

A. E. OSTRANDER.

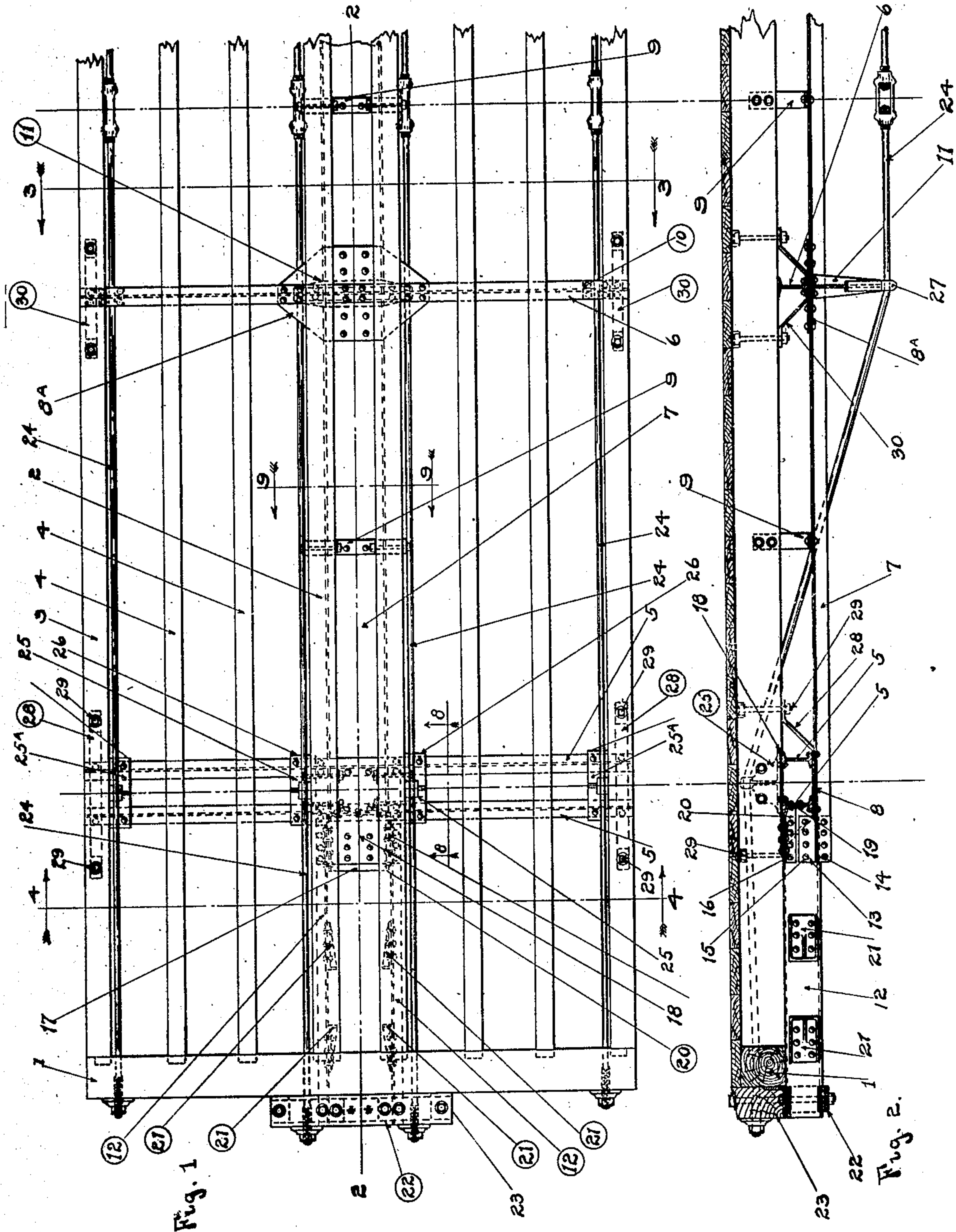
CAR UNDERFRAME.

APPLICATION FILED NOV. 2, 1907.

Patented May 4, 1909.

920,384.

3 SHEETS—SHEET 1.



WITNESSES:

Charles H. Turner.
H. B. Pearson.

