No. 891,297. PATENTED JUNE 23, 1908.

C. S. SHALLENBERGER.

UNDERFRAME FOR CARS.

APPLICATION FILED DEC. 2, 1907.

2 SHEETS—SHEET 1.

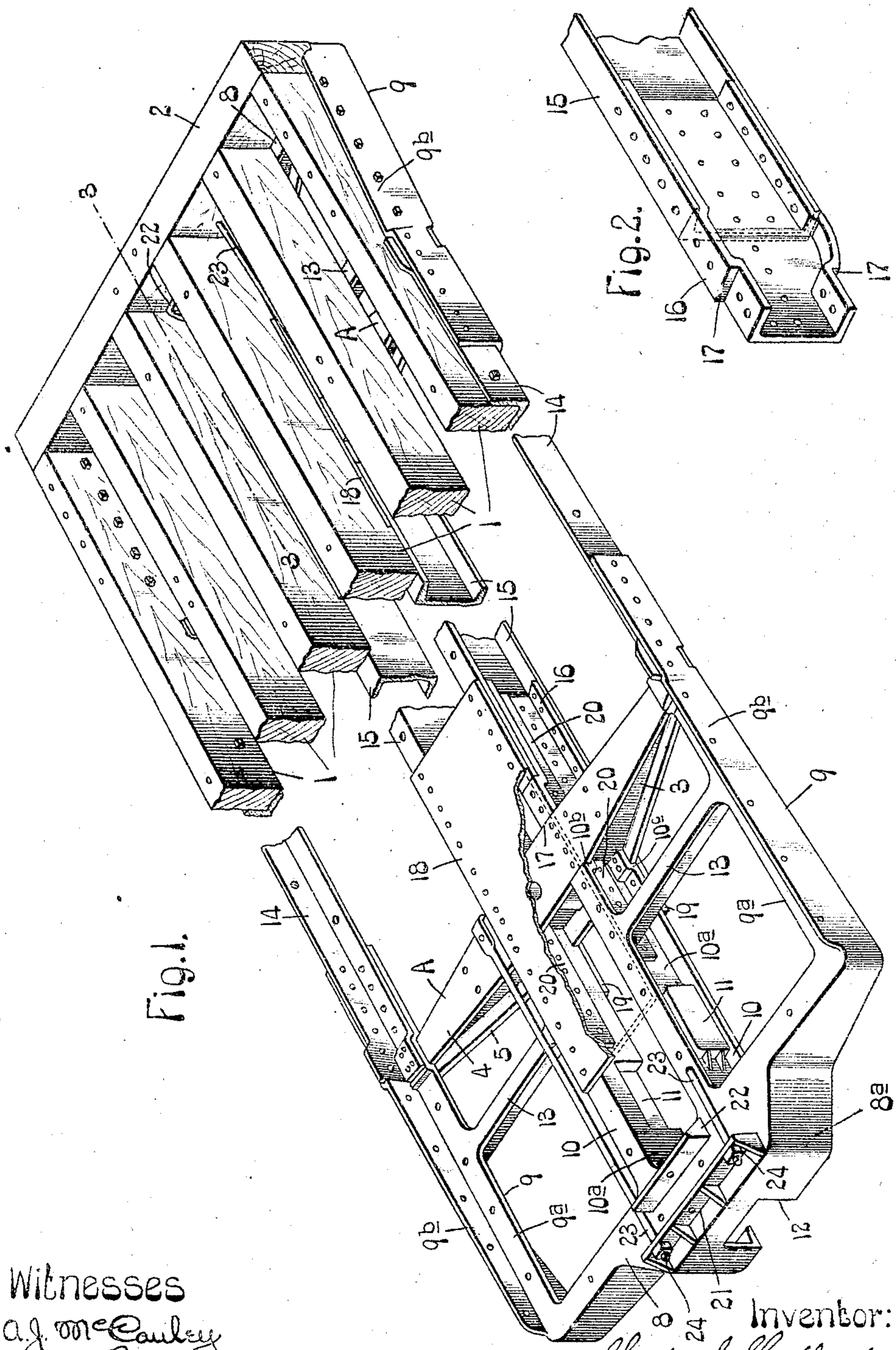





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Fig. 3.

