No. 881,466. PATENTED MAR. 10, 1908

E. I. DODDS.

RAILWAY CAR.

APPLICATION FILED APR. 29, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

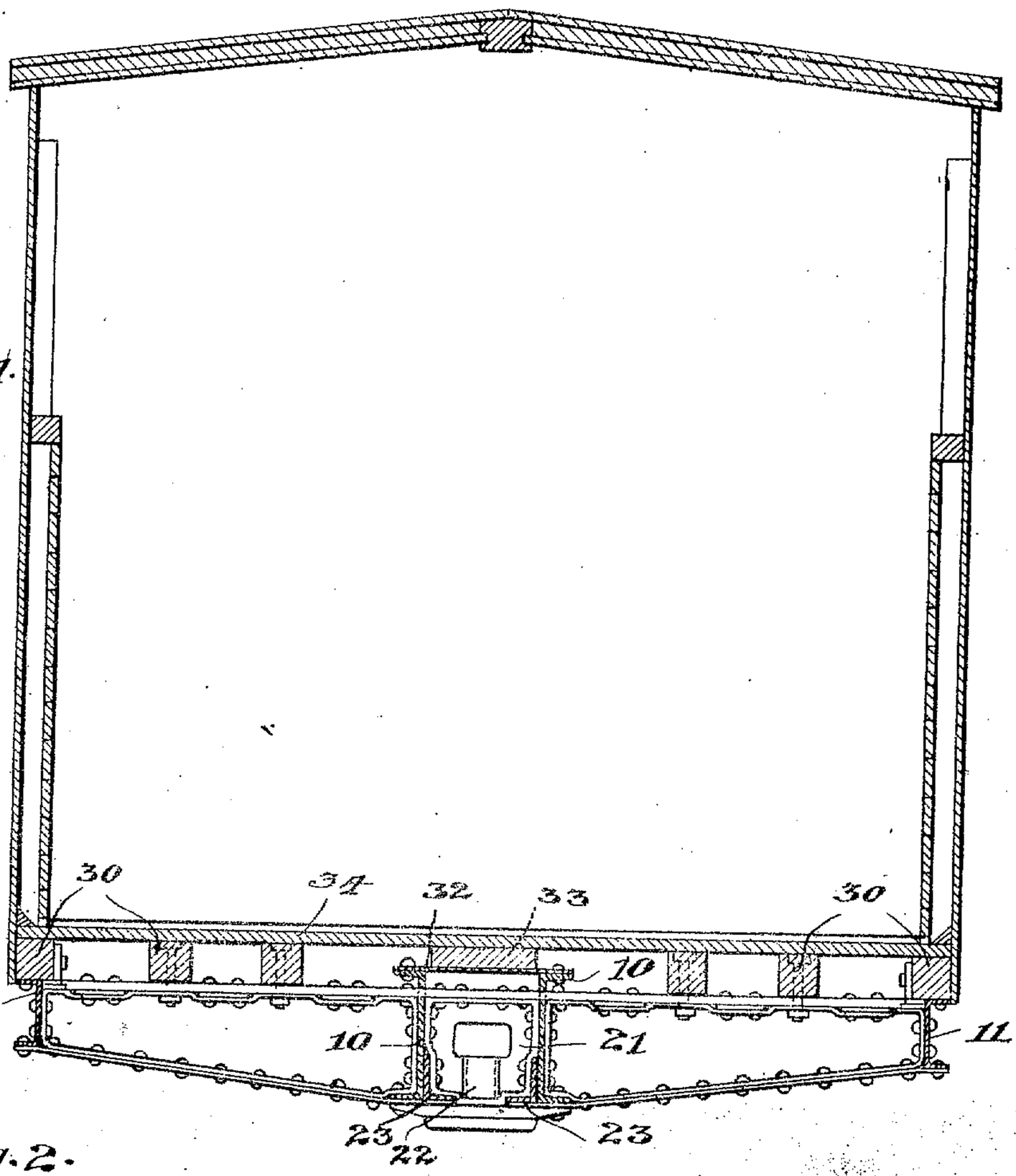
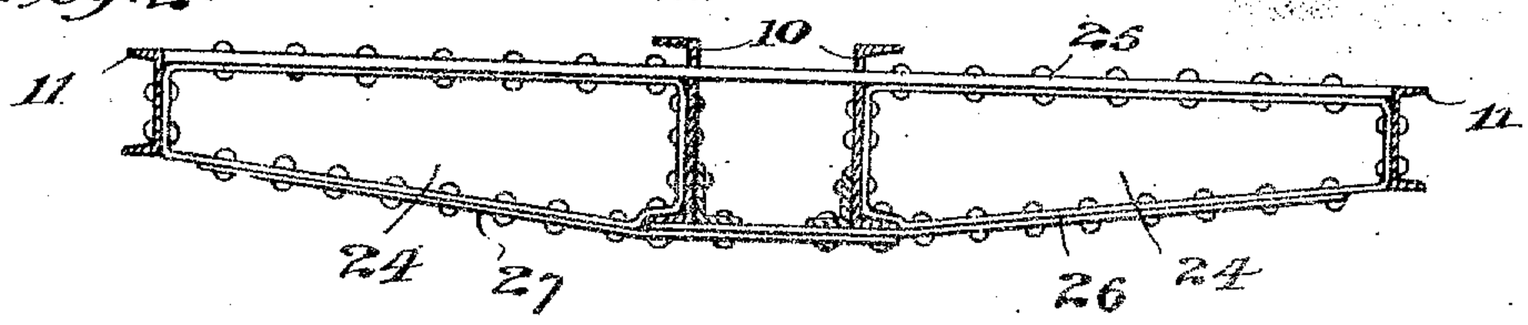