INVENTOR

Allen E. Ostrander

BY

J. H. Gibbs

ATTORNEY

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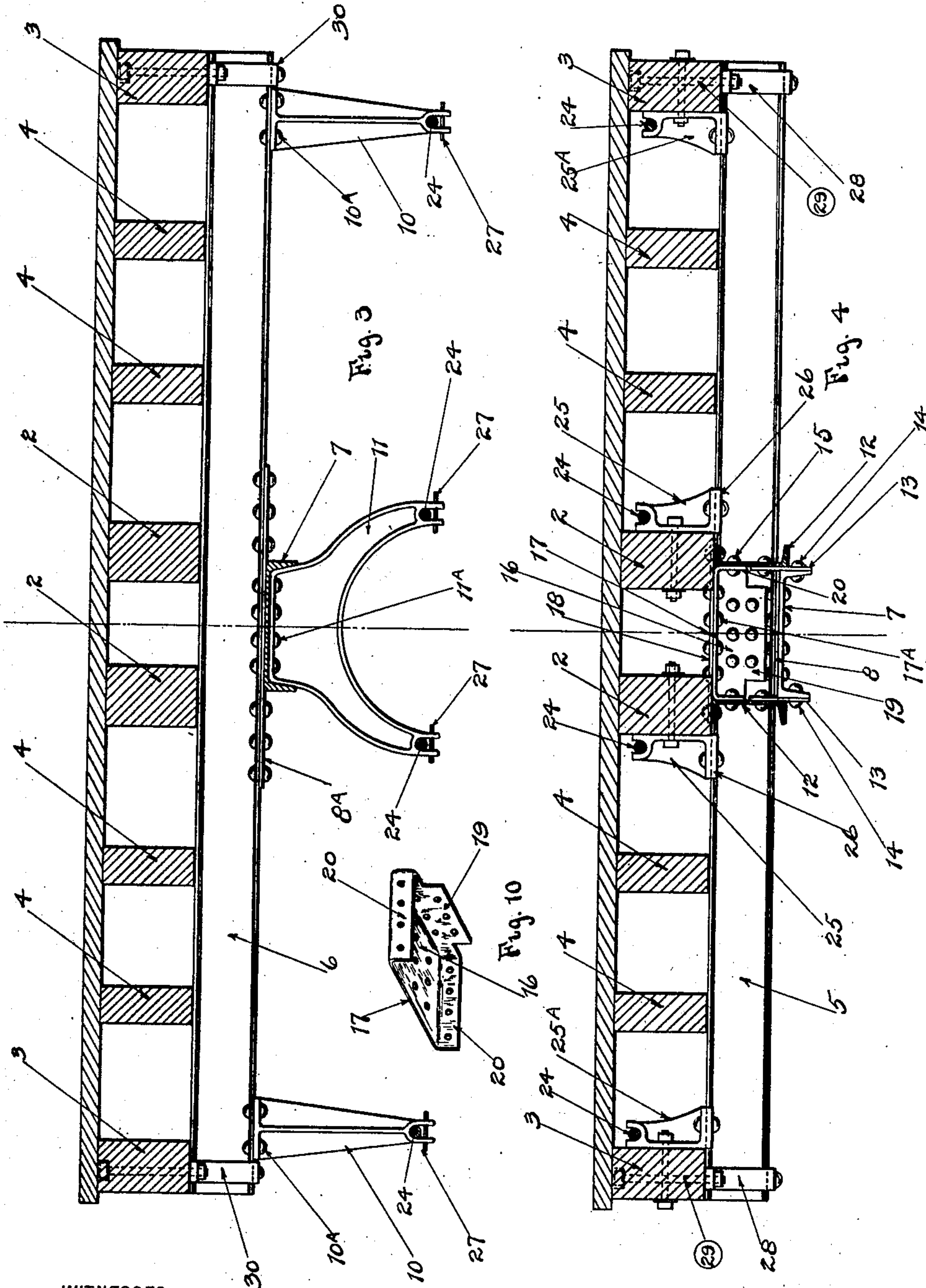
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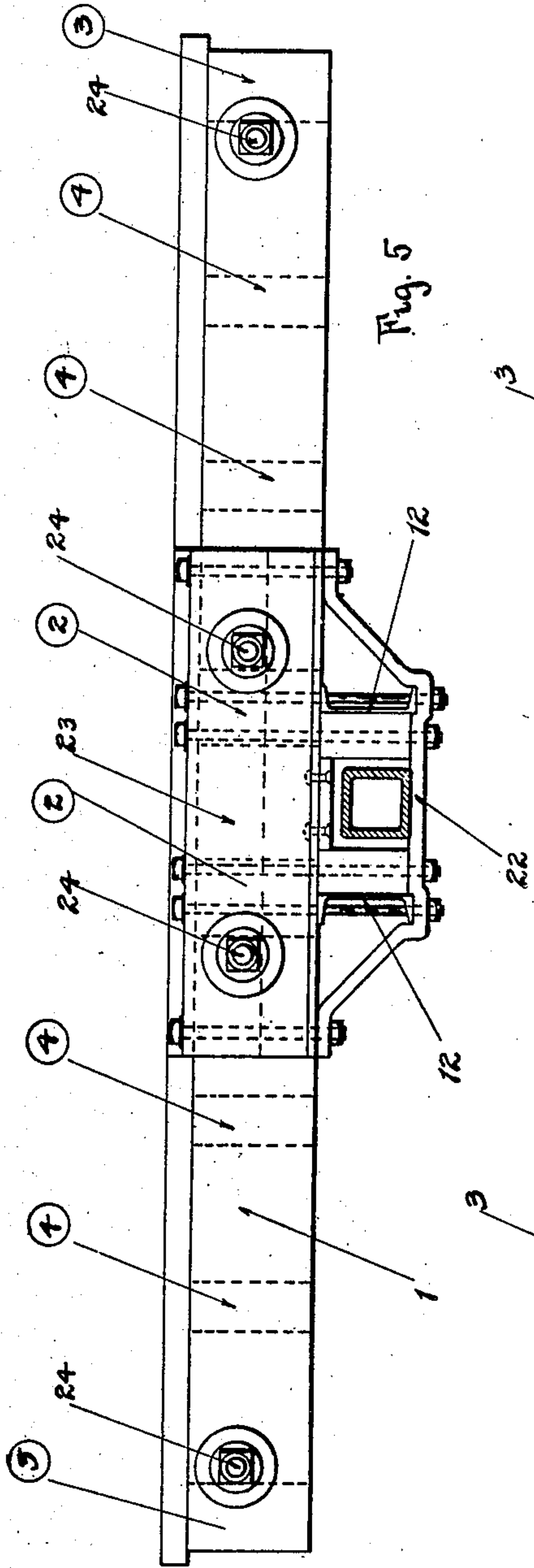


