No. 786,224. PATENTED MAR. 28, 1905.

C. A. LINDSTRÖM & J. F. STREIB.

CAR.

APPLICATION FILED APR. 25, 1904.

2 SHEETS—SHEET 1.

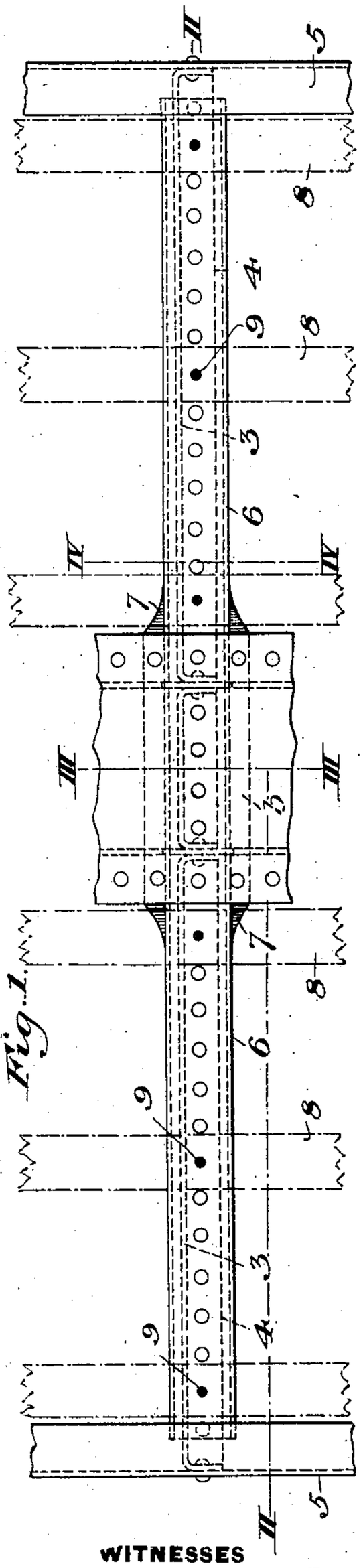

Fig. 1.

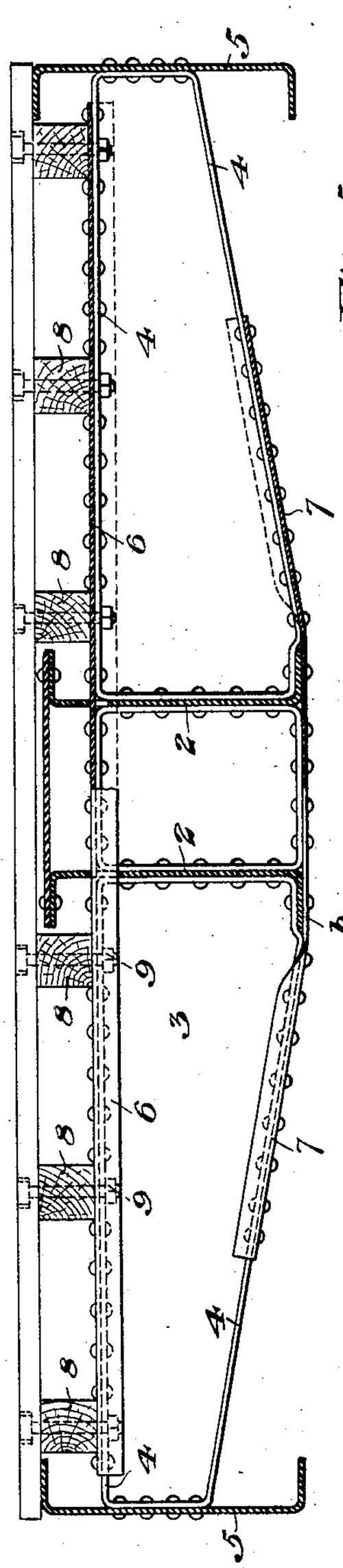

Fig. 2.