Fig. 2.



Witnesses,
F. C. Mann,
Walter M. Fuller

Inventor,
Ethan I. Dodds
By Offield Towle & Luthicum
Att'ys.

No. 881,466. PATENTED MAR. 10, 1908.

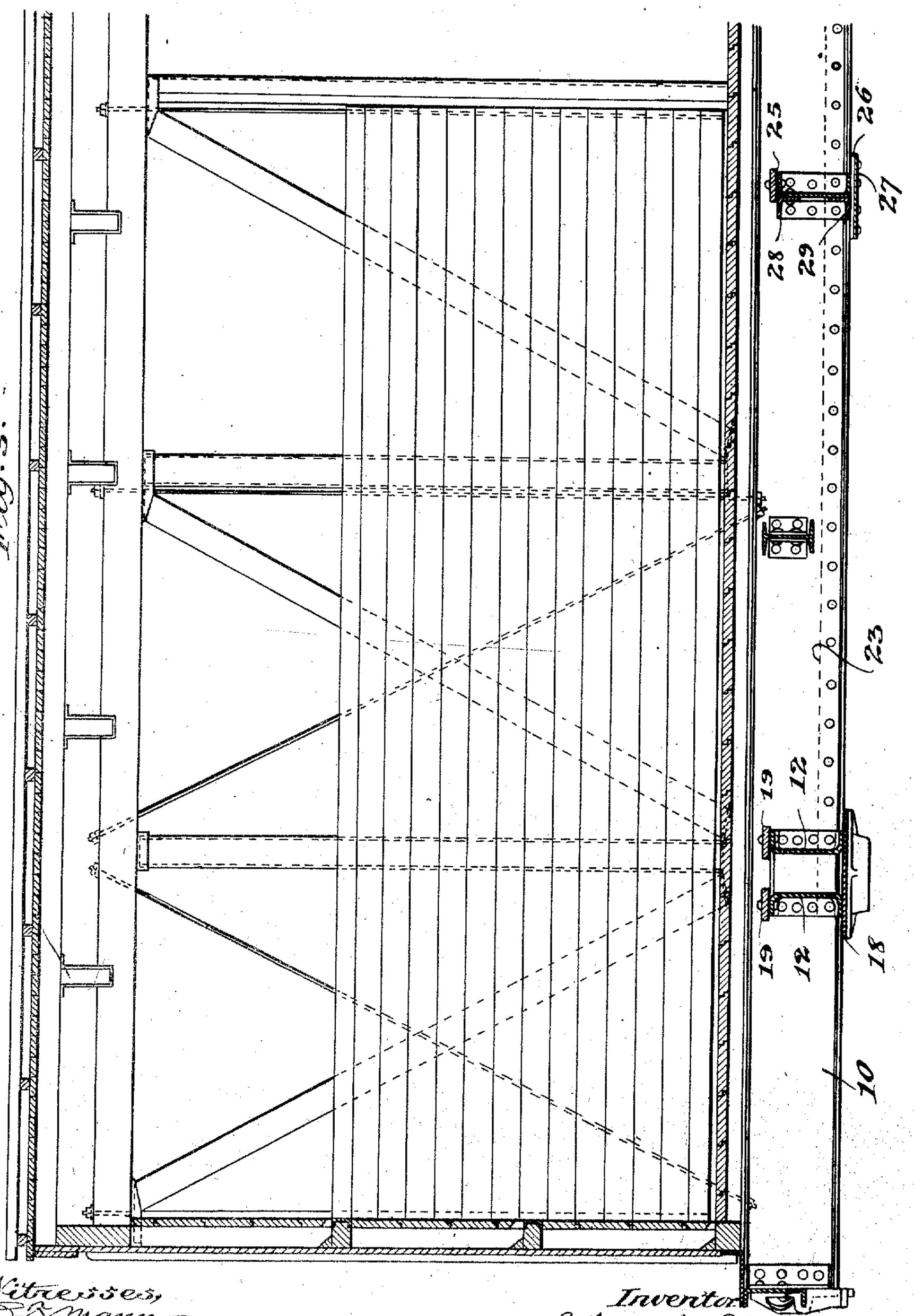
E. I. DODDS.

RAILWAY CAR.

APPLICATION FILED APR. 29, 1907.

3 SHEETS—SHEET 2.

Fig. 3.



Witnesses,
E. S. Mann,
Walter M. Fuller

Inventor:
Ethan I. Dodds
By Offield Towle & Linthicum Attys.

No. 881,466. PATENTED MAR. 10, 1908.

E. I. DODDS.

RAILWAY CAR.

APPLICATION FILED APR. 29, 1907.

3 SHEETS—SHEET 3.

Fig. 4.