Fig. 5

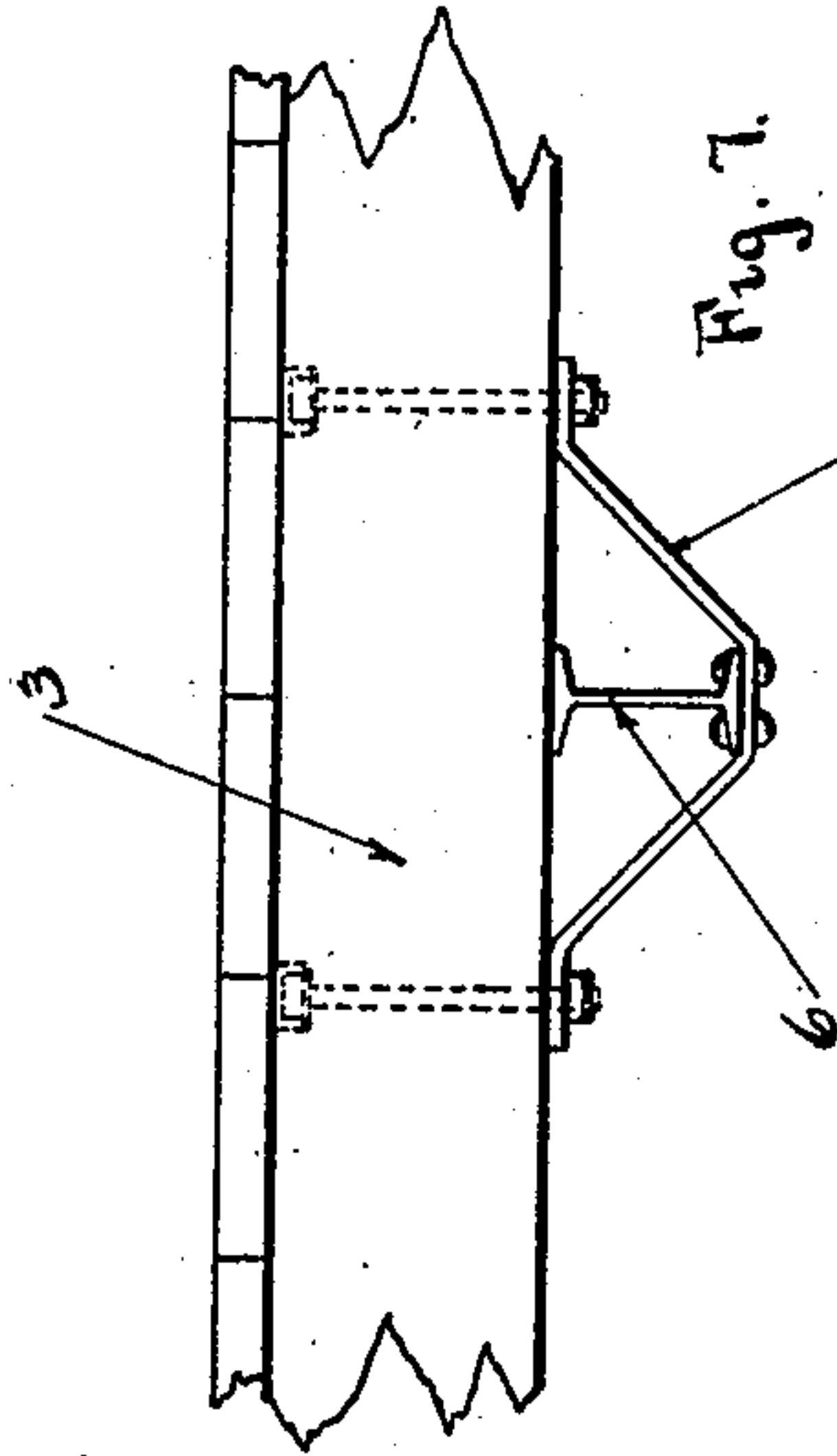


Fig. 7

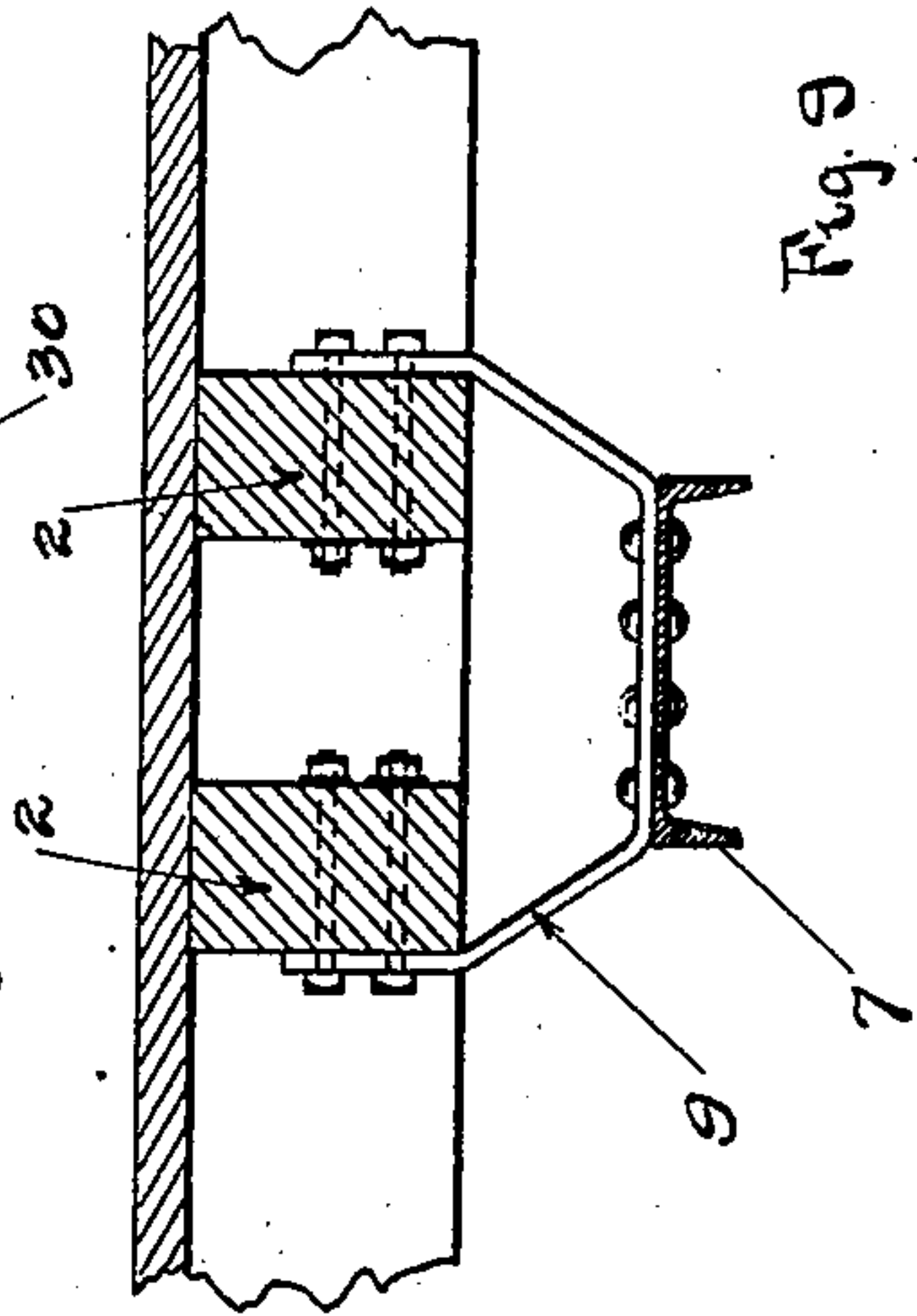


Fig. 9

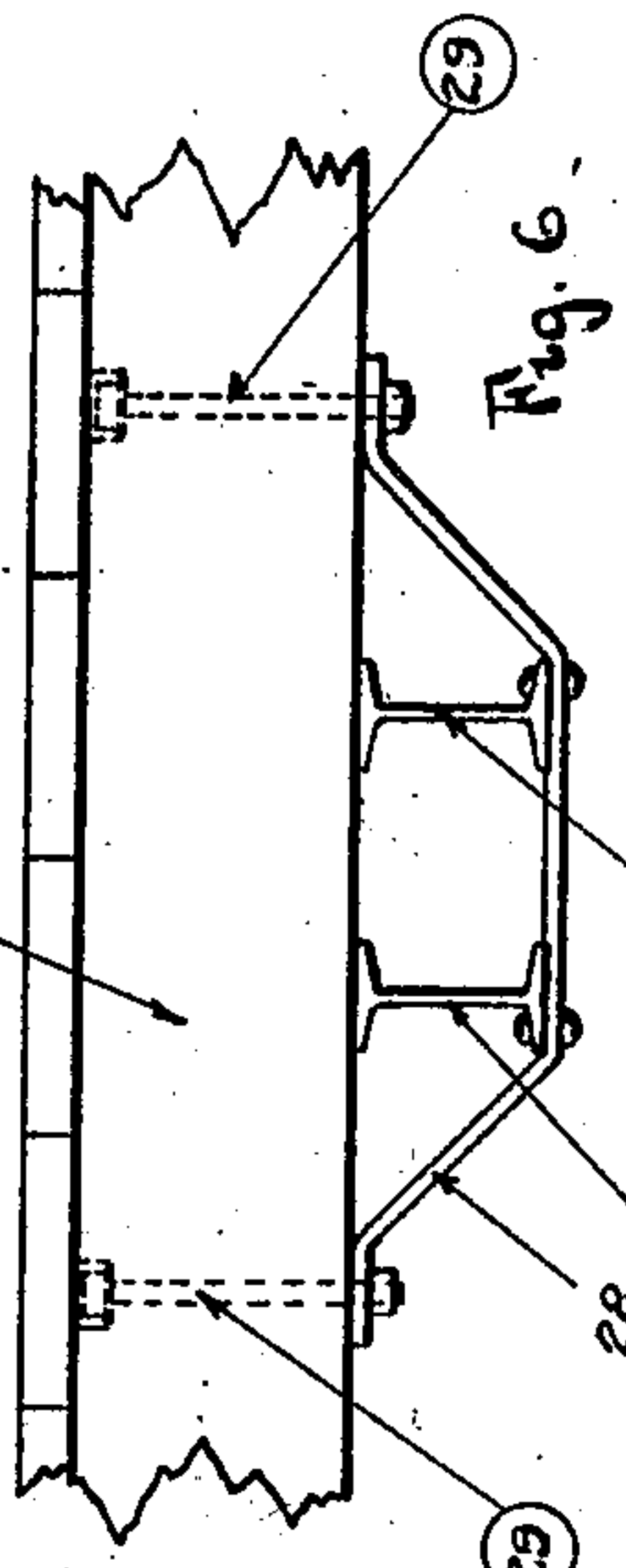


Fig. 6

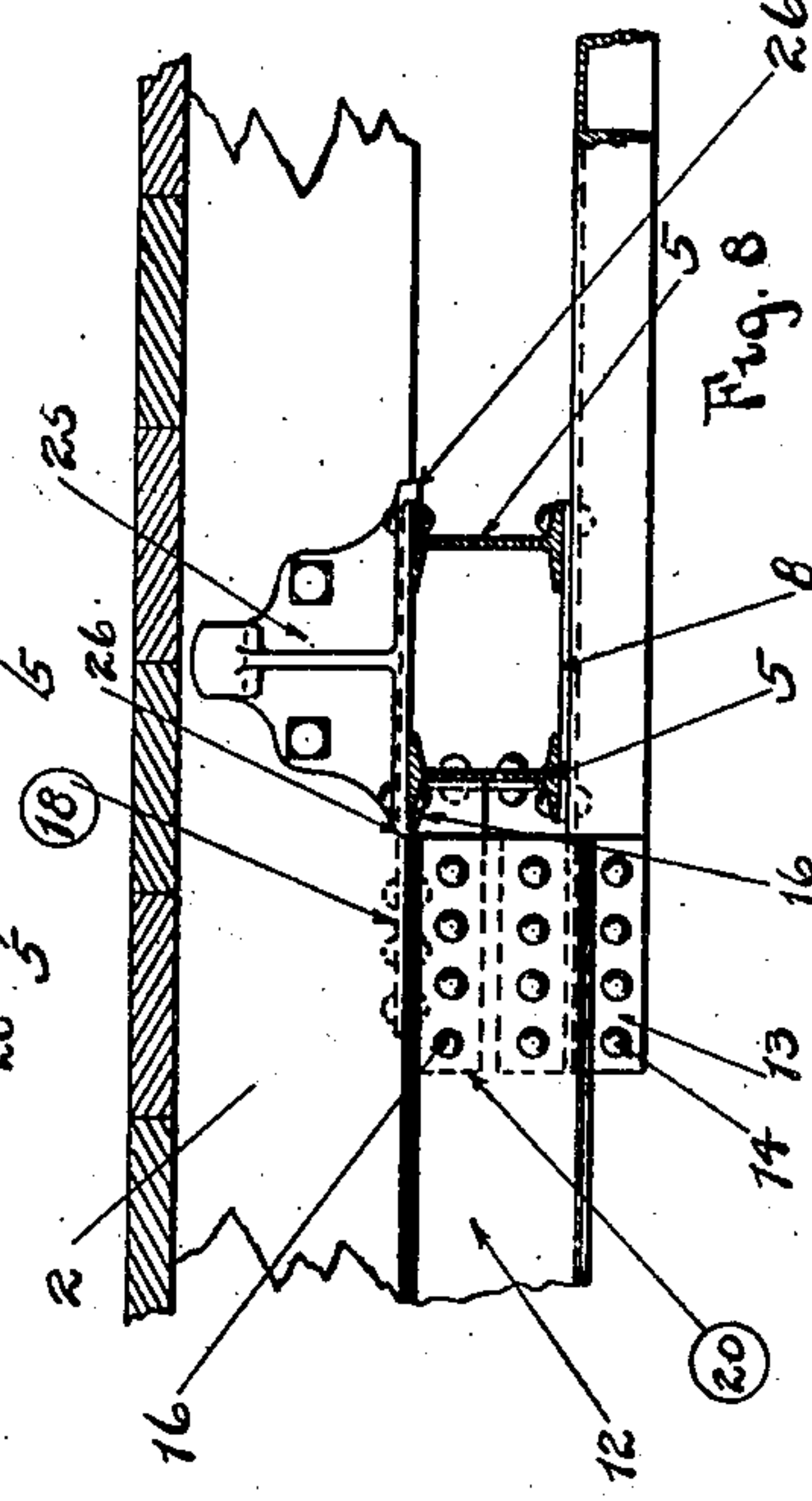


Fig. 8

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UNITED STATES PATENT OFFICE.

ALLEN EDWARD OSTRANDER, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM H. WOODIN, OF NEW YORK, N. Y.

CAR-UNDERFRAME.

No. 920,384.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed November 2, 1907. Serial No. 400,430.

To all whom it may concern:

Be it known that I, ALLEN EDWARD OSTRANDER, residing at the city, county, and State of New York, and being a citizen of the United States, have invented certain new and useful Improvements in Car-Underframes, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which illustrate the preferred form of invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof will occur to persons skilled in the art.

This invention relates to improvements in underframes for railway cars, and is especially adapted for use in cars having side, center and end sills of wood, or other material supported in a given plane, with bolsters, cross-bearers and