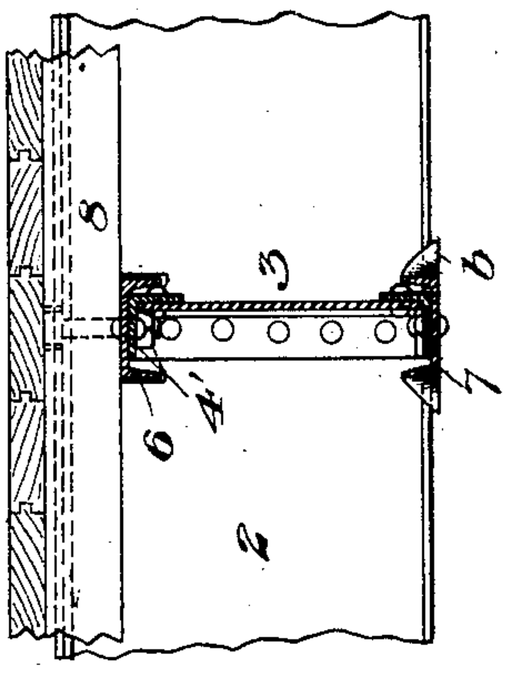

Fig. 5.

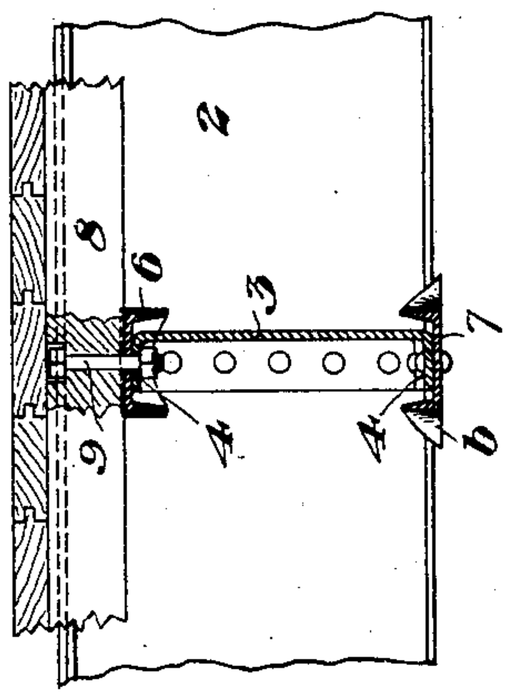

Fig. 4.

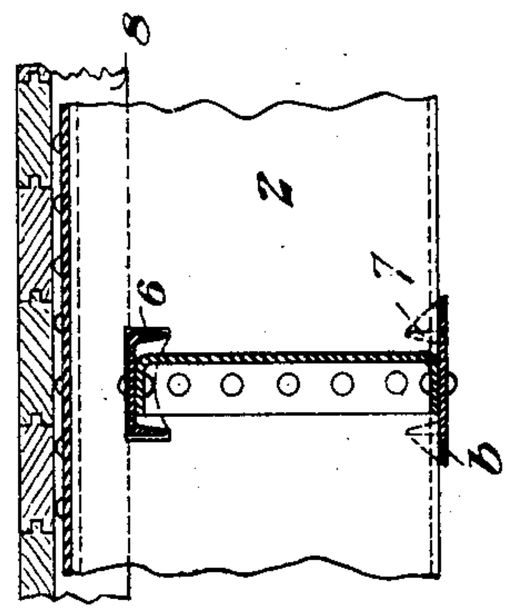

Fig. 3.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 8.

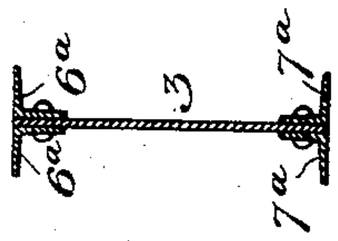


Fig. 7.