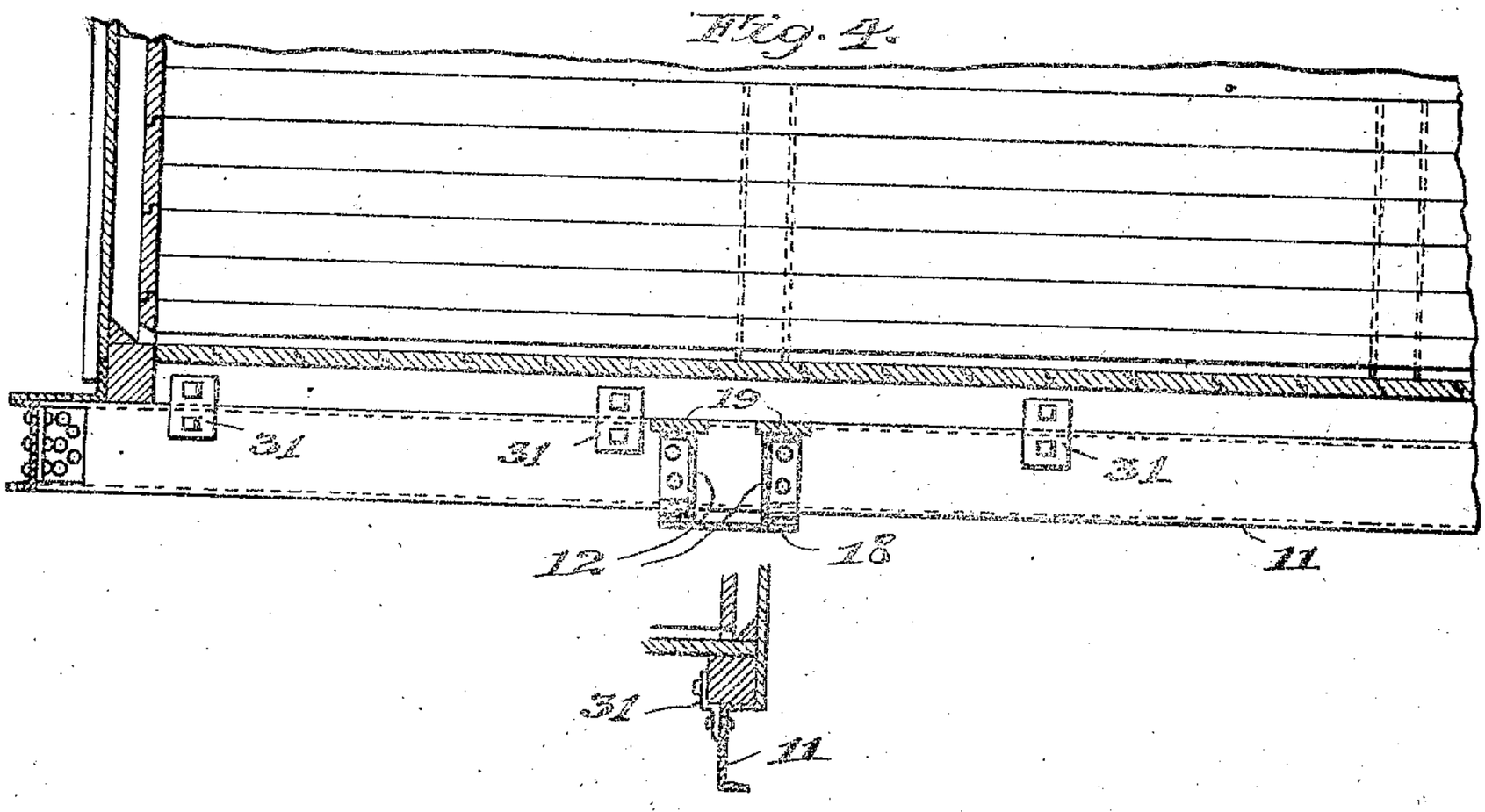