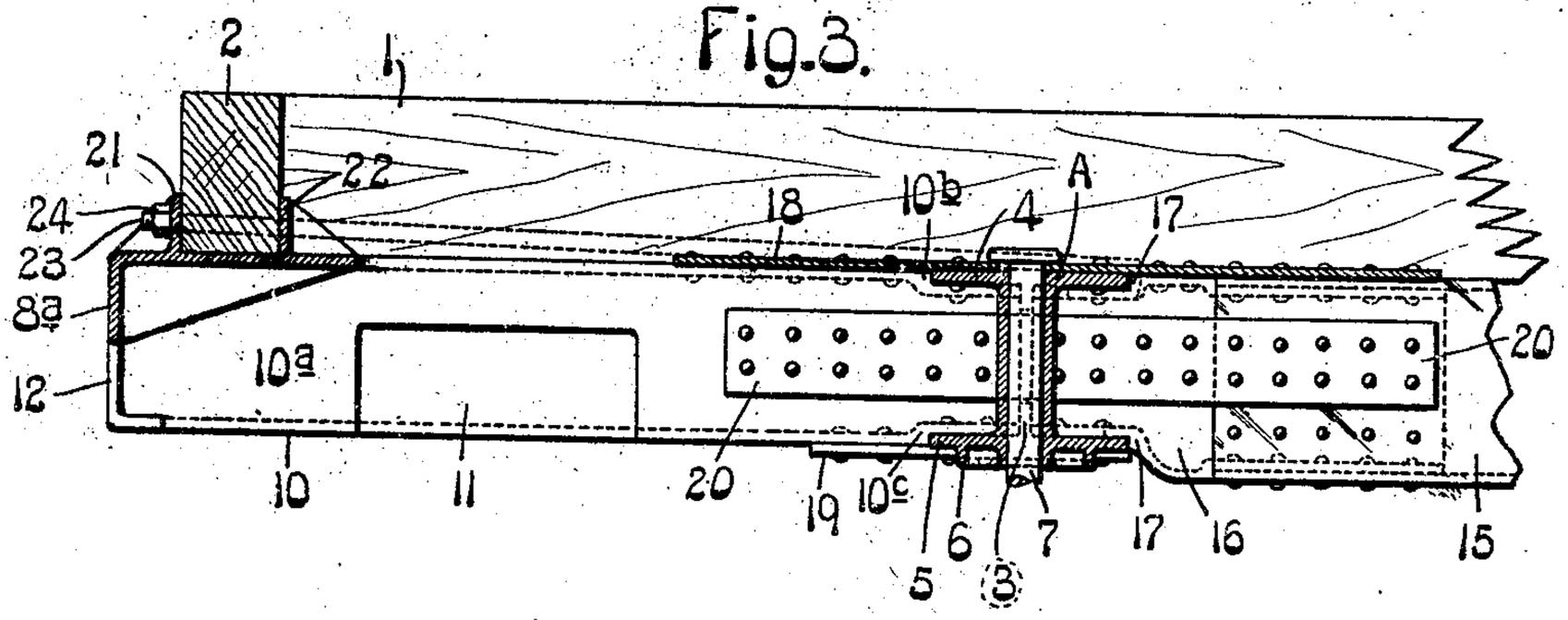
