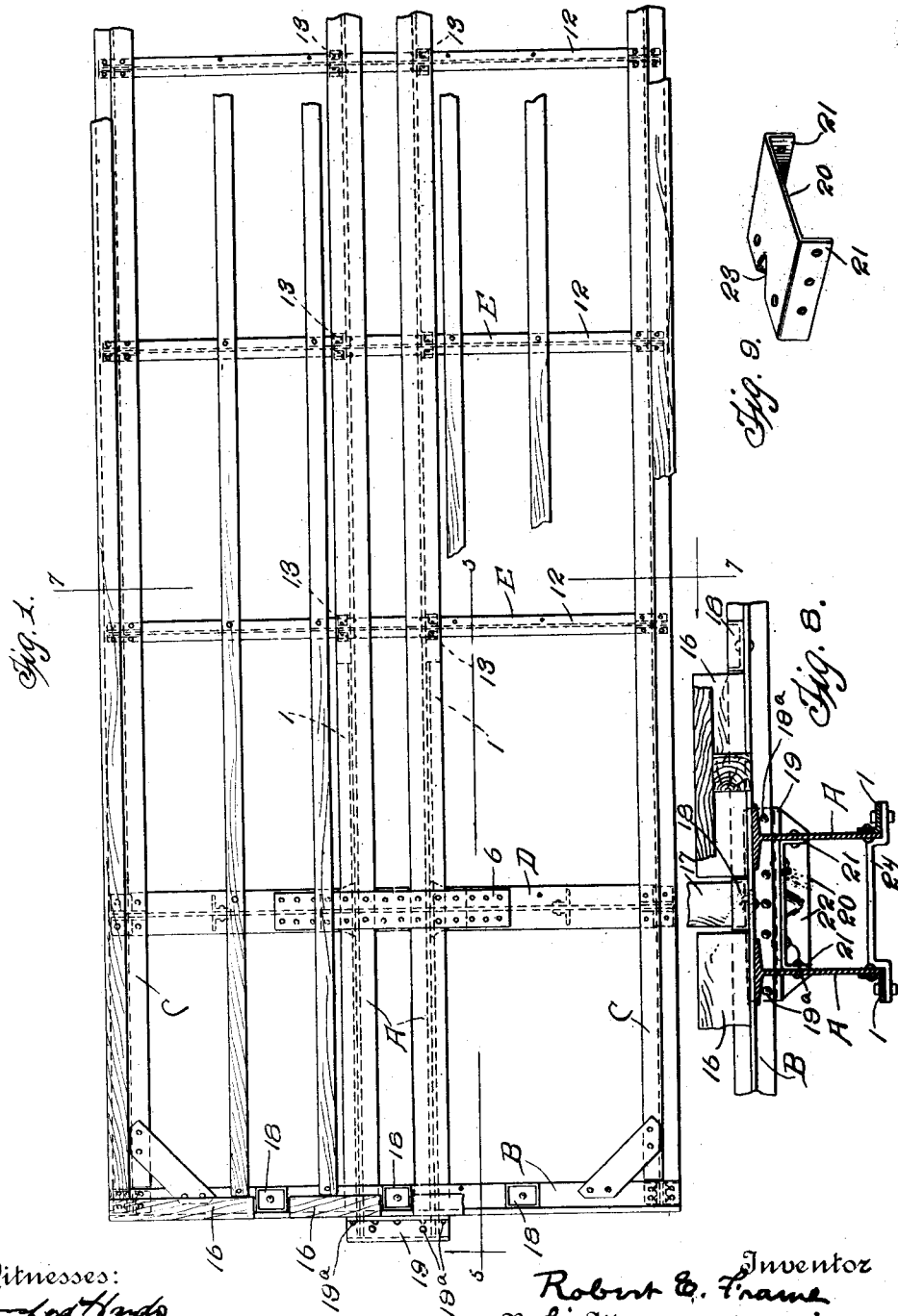


R. E. FRAME.
CAR UNDERFRAME.
APPLICATION FILED JULY 18, 1910.

1,029,115.

Patented June 11, 1912.

3 SHEETS—SHEET 1.



Witnesses:
L. Sanford Hanks
Edgar M. Kitchin

Inventor
Robert E. Frame
By his Attorney *J. H. Gibbs*

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3 SHEETS—SHEET 2.