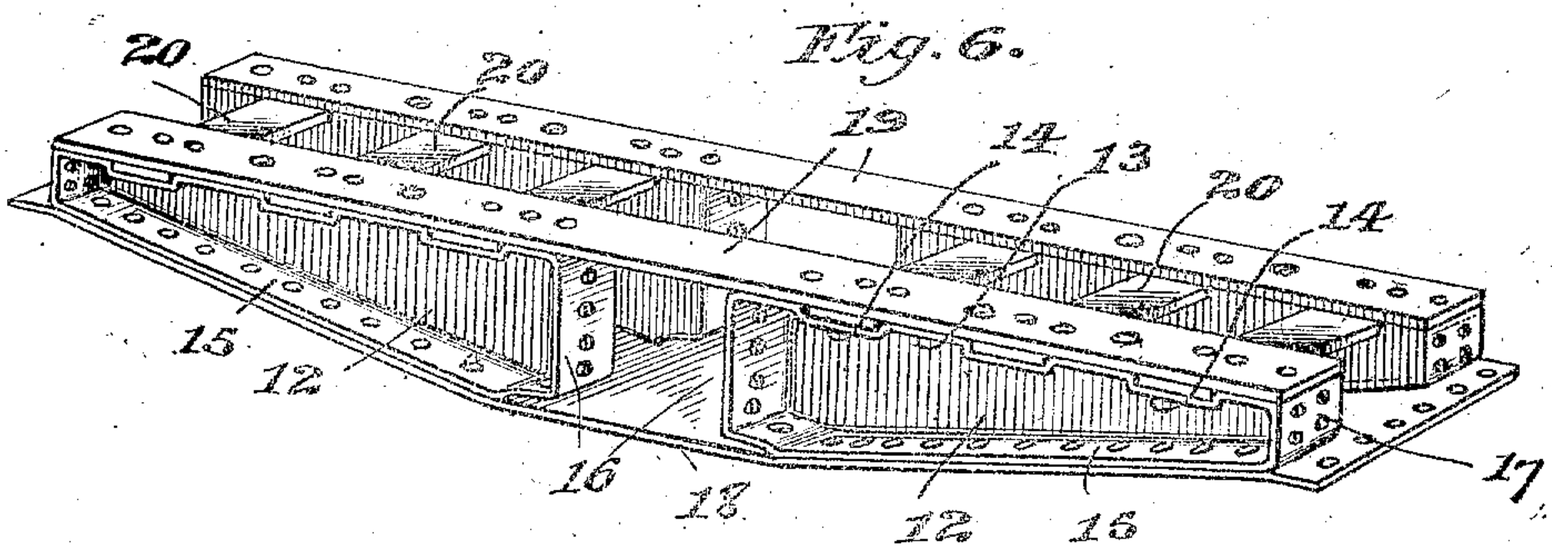