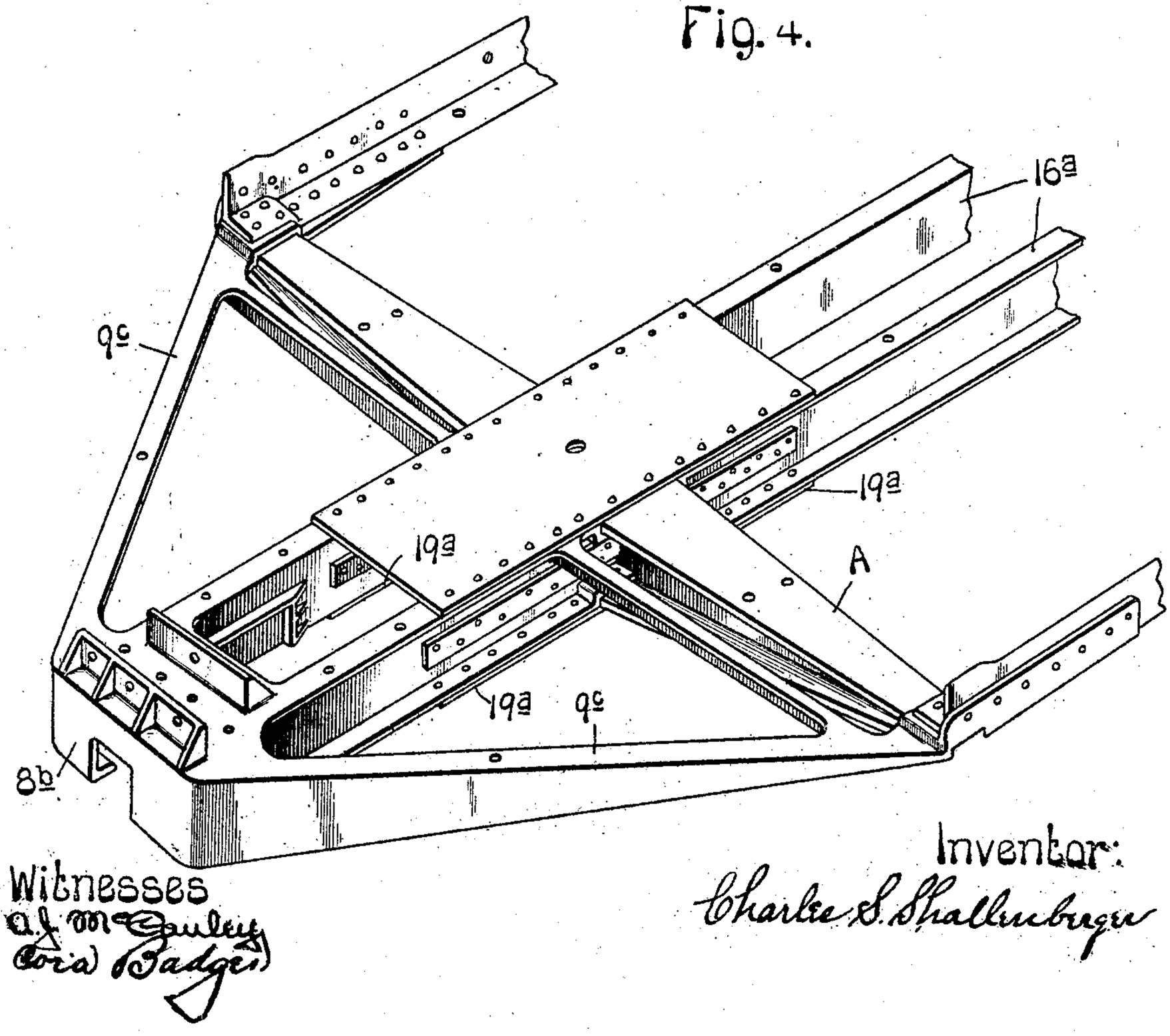