draft sills in another plane, while said draft sills are suitably connected so as to transmit buffing and pulling stresses without undue strain on the floor-frame used as a support for the load. To that end I have produced the structure disclosed in the accompanying drawings in which the longitudinal sills extend from end sill to end sill, there being continuous bolsters and continuous cross-bearers suitably disposed below said longitudinal sills, and end sills in the same plane with the longitudinal sills, there being also truss rods extending from end sill to end sill, as shown, and struts cooperating with the said truss rods. Positioned between the said cross-bearers and some of the said struts is a continuous draft-transmitting connecting member in the form of a channel which is horizontally disposed, that is with the flanges thereof depending below the web of said connecting member, while short draft sills extend from the bolsters relatively flush with the outer face of the usual dead-block and by said draft-sills is carried the draft-rigging. The inner ends of the draft sills are connected to the bolsters and to said draft transmitting member by suitable rigid connections independent of the center sills so that pulling stresses will be received and transmitted by said draft-sills and connecting member, while cross-bearers extend preferably from side sill to side sill, or to the

equivalent of said side sills, and serve to distribute the load carried by said car. Said cross-bearers serve also as a means for holding the draft transmitting member in proper position and serve as means to resist tendency of said member to buckle during buffing of the car.

In the drawings referred to, Figure 1 is a plan view embodying the elements of my invention. Fig. 2 is a longitudinal section taken on line 2—2 of Fig. 1. Fig. 3 is a transverse section taken on line 3—3 of Fig. 1. Fig. 4 is a transverse section taken on the line 4—4 of Fig. 1. Fig. 5 is the end elevation. Fig. 6 is a fragmentary view of the side sill showing method of stiffening the ends of bolster. Fig. 7 is a view similar to Fig. 6 showing method of stiffening end of the cross bearer or needle beam. Fig. 8 is a fragmentary section taken on the line 8—8 of Fig. 1. Fig. 9 is a fragmentary section taken on the line 9—9 of Fig. 1. Fig. 10 shows details of box connection for draft sills and bolsters.