Fig. 5.

Fig. 6.



Witnesses,
F. D. Mann,
Walter M. Fuller

Inventor,
Ethan I. Dodds
By Offield Towle & Linthicum
Attys.

UNITED STATES PATENT OFFICE.

ETHAN I. DODDS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE PULLMAN COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RAILWAY-CAR.

No. 881,466. Specification of Letters Patent. Patented March 10, 1908.

Application filed April 29, 1907. Serial No. 370,833.

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

My invention concerns improvements in railway car bolsters and cross-bearers or flying transoms.

It is my object to produce a body-bolster which, with a minimum weight of metal, will have a maximum degree of strength. This result I accomplish by a proper distribution of the metal, and especially by having the top tension members disposed substantially wholly over the diaphragms or beams of the bolster, the latter being transversely connected together by a number of tie bars which, if desired, may rest in recesses or seats on the top surfaces of the beams or diaphragms. Instead of having a single plate or bar compression member on the under side of the cross-bearer or transom, I employ two such plates or bars and overlap them beneath the center sills whereby if one portion of the cross-bearer becomes damaged or injured it is only necessary to remove one of the compression plates to effect repairs.

I have illustrated my preferred embodiment of the invention on the accompanying drawings forming a part of this specification.

On said drawings Figure 1 is a vertical cross-section of a box car embodying my invention; Fig. 2 is a side elevation of one of the cross-bearers or flying transoms showing the center and side sills in section; Fig. 3 is a longitudinal vertical section of a portion of the car outside of and adjacent to the center sills; Fig. 4 is a fragmentary longitudinal vertical section adjacent to one of the side sills; Fig. 5 is a cross-section of a detail of construction; and Fig. 6 is a perspective view of my improved form of body-bolster.

Referring to the drawings, it will be noticed that the car underframe includes a pair of channel center sills 10, 10 spaced apart and disposed with their flanges extended outwardly. The underframe also includes the channel side sills 11, 11 with their flanges projected outwardly. The body-bolster comprises a pair of tapered beams or dish-shaped diaphragms 12, 12 on each side of the center sills, each beam 12 having a top flange 13 provided with a number of transverse recesses or seats 14 on its upper face, three (3) of such seats being provided for each beam in the present instance. On its lower edge each beam or diaphragm has an inclined flange 15, the beam at its inner and outer ends having flanges 16 and 17 respectively riveted to the webs of the center sill and side sill respectively. I provide a single broad compression plate 18 riveted to the flanges 15 of all of the beams and extended beyond the ends of the beams so as to underlie and be riveted to the lower flanges of the side sills 11, as is clearly indicated in Fig. 1.