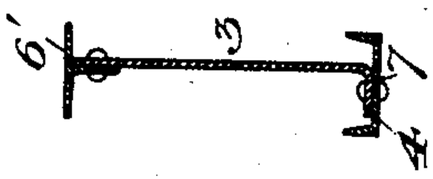


Fig. 6.

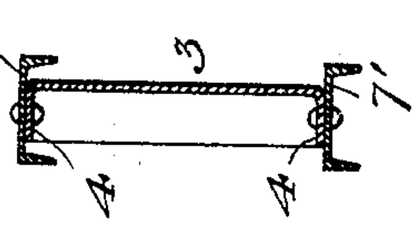
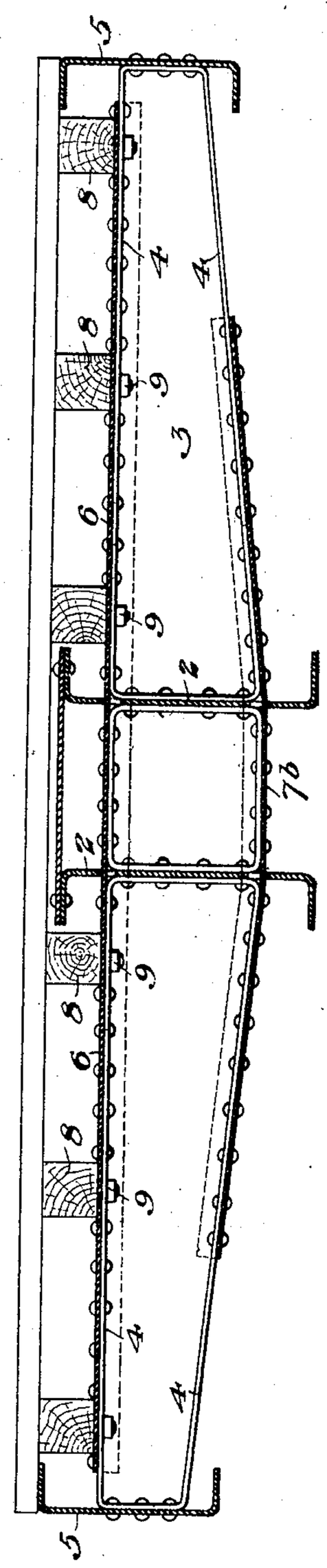


Fig. 9.



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No. 786,224. Patented March 28, 1905.

UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTRÖM, OF ALLEGHENY, AND JOHN F. STREIB, OF AVALON, PENNSYLVANIA, ASSIGNORS TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CAR.

SPECIFICATION forming part of Letters Patent No. 786,224, dated March 28, 1905.

Application filed April 25, 1904. Serial No. 204,706.

To all whom it may concern:

Be it known that we, CHARLES A. LINDSTRÖM, of Allegheny, and JOHN F. STREIB, of Avalon, Allegheny county, Pennsylvania, have invented a new and useful Car, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a diaphragm in accordance with our invention. Fig. 2 is a vertical section on the line II II of Fig. 1. Fig. 3 is a vertical cross-section on the line III III of Fig. 2. Fig. 4 is a similar section on the line IV IV. Fig. 5 illustrates a modification, and Figs. 6 to 9 are sectional views illustrating modifications.

The object of our invention is to provide a car construction in which the cross members—that is to say, the bolsters or diaphragms—are lowered, so as to permit the use of continuous stringers for the floor and to provide a wide surface for the stringers. It affords a strong arrangement in which a minimum number of rivets are employed to fasten the parts together. The diaphragm is composed of a vertical member, preferably with integral bent flanges, which constitutes the web, and attached channels or angles, which constitute the flanges. The diaphragms extend between the center sill and side sills, and the channel-flanges extend through the center sills and impart great strength to the device, as well as a broad resting-surface for the stringers.