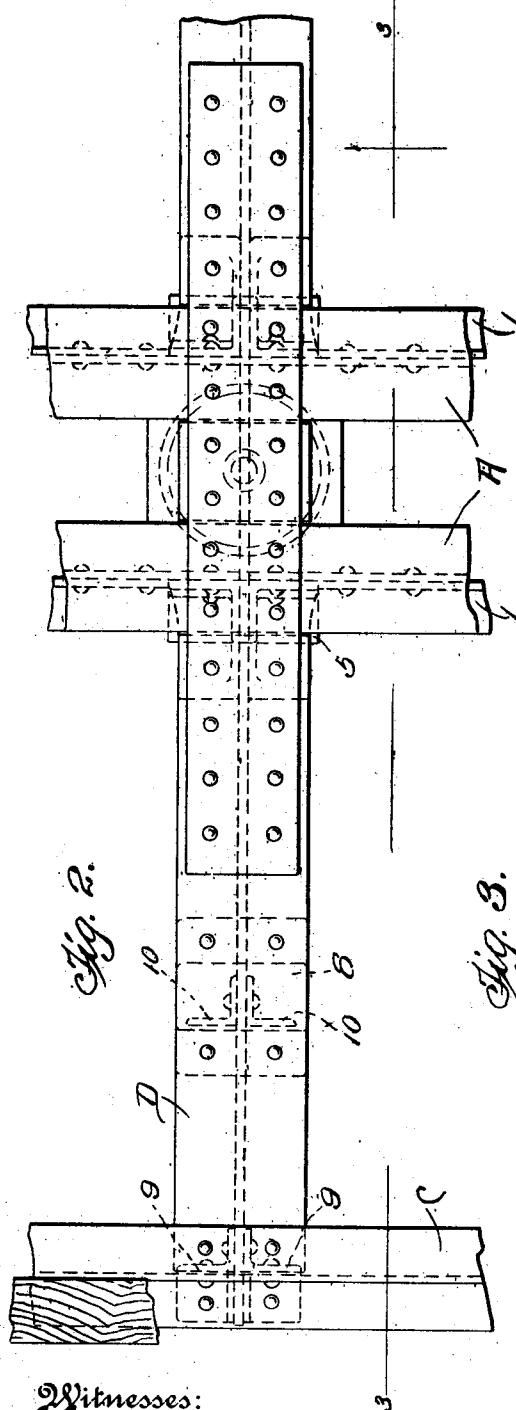
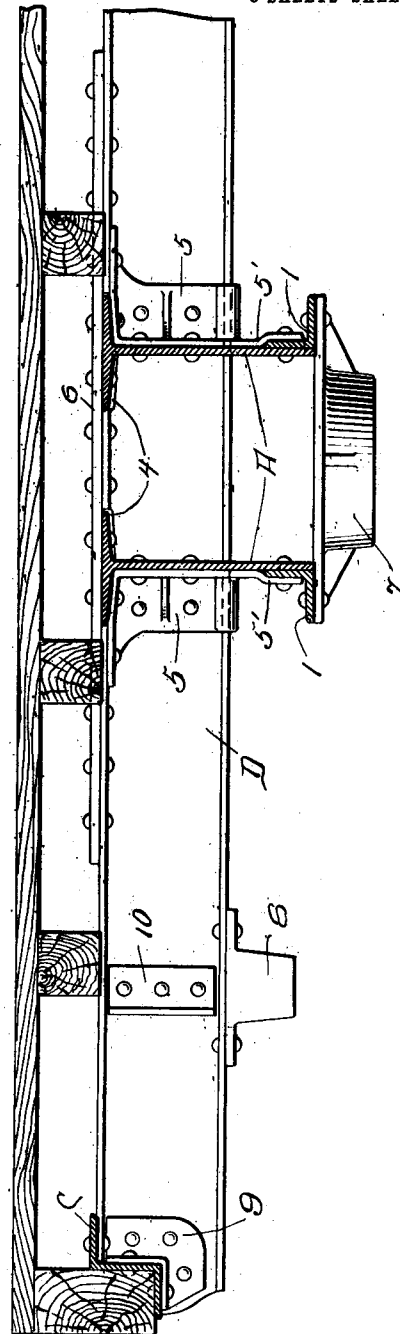


Fig. 3.