Along the top of the body-bolster I provide two (2) tension bars 19 of substantial thickness, each being located above and riveted to the top flange 13 of one of the beams 12 on each side of the center sills, the webs of the latter being apertured or slotted to accommodate the bars 19 which extend substantially the full length of the bolster. In order to brace the bolster transversely and tie the beams 12 together, I provide a plurality of bars 20 which rest in the seats 14 and are riveted to the flanges 13 and to the bars 19, as is clearly shown in Fig. 6. Between the center sills I employ a spreader or diaphragm 21 which is provided with a king pin socket 22 and is riveted to the webs of the center sills, to bars 19, and to longitudinal angle bars 23 extending along the inner surfaces of the lower marginal edges of the center sills. It will be noticed that by using bars 19 of substantial cross-section the strains on these top tension bars are limited to the planes of the beams or diaphragms 12, by which construction I am permitted to use a minimum amount of metal to secure the requisite strength. I find that the tie bars 20 are sufficiently strong to maintain the beams or diaphragms 12 in place and to stiffen and strengthen the bolster transversely.

For the cross-bearers or needle beams I employ a construction like that shown in Fig. 2 wherein a pair of beams or diaphragms 24 have their inner end flanges riveted to the webs of the center sills 10, 10 and their outer end flanges riveted to the webs of the channel side sills 11, 11. The webs of the center sills on a level with the tops of the beams 24 are apertured or provided with holes through which passes a tension bar 25 extended from side sill to side sill and riveted to the top flanges of the beams 24. Instead of using a

single bottom compression plate riveted to the lower flanges of the beams 24, I prefer to use two (2) such compression plates or members 26 and 27, each of which is riveted to the lower flange of one of the beams 24, the inner ends of the plates 26 and 27 being overlapped, as shown in Fig. 2, and riveted not only to each other but also to the lower flanges of the center sills. With a construction of cross-bearers or needle beams of this kind, if one portion or side thereof is damaged the injured diaphragm 24 may be readily removed by taking off or removing only one of the compression plates, whereby a saving of time and cutting of rivets is effected. At the same time my new form of compression member has great strength because of the secure fastening together of the two parts and their riveting to the center sills. If desired, the channel or dish-shaped beams 24 may be strengthened by angle bars 28 and 29 riveted along their edges, as shown in Fig. 3. It is to be understood that this overlapping feature of the compression plates may be used equally as advantageously in the body bolster.

This form of underframe construction is suitable for use in cars of various kinds, but I have illustrated my invention as embodied in a box car, and in such a car the longitudinal wooden stringers 30 rest upon the tension bars 19 of the body-bolster and upon the corresponding parts of the other transverse underframe members. The outside stringers 30 however rest upon the top flanges of the side sills 11, 11, and in order to retain them in place I use off-set brackets 31, shown in Fig. 5, which are fastened to the webs of the side sills and to the inner faces of the stringers. The longitudinal metal plate 32 is fastened to the top flanges of the center sills, and on top of the same is placed another stringer or nailing strip 33, the floor 34 being fastened to the longitudinal wooden members, as is clearly illustrated, and as will be readily understood.

To those skilled in the art it will be apparent that many changes may be made in the construction herein shown and described without departure from my invention. For example, the seats or recesses 14 of the beams 12 can be omitted, if desired, and the tie bars 20 caused to rest upon the top faces of the upper flanges of the beam, or, if desired, the tie bars 20 may be located above the tension bars 19.