In the drawings, 2 represents the center sill, and 3 3 are the vertical webs of the diaphragm composed of plates having integral bent flanges 4 at the sides and ends, through which they are riveted to the center sill and to the side sills 5. Along the top of the webs, extending transversely through the center sill, is a channel-beam 6, which is riveted to the flanges 4 as a cap member. A similar channel 7 extends along the bottom margin of the webs and under the center sill and is riveted thereto, the flanges of the channels being flattened, as at *b*, under the center sill. The webs are below the level of the top of the center sill and side sills, and in the intermediate space are continuous stringers 8, which are secured by bolts 9 passing through the channels 6 and through the flanges 4.

Instead of the integral flange 4 at the top of the diaphragm-webs we may employ attached angle-pieces 4′, constituting flanges, as shown in Fig. 5.

The diaphragm-webs may be attached to the center sill either by connecting angle-irons or by bending the end of the diaphragm-web.

In Fig. 6 we show a modification which differs from the construction shown in Figs. 1 to 4 in that the channel-beam 7′ along the lower edge of the diaphragm-web has its flanges directed downwardly, so as to present its flat bottom side to the lower edge of the web. This makes it unnecessary to flatten the middle portion of the channel, as at *b* in Fig. 2.

In the construction shown in Fig. 7 the channel-beam at the top edge of the diaphragm-web of Figs. 1 to 4 is substituted by a beam of T-section 6′, which is riveted to the margin of the diaphragm-web, as shown.

In Fig. 8 the top and bottom channel-beams of Figs. 1 to 4 are replaced by pairs of angles 6^a 7^a, which are riveted to the margins of the web.

In the modification shown in Fig. 9 the flange member 7^b passes through the center sill in like manner to the arrangement of the flange member 6 of this and the other figures.

The importance of using a flanged member at the margin of the diaphragm which extends through the center sill is that the flanges afford material which, being located at a considerable distance from the neutral axis of the diaphragm, gives the strongest possible construction for a given weight of metal. It thus constitutes a bolster or diaphragm of rigid construction more suitable to absorb horizontal impacts than the bolsters and diaphragms which have heretofore been employed.

Within the scope of our invention the device may be modified, since what we claim is—

1. A cross member for cars having a web composed of a vertical member flanged at the top and having also an attached flanged cap member; substantially as described.

2. A car having a center sill, a cross member composed of a vertical web attached at the ends to the center sill, and having an attached flanged member extending along the margin and through the center sill; substantially as described.

3. A car having a center sill, a cross member composed of a vertical web having integral flanges at the inner ends and margin, attached at the said ends to the center sill, and having an attached flanged member extending along the margin and through the center sill; substantially as described.

4. A car having a center sill, a cross member composed of a vertical web having an attached flanged member extending along a margin and through the center sill; substantially as described.

5. A car having a center sill, a cross member composed of a vertical web having flanges at the inner ends and margin, attached at the said ends to the center sill, and having an attached channel extending along the margin and through the center sill; substantially as described.

6. A car having a center sill, a cross member composed of a vertical web having flanges at the inner ends and margin, attached at the said ends to the center sill, and having an attached channel extending along the margin and through the center sill, and stringers supported on the channel; substantially as described.

7. A car having a center sill, a cross member composed of a vertical web having flanges at the ends, attached at the ends to the center sill and side sill below the level of the center sill, and a marginal flanged member extending through the center sill; substantially as described.

8. A car having a center sill, a cross member composed of a vertical web having flanges at the ends, attached at the ends to the center sill and side sill below the level of the center sill, and a marginal channel member extending through the center sill; substantially as described.

9. A car having a center sill, a cross member composed of a vertical web, and channels applied to the top and bottom of the diaphragm, the upper channel extending through the center sill; substantially as described.

10. A car having a center sill, a cross member composed of a vertical web, and channels applied to the top and bottom of the diaphragm, the upper channel extending through the center sill and the lower channel having flattened flanges at the place of attachment to the center sill; substantially as described.

In testimony whereof we have hereunto set our hands.

CHARLES A. LINDSTRÖM.
JOHN F. STREIB.

Witnesses:
H. B. FISHER,
FRANK DITCHFIELD.