Witnesses:
Edgar M. Ritchie

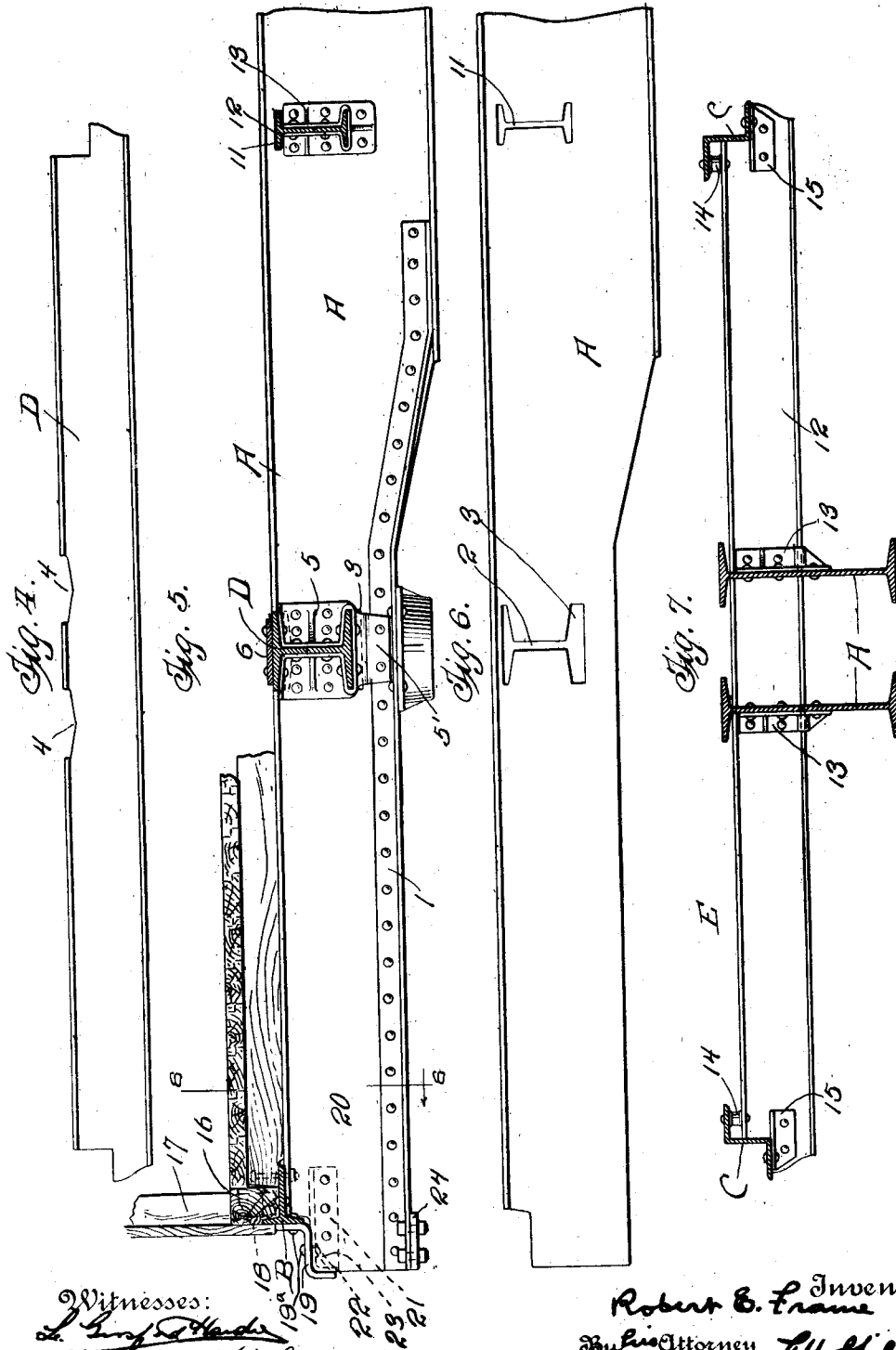
Robert E. Frame, Inventor
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GAR UNDERFRAME.
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2 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

ROBERT E. FRAME, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN CAR AND
FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

CAR-UNDERFRAME.