I claim:

1. In a railway car, the combination of center sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, a bottom compression member fastened to the under sides of said beams or diaphragms, a pair of tension bars each fastened to the tops of two of said beams or diaphragms on opposite sides of said center sills, and means to tie said beams or diaphragms together transversely, substantially as described.

2. In a railway car, the combination of center sills, a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, a bottom compression member fastened to the under sides of said beams or diaphragms, a pair of tension bars located in the planes of said beams or diaphragms and each fastened to the tops of two of them on opposite sides of said center sills, and means to tie said beams or diaphragms together transversely, substantially as described.

3. In a railway car, the combination of center sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, each of said beams or diaphragms having a top and bottom marginal flange, a compression member fastened to the bottom flanges of said beams or diaphragms, a pair of tension bars located in the planes of said beams or diaphragms and each fastened to the top flanges of two of them on opposite sides of said center sills, and means to tie said beams or diaphragms together transversely, substantially as described.

4. In a railway car, the combination of center sills, side sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, each of said beams or diaphragms having a top and bottom marginal flange and inner and outer end flanges fastened respectively to one of the center sills and one of the side sills, a compression member fastened to the bottom flanges of said beams or diaphragms, a pair of tension bars located in the planes of said beams or diaphragms and each fastened to the top flanges of two of them on opposite sides of said center sills, and means to tie said beams or diaphragms together transversely, substantially as described.

5. In a railway car, the combination of apertured center sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, each of said beams or diaphragms having a top and bottom marginal flange, a compression member fastened to the bottom flanges of said beams or diaphragms, and a pair of tension bars passing through the apertures of said center sills and each fastened to the top flanges of two of said beams or diaphragms on opposite sides of said center sills, and means to tie said beams or diaphragms together transversely, substantially as described.

6. In a railway car, the combination of center sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, each of said beams or diaphragms having a top and bottom marginal flange and one or more seats or recesses on its top face, a compression member fas-

tened to the bottom flanges of said beams or diaphragms, a pair of tension bars each fastened to the top flanges of two of said beams or diaphragms on opposite sides of said center sills, and transverse tie bars resting in said seats or recesses and fastened to said beams or diaphragms to tie the same together transversely, substantially as described.

7. In a railway car, the combination of apertured center sills, side sills, and a body-bolster comprising a pair of beams or diaphragms on each side of said center sills, each of said beams or diaphragms having a top and bottom marginal flange and inner and outer end flanges fastened respectively to one of the center sills and one of the side sills, each of said beams or diaphragms having on its top surface one or more seats or recesses, a compression plate fastened to the bottom flanges of said beams or diaphragms, a pair of tension bars passing through the apertures of said center sills, and each fastened to the top flanges of two of said beams or diaphragms on opposite sides of said center sills, and tie bars resting in said seats or recesses and fastened to said beams or diaphragms to tie the same together transversely, substantially as described.

8. In a railway car, the combination of a pair of center sills, transverse beams on opposite sides thereof and fastened thereto, a tension member secured to the tops of said beams, and a pair of compression members each fastened to the bottom of one of said beams and to both of said center sills, substantially as described.

9. In a railway car, the combination of center sills, transverse beams on opposite sides thereof and fastened thereto, a tension member secured to the tops of said beams, and a pair of compression members each fastened to the bottom of one of said beams, to one or more of said center sills, and to the other compression member, substantially as described.

10. In a railway car, the combination of center sills, transverse beams on opposite sides thereof and fastened thereto, and a pair of compression members each fastened to the bottom of one of said beams, the inner ends of said compression members being overlapped and fastened together, substantially as described.

11. In a railway car, the combination of center sills, transverse beams on opposite sides thereof and fastened thereto, a tension member secured to the tops of said beams, and a pair of compression members each fastened to the bottom of one of said beams and to one or more of said center sills, the inner end of said compression members being overlapped and fastened together, substantially as described.

ETHAN I. DODDS.

Witnesses:
FREDERICK C. GOODWIN,
WALTER M. FULLER.