Fig. 4.

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# UNITED STATES PATENT OFFICE.

CHARLES S. SHALLENBERGER, OF ST. LOUIS, MISSOURI.

## UNDERFRAME FOR CARS.

No. 891,297. Specification of Letters Patent. Patented June 23, 1908.

Application filed December 2, 1907. Serial No. 404,724.

*To all whom it may concern:*

Be it known that I, CHARLES S. SHALLENBERGER, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Underframes for Cars, 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, forming part of this specification, in which—

Figure 1 is a perspective view, partly broken away, illustrating my improved underframe arranged below a wooden underframe, only one end of the wooden underframe being shown; Fig. 2 is a detail view of a portion of a center sill; Fig. 3 is a vertical sectional view taken approximately on the line 3—3 of Fig. 1; and Fig. 4 is a perspective view illustrating a modified form of the underframe shown in Fig. 1.

This invention relates to new and useful improvements in underframes for cars.

There are many wooden cars at the present time which, on account of the high price and scarcity of proper timber, are being abandoned because it is almost impossible to obtain the proper timber for repairs.

One of the principal objects of my invention, therefore, is to provide an underframe of maximum strength and minimum weight which can be used in wooden car construction, said underframe being capable of being placed under existing cars. These old wooden cars are usually equipped with metallic body bolsters, and it is one of the objects of this invention to have these bolsters form part of the metallic underframe. I deem this feature very desirable as it enables old cars to be provided with a complete metallic underframe at a comparatively small cost.

An underframe constructed in accordance with my present invention is composed of a small number of parts which are easy to assemble, and is adapted for use on various types of cars both new and old.

Referring to Fig. 1 of the drawings which illustrates my improved underframe connected to the underframe of a wooden car in such manner that it constitutes an auxiliary underframe, 1 indicates the longitudinal sills of the wooden underframe and 2 is the end sill thereof.

Body bolsters A which form part of the metallic underframe have vertical webs 3 and top and bottom flanges 4 and 5.

6 indicates a center bearing and 7 is a king bolt.

The body bolsters herein shown are castings, but built-up bolsters could be used in lieu thereof, as this invention is not limited to any particular design of bolster.

8 is the end sill of the metallic underframe, said end sill being preferably provided with an enlarged portion $8^a$ which constitutes a buffer block. Short side sills 9 have horizontal flanges $9^a$ which form seats for the wooden side sills, and vertical webs $9^b$ which engage the outer face of said wooden sills. These short side sills rest upon and abut against the top flange of the bolster.

10 indicates short draft or center sills which are interposed between the bolster and end sill, said draft sills each having a vertical web $10^a$ and top and bottom flanges. Abutments $10^b$ and $10^c$, formed by the top and bottom flanges of draft sills 10, engage the top and bottom flanges of the bolster, the end portion of said sills being reduced at the abutments to fit between the bolster flanges.

11 indicates pockets which are adapted to receive a draft rigging, and 12 is a recess in the end sill through which the draw-bar passes.

The end sill, draft sills and short side sills are preferably a single casting as this construction reduces the number of parts in the underframe and lessens the labor of assembling. This casting also preferably includes members 13 which connect the draft sills to the short side sills.

Side sills 14, which are preferably rolled angles, connect the bolsters to each other and form a seat for the wooden side sills. These side sills 14 overlap and are secured to the short side sills 9.

While various types of center sills could be used on my improved underframe, each of the center sills preferably comprises end members in the form of castings 15 and an intermediate member in the form of a rolled channel 16 secured to said end members. The object of this construction is to provide a center sill which is adapted for use in connection with the different types of bolsters in use at the present time. The intermediate members can be made of any desired height, and the end members formed to fit between the flanges of the bolster. Abutments 17, formed by the top and bottom flanges of the

center sills, engage the top and bottom flanges of the bolster A, the end portions of said sills being reduced at the abutments to fit between said bolster flanges. Each of the center sills is preferably in alinement with its corresponding draft sill, and as these draft and center sills engage the web of the bolster they practically form continuous center sills which extend from end to end of the car.

18 is a cover plate which is riveted to the upper face of the bolster, draft sills and center sills. Tie bars 19 are riveted to the underside of the bolster and draft sills.

20 indicates connecting plates which are riveted to the webs of the center sills and to the webs of draft sills, said connecting plates passing through the web of the bolster.

When an underframe constructed as herein shown and described is applied to a wooden car, the wooden sills are provided with suitable holes to receive bolts which connect them to the metallic underframe, and said wooden sills are cut away adjacent the bolsters to receive the cover plates 18 and the overlapping portions of the metallic side sills. The metallic end sills are preferably provided with abutments 21 and 22 which engage the wooden end sills. Rods 23 which pass through each wooden end sill 2 have their inner ends bent under the top flange of the bolster and secured thereto, the outer ends of said rods being screw-threaded and provided with nuts 24 which engage abutments 21.

Referring now to Fig. 4, which illustrates a modified form of the underframe, just described, $9^c$ indicates short side sills which extend diagonally from a buffer block $8^b$ to the ends of a body bolster A. This underframe includes rolled channel center sills $16^a$ which engage the bolster A, and the bottom tie bars $19^a$ are riveted to the lower flanges of said channels. Otherwise this modified form is of substantially the same design as the underframe shown in Fig. 1.