1,029,115.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed July 18, 1910. Serial No. 572,509.

To all whom it may concern:

Be it known that I, ROBERT E. FRAME, residing at Chicago, Illinois, 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 to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the 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.

In said drawings: Figure 1 is a top plan view of an underframe embodying the features of the present invention, approximately one half of the frame being broken away. Fig. 2 is an enlarged detail fragmentary plan view of a bolster and connected parts. Fig. 3 is a vertical, transverse section taken on the plane indicated by line 3—3 of Fig. 2 and looking in the direction of the arrow. Fig. 4 is a view in side elevation of a bolster prior to its positioning in the underframe. Fig. 5 is a longitudinal, vertical section taken on the plane indicated by line 5—5 of Fig. 1. Fig. 6 is a view in side elevation of an end portion of one of the center sill blanks. Fig. 7 is a transverse, vertical section taken on the plane indicated by line 7—7 of Fig. 1. Fig. 8 is a transverse, vertical, detail section, taken on the plane indicated by line 8—8 of Fig. 5 and looking in the direction indicated by the arrow. Fig. 9 is a detail perspective view of one of the center sill fillers detached.

Referring to the details, A—A indicate the center sills, B—B the end sills, and C—C the side sills or side connecting members, the center sills extending from end to end of the underframe and contacting with and extending beyond the end sills, and being connected to the side sills by bolsters D and cross bearers E—E.

Each of the center sills A comprises preferably an I-section but may assume the form of other commercial shapes, and each of said center sills is cut away at each end portion along the lower edge from a point inside the respective bolster D to the end of the sill, the severance being preferably

along a diagonal or inclined line from the lower flange of the sill outwardly and upwardly to a point adjacent and below the plane of the bolster, and thence in a line parallel to the upper flange of the sill to the end thereof.

An angle 1 is fixed to the lower edge of each sill A along the cut-away portion from the end of the sill to the remaining end of the lower flange, a portion of the angle lapsing such flange. Each angle 1 is preferably disposed against the outer face of the respective sill and has its horizontal leg or flange directed outwardly. Above the angle 1, the web of each sill A is formed with an I-aperture 2, the lower flange receiving portion of which is relatively enlarged as at 3 for allowing the passage therethrough of the flange and also allowing vertical adjustment or movement of the flange vertically, transversely of the sill within the aperture, the portion 3 of the aperture being of greater depth than the thickness of the flange to be introduced.

Extending through the apertures 2 of the sills A are the bolsters D, one adjacent each end of the sills, and only one being illustrated. Each of the bolsters comprises an I-section of less depth than the depth of the reduced end portion of the center sills and having recesses or notches 4—4 in its upper edge positioned for receiving the remaining web portion and upper flange of the respective center sill when the bolster is positioned.

In assembling the parts, the bolster D is thrust endwise through the apertures 2, said apertures in the respective sills A being of course disposed to register transversely of the car, and after the bolster has been introduced and arrives at a position with the recesses 4 immediately beneath the upper flanges of the respective sills A, the bolster is elevated to a position with the upper surface of its upper flange in the plane of the upper surfaces of the upper flanges of sills A, the recesses 4 being shaped to accommodate the adjacent parts of the center sill sections above the bolster and the adjacent parts of the respective center sill. Prior to the connection of the bolster to the side connecting members C, brackets 5 are slid on to the bolster longitudinally thereof and are riveted in position for sustaining the bolster in its elevated position, and connect-

ing the bolster to the center sill sections. Each bracket 5 preferably comprises a web shaped to embrace the lower flange of the bolster and to conform to the contour thereof, and extends along the web of the bolster and beneath the upper flange, and is provided with lateral flanges lying flat against the vertical face of the respective center sill web. Each bracket 5 is fixed to the webs and flanges of the bolster and respective center sill. Each bracket 5 is also provided with a depending flange 5' which laps the respective angle 1 and is riveted thereto, and to the web of the respective center sill.

