, such as shown in my co-pending application Serial No. 45,665, filed October 18, 1935, the central portion of the web 17 being formed with an enlarged opening 22 in which the device may be conveniently mounted.

Projecting from one side of the web 17 in a direction longitudinal of the center sill are laterally spaced preferably triangularly shaped portions or walls 23 affording means to which the flanged portions 16 of the plates 5 are rigidly secured. The downwardly inclined edges of the walls 23 may be formed with turned flanges 24 which are integrally connected at their lower ends by a substantially vertical flange 25 extending upwardly from the base 20 inwardly of its inner edge. It will, of course, be appreciated that, in addition to providing means to which the flanged inner ends of the bolster plates are rigidly secured, the walls 23 function as struts resisting overturning moments to which the body bolster is subjected by buffing and draft forces imparted to the center sill.

To reinforce the bolster against forces transmitted from the side bearings (not shown) of the car to the side bearing wear plates 26 secured to the bottom of the bolster, each of the plates 5 is provided on opposite sides with suitably shaped members, such as angle bars 27, to the lower ends of which are connected brackets 28. Each of these brackets is provided with a web portion 29 secured to the associated plate 5 in overlapping relation to the flange of the adjacent reinforcing angle 27 and with laterally spaced flanges 30 connected at their lower ends by a base portion 31 secured to the bottom flange of the adjacent angle 11, one of the flanges 30 being riveted to the outstanding flange of the adjacent reinforcing angle 27.

One of the angles 27, preferably the one disposed on the side of the plate 5 opposite the side on which the web 17 is disposed, is rigidly connected to the adjacent outer end of the web 17, so that forces to which the side bearing wear plates are subjected will be transmitted directly to the cast member 6 of the bolster. Each outer portion of the web 17 to which the angles 27 are connected may be advantageously rigidified by angularly disposed flanges 32 and 33 which intersect a short distance below the inclined top flange 19 and continue downwardly as a single flange 34 along the adjacent marginal edge of the web, merging at its lower end with the base 20.

From the foregoing, it will be perceived that a composite body bolster of simple and rugged construction has been devised. Moreover, the design of the bolster is such that it is capable of being used as a repair part in cars differing greatly in construction and that it will most efficiently and effectively withstand the severe shocks and strains to which the body bolsters of railway hopper cars are ordinarily subjected.

What I claim is:

1. A composite body bolster adapted for use beneath an inclined floor of a railway hopper car, said bolster including vertical plates adapted to respectively extend from opposite sides of the center sill of the car to the adjacent sides of the

car, and a cast metal member rigidly connecting said plates, said member being provided with a centrally disposed strut adapted to be interposed between the center sill and the inclined floor of the car for supporting the latter and with portions projecting laterally of the strut respectively secured to said plates, said strut having substantially vertical laterally spaced walls extending longitudinally of the car and a base portion integrally connecting said walls projecting on opposite sides of said plates adapted to be overlappingly secured to the top of the center sill.

2. A composite body bolster adapted for use beneath an inclined floor of a railway hopper car, said bolster including vertical plates adapted to respectively extend from opposite sides of the center sill of the car to adjacent the sides of the car and having flanged inner ends, and a cast metal member rigidly connecting said plates, said member having portions respectively adapted to extend toward the sides of the car secured to said plates and also having a centrally disposed strut interposed between the inner ends of said plates for supportingly cooperating with said inclined floor, said strut having spaced walls respectively secured to said flanges of the plates and a base portion integrally connecting said walls projecting on opposite sides of said plates adapted to be overlappingly secured to the top of the center sill.

3. A composite body bolster adapted for use beneath an inclined floor of a railway hopper car, said bolster including vertical plates adapted to respectively extend from opposite sides of the center sill of the car to adjacent the sides of the car and having flanged inner ends, and a cast metal member rigidly connecting said plates, said member comprising a centrally disposed strut adapted to be interposed between the center sill and said inclined floor for supporting the latter, an inclined top flange adapted to be secured to the floor and portions projecting laterally from the strut respectively secured to said sheets, said strut having side walls extending longitudinally of the car respectively secured to the flanges on the inner ends of said plates and also having a base portion integrally connecting said walls projecting on opposite sides of said plates adapted to be overlappingly secured to the top of the center sill.

4. A composite body bolster adapted for use beneath an inclined floor of a railway hopper car, said bolster including substantially vertical plates adapted to be respectively disposed on opposite sides of the center sill of the car, each of said plates being provided adjacent its inner end with flanged portions respectively adapted to be secured to the adjacent side of the center sill and to extend upwardly above the center sill, and a cast metal member rigidly connecting said plates, said member comprising a web portion secured to corresponding faces of said plates and a strut projecting from one side of said web adjacent the central portion thereof, said strut having spaced walls respectively secured to the flanged portions of said plates extending above the center sill and a base portion integrally connecting said walls adapted to be overlappingly secured to the top of the center sill.

5. A composite body bolster adapted for use beneath an inclined floor of a railway hopper car, said bolster including substantially vertical plate members respectively extending from the sides of the car to the center sill, side bearing wear plates respectively secured to said plate members, and a cast metal member provided with a

centrally disposed strut adapted to be interposed between the center sill of the car and the inclined floor and with a web overlappingly secured to said plate members projecting on opposite sides of said strut to points in substantial vertical alignment with said side bearing wear plates, and reinforcing means secured to said plate members respectively connecting said side bearing wear plates to the adjacent ends of said web, said strut having spaced walls respectively secured to the inner ends of said plate members and also having a base portion adapted to be secured in overlapping relation to the top of the center sill.

6. In a railway hopper car, the combination with an inclined floor of the car and the center sill, of a composite body bolster including substantially vertical plate members respectively dis-

posed on opposite sides of the center sill and provided with side bearing wear plates, a cast metal member disposed above the center sill rigidly connecting said plate members and having vertically spaced portions respectively secured to the inclined floor and to the top of the center sill, said cast metal member being provided with portions respectively projecting beyond the sides of the center sill secured to said plate members, and substantially vertical reinforcing members extending upwardly from adjacent said side bearing wear plates on opposite sides of each of the plate members, the upper end of at least one reinforcing member of each plate member being rigidly secured to the adjacent end of the cast metal member.

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