Referring to the drawing 1 indicates the usual wood end sill of the car, which is secured to the center sills 2 side sills 3, and intermediate sills 4 of the car, all in accordance with the usual accepted standard practice. Below the sills I use a bolster which is composed of two I-beams 5, each being continuous from side sill to side sill. The cross bearer or needle beam 6 is a steel member preferably of an I-section, which also is in one continuous length from side sill to side sill. Below the bolster and cross bearer I place a longitudinally extending channel 7, which is secured to the above mentioned members, and at the bolster and cross bearers I have interposed gusset plates 8, and 8^a respectively, which allows for more rivets being used to secure the parts together.

The main stiffening member or back bone 7 of the underframe is prevented from buckling at points intermediate the cross bearers and bolsters by braces 9. These braces are riveted to the steel member 7 and bolted to the wooden sills. Truss rod supports are secured at the cross bearers, the outside supports 10 being secured to the bottom flanges of the cross bearers 6 by rivets 10^a and the center truss rod support 11 is arranged to seat in the channel 7, to which it is secured by rivets 11^a. At the ends of the back bone

7 the draft sills 12, preferably of channel section, are secured by means of gusset plates 13 placed one on either side of the channel 7 and secured thereto by rivets 14 passing through the gusset plates and flanges of the channel, rivets 15 passing through the gusset plates and web of the draft sills. Near the upper edge of the draft sills is secured a box shaped pressing 16 shown at a larger scale in Fig. 10. The upper flange 17 of this box pressing is secured by rivets 17^a to the top cover plate 18 of the bolster, and is also secured to the top flange of the contiguous I-beam 5 forming part of said bolster. The down turned flange 19 of the pressing is secured to the webs of the contiguous I-beam 5 of the bolster and is deeper to give more space for rivets than are the side flanges 20 which are secured to the draft sills. The usual stops 21 for the draft rigging are riveted to the draft sills as shown, and the draft sills are secured at their outer end by coupler carrier irons 22, which are fastened to the deadwood 23, all as per usual construction. Center truss rods 24, as applied, pass through the deadwood 23 and over the truss rod saddles 25 which are secured to the top of the bolster. As shown in Fig. 8 this saddle 25 is made with lips 26 extending over the edges of the bolster, the object of which will be hereinafter explained. At the needle beams center truss rods fit into the brackets of the strut 11 and are held in place by pins 27 driven through the ends of these brackets. Side truss rods are applied in a similar manner, said side truss rods extending through the end sills, over side truss rod saddles 25^a and under the outside supports 10 or queen posts in which the rods are held by pins 27 as before described and as will be readily understood by reference to the drawings.

The center line of the coupler, which will be the center of buffing and draft rigging is somewhat above the center of resistance represented by the back bone 7 which would result in a tendency to tip the bolster members 5 sidewise. I overcome this tendency by forming lips 26 on the truss rod saddles 25 mentioned heretofore, which, when the truss rods are pulled up tight, serve to hold the bolster in an upright position. The bolster is further stiffened by means of straps or braces 28 located at the ends of the bolster as shown in Fig. 6, which straps are riveted to the bottom flange of the members 5 and are secured to the wooden sills by bolts 29. A similar method is employed for stiffening up the ends of the needle beams 6, a strap 30 being secured to the bottom flange of the beams and bolted to the side sills.

Should the construction of the car be such that a bolster of greater or less depth than that shown in the drawings is required, it is obvious that this change could easily be made without affecting the depth of the

draft sills; it simply requiring a deepening or increasing in width of the gusset plate 13.

Various other modifications of my invention will readily suggest themselves to one skilled in the art, and it should be distinctly understood that I do not limit myself to the exact construction as shown in the drawings.

Having described the invention, what I claim is:

1. In a car underframe, longitudinal sills, bolsters in a plane relatively lower than said sills, a longitudinally extending connecting member in a plane relatively lower than said bolsters at its ends, said member being connected with said bolsters and draft sills in the plane of said bolster.

2. In a car underframe, longitudinal sills, continuous bolsters in a plane relatively lower than said sills, a longitudinally extending connecting member in a plane relatively lower than said bolsters at its ends, said member being connected with said bolsters and draft sills in the plane of said bolster.

3. In a car underframe, longitudinal sills, continuous I-beam bolsters in a plane relatively lower than said sills, a connecting member in a plane relatively lower than said bolsters, said member being connected with said bolsters and draft sills in the plane of said bolster.

4. In a car underframe, longitudinal sills, continuous rolled bolsters in a plane relatively lower than said sills, a connecting member in a plane relatively lower than said bolsters, said member being connected with said bolsters and draft sills in the plane of said bolsters.

5. In a car underframe, longitudinal sills, bolsters in a plane relatively lower than said sills, a channel shaped connecting member in a plane relatively lower than said bolsters, said member extending below and being connected with said bolsters and draft sills in the plane of said bolster.

6. In a car underframe, longitudinal sills, bolsters in a plane relatively lower than said sills, a flanged connecting member in a plane relatively lower than said bolsters, said member being connected with said bolsters and draft sills in the plane of said bolster.

7. In a car underframe, longitudinal sills, bolsters in a plane relatively lower than said sills, a rolled channel connecting member in a plane relatively lower than said bolsters, said member being connected with said bolsters and draft sills in the plane of said bolster.

8. In a car underframe, the combinations comprising continuous bolsters, sills in a relatively higher plane and a single channel shaped connecting member secured below both bolsters.

9. In a car underframe, the combination comprising continuous parallel bolster members, top cover plates connecting said bolster

members and extending there beyond, draft sills connected with said cover plates and with said bolsters and a single connecting member extending beyond the bolsters and
5 connected with the said draft sills.

10. In a car underframe, the combination comprising continuous parallel bolster members, top cover plates connecting said bolster members and extending there beyond, draft
10 sills connected with said cover plates and with said bolsters and a longitudinally extending channel shaped connecting member secured below said bolsters.

11. In a car underframe, the combination
15 comprising longitudinal sills, cross bearers cooperating therewith, bolsters in a plane relatively below said sills and a horizontally disposed flanged connecting member secured to and below said bolster.