Top cover plate 6 extends along the bolster D across the center sills and is riveted to the upper flange of the bolster and to the upper flanges of the center sills, connecting interrupted portions of the upper flange of the bolster. A center bearing plate 7 is fixed to the outstanding flanges of the angle 1 immediately beneath the bolster D and said bolster is provided at an intermediate point between each center sill and the respective adjacent side connecting member C, with a pendent side bearing 8. Bracket plates 10 are fixed to the opposite sides of the web of each bolster immediately above each side bearing 8 for stiffening and strengthening purposes. Each of the side connecting members C preferably comprises a Z section, and each end of each bolster D is notched to receive the web and lower outstanding flange of the Z section, the upper flange lapping the end of the upper flanges of the bolster and being riveted thereto.

An angle bracket 9, formed of an angle section, is arranged at each side of each end of the web of bolster D and has one of its legs or flanges riveted to the web of the bolster and the other flange or leg riveted respectively to the web and lower flange of the side connecting member C. As a bracket 9 is provided at each side of the web of the bolster, obviously the rivets connecting the flange of one bracket to the web of the bolster extend through and connect the corresponding flange of the other bracket.

Each center sill is formed with I-apertures 11 spaced apart along the length of the center sill between the bolsters, and each aperture 11 of one sill is positioned for registering with the corresponding aperture in the other. A cross bearer, comprising an I-section 12, is passed through each set of said registering apertures 11 and is connected to each center sill by connecting brackets 13, embracing the lower portion of the cross bearer and having outstanding and pendent flanges fixed to the web of the respective center sill, and flanges extending along the cross bearer and fixed to the web thereof. Each member 13 is preferably disposed outside the respective center sill but may be otherwise arranged as found prefer-

able. Each cross bearer 12 has its upper surface lying below the upper flanges of the center sills and below the upper flange of the side connecting member C, the ends of each cross bearer being connected to the upper flanges of the side connecting member C by rivets extending through spacing sleeves or fillers 14. Each end of each cross bearer is notched to receive a portion of the web and lower flange of the respective side connecting member, and a bracket 15 is fixed to the web of each end of each cross bearer at each side thereof and extends beneath and is connected to the lower flange of the respective side connecting member.

Each end sill B is preferably a T section horizontally disposed and carrying the wood nailing strip 16 formed in sections with the vertical end posts 17 of the super-structure of the car extending downwardly between the sections of the nailing strip and having their lower ends fitted into pockets 18 riveted to the web of T-section B. It will be noted that the center sills are notched or cut away at their upper outer corners where said sills extend beyond the end posts 17, while the T-shaped end sills B rest with their webs above the said center sills, with one vertical flange resting in said cut out and one flange extending upwardly outside of said end posts 17.

Secured to the center sill extensions beyond the end sills B are Z-shaped members 19, which have one flange outside of the end sills, as shown in Fig. 5 with horizontal web secured in position and with vertically downwardly extending leg overlapping the ends of said center sills. Immediately below the cover plate 19 is arranged a spacing filler 20, Fig. 9, which comprises a plate extending from the web of one center sill to the web of the other center sill and having pendent flanges 21 riveted to said webs, the outer end of the plate being formed with a pendent flange 22 stiffened intermediate its length by a transverse depression 23. A draw bar carrier iron 24 is fixed to the outstanding flanges of the angles 1 and extends across and connects the respective ends of the center sills beneath member 20, and may be offset upwardly between the center sills.

Thus it will be noted that the usual separate striking casting commonly secured to the end sills or to the ends of the center sills is dispensed with, and the center sills, extending beyond the end posts 17, and end sheathing secured thereto serve—with the Z-plate 19 and filler 20—all the functions of said striking casting, at the same time reinforcing the end portions of the underframe and securing the end sills and center sills together. Rivets 19^a pass through the horizontal web of said cover plate 19 and into the filler 20 while other rivets 19^a serve to connect the vertical leg of said plate 19 to

the pendent leg of the end sill B, thus securely uniting these parts. The pendent leg of the cover plate 19 extends downwardly at the ends of the center sills against the pendent flange 22 of the stiffening member 20 so that the extensions of the center sills beyond the end sills are stiffened and so united to the contiguous parts as to be adapted to all conditions of service without the addition of such striking castings as are generally used.