I am aware that minor changes in the construction, arrangement and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principles of my invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An underframe for cars, the same comprising end portions in the form of castings, each of said castings consisting of draft sills, short side sills and a buffer block, a bolster riveted to each of said castings, and an intermediate portion in the form of a longitudinal sill connecting said end portions, substantially as described.

2. An underframe for cars, the same comprising end portions in the form of castings, each of said castings consisting of draft sills and short side sills, a separate bolster fastened to each of said castings, and an intermediate portion in the form of a longitudinal sill or sills connecting said end portions; substantially as described.

3. An underframe for cars having draft sills and side sills integrally connected together, a separate bolster fastened to said sills, a center sill, and connections between said draft sills and center sill, one of which connections extends over the bolster; substantially as described.

4. An underframe for cars having draft sills and side sills integrally connected together, a separate bolster fastened to said sills, a center sill, and connections between said draft sills and center sill; substantially as described.

5. An underframe for cars having draft sills and side sills integrally connected together, a bolster fastened to said sills, a center sill, and connections between said draft sills and center sill, one of which connections extends under the bolster; substantially as described.

6. An underframe for cars having draft sills and side sills integrally connected together, a bolster fastened to said sills, a center sill, and connections between said draft sills and center sill, one of which connections extends through the bolster; substantially as described.

7. An underframe for cars having draft sills and side sills integrally connected together, a bolster fastened to said sills, a center sill, and connections between said draft sills and center sill, one of which connections extends over the bolster, and one of which connections extends under the bolster; substantially as described.

8. An underframe for cars having a draft sill, a center sill, and a bolster interposed between the ends of said sills; substantially as described.

9. An underframe for cars having draft sills, center sills, a bolster interposed between the ends of said sills, and connecting members secured to said sills, one of said connecting members extending through the bolster; substantially as described.

10. An underframe for cars comprising a bolster having a web, and sills having webs which abut against said bolster web, said sills being connected by members which pass through the bolster, substantially as described.

11. An underframe for cars comprising a bolster having a flange, and sills having flanges which abut against said bolster flange said sills being connected by members which pass through the bolster; substantially as described.

12. An underframe for cars having end portions consisting of draft sills and side sills

integrally connected together, a bolster fastened to the draft sills and constituting an abutment for the ends thereof, and an intermediate portion in the form of a longitudinal sill or sills connecting said end portions; substantially as described.

13. An underframe for cars having end portions consisting of draft sills and side sills integrally connected together, a bolster fastened to the draft sills and constituting an abutment for the ends thereof, said draft sills being arranged partly within the bolster, and an intermediate portion in the form of a longitudinal sill or sills connecting said end portions; substantially as described.

14. An underframe for cars having end portions consisting of draft sills and side sills integrally connected together, a bolster fastened to the draft sills, abutments on the draft sills which engage the bolster, and an intermediate portion in the form of a longitudinal sill or sills connecting said end portions; substantially as described.

15. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, each of said side sills having abutments which engage the bolster, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

16. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, the side sills being interlocked with the bolster, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

17. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, the side sills having flanges which extend above the bolster, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

18. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, the bolster having a web which constitutes an abutment for flanges on the draft sills, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

19. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, the draft sills having a web which abuts against the web of the bolster, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

20. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, a cover plate riveted to the bolster and draft sills, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

21. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, said longitudinal sills being connected to the draft sills by means of a member which extends over the bolster; substantially as described.

22. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, said longitudinal sills being connected to the draft sills by means of members which extend through the bolster; substantially as described.

23. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, said longitudinal sills being connected to the draft sills by means of members which extend under the bolster; substantially as described.

24. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of L-shaped longitudinal sills connecting said end portions; substantially as described.

25. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of L-shaped longitudinal sills connecting said end portions, said longtitudinal sills being bent upwardly at the bolsters; substantially as described.

26. An underframe for cars having end portions each of which consists of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of L-shaped longitudinal sills connecting said end portions, said longitudinal sills overlapping the short side sills; substantially as described.