20 12. In a car underframe, the combination comprising wood sills, continuous bolsters below said sills and a horizontally disposed flanged connecting member secured to said sills and bolsters in a plane relatively lower
25 than said bolsters.

13. In a car underframe, the combination comprising continuous longitudinal sills, continuous bolsters, bolster cover plates, draft sills connected with said cover plates
30 and a continuous horizontally disposed connecting member connected with said draft sills beyond the bolsters.

14. In a car underframe, the combination comprising continuous longitudinal sills, continuous bolsters, bolster cover plates, draft
35 sills connected with said cover plates and a continuous horizontally disposed channel extending below the bolster and connected with said draft sills.

40 15. In a car underframe, continuous bolsters, longitudinal sills continuous from end sill to end sill, bolster cover plates, draft sills connected with said cover plates, cross bearers, below said longitudinal sills, a continuous
45 connecting member connected with said bolsters and plates interposed between said cross bearers and the connecting member.

16. In a car underframe, continuous bolsters, longitudinal sills, continuous from end
50 sill to end sill, bolster cover plates, draft sills connected with said cover plates, cross bearers below said longitudinal sills, a continuous connecting member connected with said bolsters and plates interposed between said bolsters and the connecting member.
55

17. In a trussed underframe the combination comprising bolsters, a longitudinal horizontally disposed and flanged connecting member, a strut connected with said member and truss rods cooperating with said
60 strut.

18. In a trussed underframe the combination comprising bolsters, a longitudinal horizontally disposed and flanged connecting
65 member, a strut seated between flanges on

said member and truss rods cooperating with said strut.

19. In a supplemental metallic underframe adapted for use with wood longitudinal, flanged draft sills, continuous bolsters
70 and a single horizontally disposed connecting member extending from draft sill to draft sill below the said bolster.

20. In a supplemental metallic underframe adapted for use with wood longitudinal
75 longitudinal, flanged draft sills, continuous bolsters and a single horizontally disposed draft transmitting member connecting said draft sills below said bolster.

21. In a supplemental metallic underframe adapted for use with longitudinal sills continuous from end sill to end sill, the combination comprising, draft sills below said longitudinal sills, bolsters in relatively the
80 plane of said draft sills, a connecting member extending below the bolsters and secured to said draft sills and means to prevent buckling of said connecting member.
85

22. In a supplemental metallic underframe adapted for use with continuous center
90 sills and continuous bolsters, draft sills in relatively the plane of said bolsters, a continuous connecting member secured to said draft sills and to said bolster, truss rods, struts bearing against the under side of said
95 connecting member and means to prevent buckling of said connecting member under buffing stresses.

23. In a car underframe, the combination comprising side and end sills of the frame, of
100 bolsters, draft sills and cross bearers in a plane relatively below said frame and a member connecting said draft sills below said bolsters and cross bearers and adapted to transmit pulling stresses independently of
105 said side and end sills.

24. In a car underframe, the combination comprising side and end sills; draft sills and
a bolster in a lower plane than said sills; a single draft transmitting member connecting
110 said draft sills beyond the bolsters and means to prevent buckling of said draft transmitting member under buffing stresses.

25. In a car underframe, the combination comprising side and end sills; draft sills and a
115 bolster in a lower plane than said sills; a single draft transmitting member connecting said draft sills beyond the bolsters, cross bearers in relatively the plane of said bolsters and means to prevent buckling of said draft transmitting member.
120

26. In a trussed car underframe, the combination comprising sills and bolsters with a supporting, truss, and an intermediate member of which serves as a means for connecting
125 the bolsters and occupies a position at its end portions below the bolsters.

27. In a trussed car underframe, the combination comprising sills and bolsters, with a supporting truss one member of which occu-
130

pies a position wholly below said bolsters, with truss rods and struts cooperating therewith.

28. In a trussed car underframe, the combination comprising sills and bolsters, with a supporting truss one member of which occupies a position wholly below said bolsters, with truss rods and struts cooperating therewith and separate draft sills in the plane of said bolsters.

29. In a trussed car-underframe, continuous bolsters, continuous sills resting thereon, draft sills in the plane of the bolsters and a longitudinally extending truss an intermediate member of which extends below and beyond said bolsters.

30. In a trussed car-underframe, continuous bolsters, continuous sills resting thereon, draft sills in the plane of the bolsters and a longitudinally extending truss an intermediate member of which extends below and beyond said bolsters and means for connecting said intermediate member with said draft sills.

31. In a car underframe, the combination comprising longitudinal members, bolsters, a longitudinally extending channel connecting member, horizontally disposed; cross bearers between said channel and the sills, a strut cooperating with said channel member and a truss rod cooperating with said strut.

32. In a car underframe, a truss comprising a longitudinal horizontally disposed flanged member, a strut secured within the flanges of said member, and truss rods cooperating with said strut, in combination with draft sills and bolsters connected with said horizontally disposed member.

33. In a car underframe, a truss comprising a longitudinal horizontally disposed flanged member, a strut secured within the flanges of said member, and truss rods cooperating with said strut, in combination with cross bearers above said horizontally disposed member and sills resting on said cross bearers.

34. In a car underframe, a truss comprising a longitudinal horizontally disposed flanged member, a strut secured within the flanges of said member, and truss rods cooperating with said strut, in combination with cross bearers above said horizontally disposed members, plates interposed between the cross bearers and said member and sills resting on said cross bearers.

35. In a car-underframe, the combination comprising draft sills, continuous bolsters, a horizontally disposed channel member connected with both bolsters, a strut and cross bearers connected with said channel member and truss rods cooperating therewith.

36. In a trussed car-underframe, the combination comprising longitudinal sills, bolsters in a lower plane than said sills, draft

sills in relatively the plane of said bolsters, a longitudinal truss, one member of which serves as a connecting means for said bolsters, struts depending from said connecting member truss rods cooperating therewith and a cross bearer between said connecting means and the longitudinal sills.