27. An underframe for cars having end portions each of which consists of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of L-shaped

longitudinal sills connecting said end portions, the horizontal legs of said sills being disposed inwardly; substantially as described.

28. An underframe for cars having end portions each of which consists of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, said longitudinal sills having their end portions reduced and arranged within the bolsters; substantially as described.

29. An underframe for cars having end portions each of which consists of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, said longitudinal sills having abutments which engage the bolsters; substantially as described.

30. An underframe for cars having end portions each of which consist of draft sills and short side sills integrally connected together, connections between said sills intermediate their ends, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions; substantially as described.

31. An underframe for cars comprising bolsters, each of said bolsters having top and bottom flanges, and a longitudinal sill having a flange which abuts against and extends between said bolster flanges; substantially as described.

32. A railway car having a metallic underframe comprising end portions, each of said end portions consisting of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, and wooden longitudinal sills supported by said metallic underframe; substantially as described.

33. A railway car having a metallic underframe comprising end portions, each of said end portions consisting of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of L-shaped longitudinal sills connecting said end portions, and wooden longitudinal sills supported by said metallic underframe; substantially as described.

34. A railway car having a metallic underframe comprising end portions, each of said end portions consisting of draft sills and short side sills integrally connected together, a bolster fastened to said sills, and an intermediate portion in the form of longitudinal sills connecting said end portions, and wooden longitudinal sills supported by said metallic underframe, said wooden sills being arranged between side flanges of the metallic underframe; substantially as described.

35. A railway car having a wooden underframe, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including connecting members which extend through the bolsters; substantially as described.

36. A railway car having a wooden underframe, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including members which abut against the outer face of the bolsters; substantially as described.

37. A railway car having a wooden underframe, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including connections which extend through the bolsters, and members which extend over the bolsters; substantially as described.

38. A railway car having a wooden underframe composed of wooden longitudinal sills and wooden end sills, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including longitudinal sill members which extend from bolster to bolster and engage the outer and bottom face of the wooden underframe, and short sill members extending from each bolster to the end of the car and forming continuations of the aforesaid sill members; substantially as described.

39. A railway car having a wooden underframe composed of wooden longitudinal load-carrying sills, and wooden end sills, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including end members in the form of draft sills and side sills integrally connected together, and means for connecting the draft sills to the bolsters; substantially as described.

40. A railway car having a wooden underframe composed of wooden longitudinal load-carrying sills, and wooden end sills, bolsters secured to said wooden underframe, and a metallic underframe secured to said bolsters, the metallic underframe including end members in the form of draft sills and short side sills integrally connected together, said short side sills each having a horizontal flange which constitutes a seat for the wooden side sills and an integral vertical flange which engages the outer face of said wooden sills; substantially as described.

41. A railway car having a wooden underframe, bolsters secured to said underframe, and tie rods connecting each bolster to the end sill of said underframe, said tie rods being bent under a flange of the bolster; substantially as described.

42. A railway car having a wooden underframe, bolsters secured to said wooden underframe, a metallic underframe secured to

said bolsters, and connecting members extending from a bolster to abutments on the end portion of the metallic underframe; substantially as described.

43. A railway car having a wooden underframe, bolsters secured to said wooden underframe, a metallic underframe secured to said bolsters, and connecting members extending from a bolster to the end portion of the metallic underframe, said connecting members passing through the wooden end sill; substantially as described.

44. A railway car having a wooden underframe, bolsters secured to said wooden underframe, a metallic frame secured to said bolsters, and connecting members extending from a bolster to the end portion of the metallic frame, said connecting members being bent under a flange of the bolster; substantially as described.

45. A railway car having an underframe including bolsters, a longitudinal sill interposed between said bolsters, the end portions of said sill being in the form of castings which terminate at the inner face of the bolsters, and means for connecting said castings to the bolsters; substantially as described.

46. A railway car having an underframe including bolsters, a longitudinal sill arranged entirely between the bolsters, the end portions of said sill being in the form of castings which terminate at and abut against the webs of the bolsters; substantially as described.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses, this twenty-ninth day of November, 1907.

CHARLES S. SHALLENBERGER.

Witnesses:
CORA BADGER,
A. J. MCCAULEY.