37. In a trussed car-underframe, the combination comprising longitudinal sills, bolsters comprising separate members, a truss extending longitudinally of the car with a flanged member thereof extending below and beyond said bolster members, draft sills connected with said bolsters and with said flanged member, a cross bearer above said flanged member and a plate interposed between the cross bearer and flanged member and riveted to both said last mentioned members.

38. In a trussed car-underframe, the combination comprising a longitudinally disposed channel shaped connecting member, with depending flanges, struts secured between the depending flanges of said member, truss rods cooperating therewith, cross bearers on said connecting member and sills resting on said cross bearers.

39. In a trussed car-underframe, the combination comprising bolsters, longitudinal sills in a plane relatively higher than said bolsters, draft sills in relatively the same horizontal plane with said bolsters and a longitudinal truss, a compression member of which is in a lower plane than said bolsters.

40. In a trussed car-underframe, the combination comprising bolsters, longitudinal sills in a plane relatively higher than said bolsters, draft sills in relatively the same horizontal plane with said bolsters and a longitudinal truss a flanged member of which is in a lower plane than said bolsters at its ends.

41. In a trussed car-underframe, the combination comprising bolsters, longitudinal sills in a plane relatively higher than said bolsters, draft sills in relatively the same horizontal plane with said bolsters and a longitudinal truss, including a channel with depending flanges and means, extending lower than said bolsters, connecting the channel and said draft sills.

42. In a trussed car-underframe, the combination comprising longitudinal sills, continuous bolsters relatively below said sills, draft sills in the plane of said bolsters, a bolster cover plate connected with said draft sills and a longitudinal truss, a compression member of which extends below said bolsters and a tension member of which extends above the bolsters.

43. In a car underframe, the combination comprising continuous bolster members, top cover plates connecting said bolster members and extending there beyond, draft sills

connected with said cover plates and with said bolsters and a longitudinally extending channel shaped connecting member secured below said bolsters.

5 44. In a car underframe, the combination comprising continuous longitudinal sills, continuous bolsters, bolster cover plates, draft sills and a continuous horizontally disposed connecting member connected with said draft
10 sills and extending below the bolsters.

45. In a supplemental metallic underframe adapted for use with wood longitudinal, flanged draft sills, continuous bolsters and a single horizontally disposed connecting
15 member extending below the bolsters and from draft sill to draft sill.

46. In a trussed car-underframe, the combination comprising sills and bolsters, with a supporting truss an intermediate member of
20 which truss serves as a means for connecting the draft sills beyond the bolsters.

47. In a trussed car-underframe, continuous bolsters, continuous sills resting thereon, draft sills in the plane of the bolsters and a
25 longitudinally extending truss an intermediate member of which extends below and beyond said bolsters.

48. In a trussed car-underframe, continuous bolsters, continuous sills resting thereon
30 and a longitudinally extending truss, an intermediate member of which extends below and beyond said bolsters.

49. In a trussed car-underframe, continuous bolsters, continuous sills resting thereon,
35 draft sills in the plane of the bolsters and a longitudinally extending truss an intermediate member of which extends below and beyond said bolsters and means for connecting said intermediate member with said draft
40 sills.

50. In a car-underframe the combination comprising longitudinal sills, bolsters, a longitudinally extending channel connecting member horizontally disposed, a strut co-
45 operating with said channel member and a truss rod coöperating with said strut.

51. In a car-underframe, the combination comprising a flanged longitudinally disposed member, a cross bearer above said flanged
50 member, a strut bearing on the under side of said flanged member, truss rods coöperating therewith and cross bearers in a different plane from said flanged member.

52. In a trussed car-underframe, the combination comprising bolsters, longitudinal
55 sills in a plane relatively higher than said bolsters, draft sills in relatively the same horizontal plane with said bolsters and a

longitudinal truss a flanged member the end portions of which extends below said bolsters. 60

53. In a car sub-underframe, the combination comprising draft sills and bolsters in substantially the same plane, a horizontally disposed flanged member connecting the draft sills beyond the bolsters, a cross bearer
65 above said connecting member, truss rods relatively lower than said connecting member and a strut between said truss rods and said connecting member.

54. In a car underframe, the combination
70 comprising continuous wood sills, a continuous horizontally disposed connecting member in a plane below said sills, bolsters above said connecting member, draft sills secured to the bolster and to the connecting mem-
75 ber, a cross bearer above the connecting member and brackets connecting the cross bearer with said sills, the brackets passing under the cross bearer.

55. In a car sub-underframe, draft sills, 80 bolsters in relatively the plane of said draft sills, a horizontally disposed draft transmitting member extending below said bolsters and connected with the draft sills, truss rods extending over the bolsters and lower than
85 said horizontal member and a strut between said truss rods and horizontal member.

56. In a car sub-underframe, bolsters, a horizontally disposed draft transmitting member in a plane below the bolsters, draft
90 sills overlapping said draft transmitting member and means connecting said member with said draft sills.

57. In a car sub-underframe, bolsters, a horizontally disposed draft transmitting
95 member in a plane below the bolsters, draft sills overlapping said draft transmitting member and means secured to the webs of said draft sills and to said draft transmitting member connecting said member with said
100 draft sills.

58. In a car underframe, comprising continuous longitudinals, cross bearers and bolsters, draft sills substantially in the plane of said bolsters, a continuous flanged draft
105 transmitting member extending below and beyond said bolsters, overlapping the draft sills, and means connecting said draft sills and draft transmitting member.

In witness whereof I have hereunto set my
110 hand in the presence of two witnesses.

ALLEN EDWARD OSTRANDER.

Witnesses:

F. V. COOPER,

MABELLE E. OSTRANDER.