What I claim is:

1. In a car underframe, an interlocked center sill and body bolster, each formed of a commercial shape, and parts of each being cut away to accommodate parts of the other.
2. In a car underframe, an interlocked center sill and body bolster, each formed of a commercial shape, and parts intermediate the ends of each of said members being cut away to accommodate parts of the other.
3. In a car underframe, an interlocked center sill and body bolster, each formed of a rolled commercial shape, parts of each being cut away to accommodate parts of the other, and a cover plate connecting parts of the cross member on opposite sides of the longitudinal member.
4. In a car underframe, an interlocked center sill and a body bolster, each formed from a rolled commercial shape, parts of each being cut away to accommodate parts of the other, and a cover plate extending transversely over the center sill and connecting partly severed parts of the cross member.
5. In a car underframe, intersecting members, each comprising a commercial shape, one member being formed with an opening in its web to accommodate a part of the other, and the second member being formed with a marginal opening to accommodate part of the first member.
6. In a car underframe, intersecting center sill and bolster members each of rolled commercial shape, one extending through the other and the second member having a flange extending between portions of the first member.
7. In a car underframe, a longitudinal sill having a bolster receiving opening and a bolster extending therethrough, said bolster having a recess receiving a portion of the sill and each of said members being composed of a single commercial shape.
8. In a car underframe, a longitudinal sill having a bolster receiving opening and a bolster extending therethrough, said bolster having a marginal recess receiving a portion of the sill and each of said members being composed of a single commercial shape.
9. In a car underframe, a longitudinal sill comprising a commercial shape, a bolster extending through the web thereof and comprising a commercial shape, the bolster having a recess in its upper margin, and the

upper flange of the sill extending through said recess.

10. In a car underframe, a longitudinal sill comprising a commercial shape, a bolster extending through the web thereof and comprising a commercial shape, the bolster having its upper flange cut away for a distance substantially equal to the width of the upper flange of the sill and the upper flange of the sill extending through said recess.

11. In a car underframe, a longitudinal sill, and a bolster extending therethrough, a portion of the sill extending below the bolster and a portion of the sill extending above a portion of the bolster, the bolster being recessed to receive the upper portion of the sill.

12. In a car underframe, a longitudinal sill, and a bolster extending therethrough, a portion of the sill extending below the bolster and a portion of the sill extending above a portion of the bolster, the bolster being recessed to receive the upper portion of the sill, and means connecting the bolster and sill together.

13. In a car underframe, a longitudinal sill, and a bolster extending therethrough, a portion of the sill extending below the bolster and a portion of the sill extending above a portion of the bolster, the bolster being recessed to receive the upper portion of the sill, and an angle bracket embracing a portion of the bolster and fixed thereto and to the sill.

14. In a car underframe, a longitudinal sill, and a bolster extending therethrough, a portion of the sill extending below the bolster and a portion of the sill extending above a portion of the bolster, the bolster being recessed to receive the upper portion of the sill, and a bracket embracing the lower portion of the bolster and fixed to the sill.

15. In a car underframe, center sills, and a bolster extending therethrough and having its upper edge flush with the upper edges of the sills, upper marginal portions of the bolster being cut away and portions of the sills extending through said marginal cut-away portions.

16. In a car underframe, intersecting center sill and bolster members, each being composed of a single commercial shape, and one of the members having an uninterrupted upper edge and the other member extending through the first member and having an interrupted edge.

17. In a car underframe, intersecting bolster and center sill members, each comprising a commercial shape, and one of the members having an uninterrupted upper edge and the other member extending through the first member and having portions of its upper edge flush with the uninterrupted upper edge of the first member.

18. In a car underframe, center sills, each comprising a commercial shape, said sills having registering openings, and a bolster extending through said openings and fixed to one center sill at one side thereof, and to the other center sill at the reverse side thereof said bolster being composed of a single commercial shape.

19. In a car underframe, center sills, each comprising a commercial shape, said sills having registering openings, and a bolster extending through said openings and fixed to the outside of each center sill said bolster being composed of a single commercial shape.

20. In a car underframe, center sills, each comprising a commercial shape, said sills having registering openings, and a bolster extending through said openings said bolster being composed of a single commercial shape.

21. In a car underframe, intersecting members each comprising a commercial shape and one of said members being formed with an aperture said aperture conforming in general contour to the cross sectional contour of the other member and being of

greater depth than the adjacent portion of said other member.

22. In a car underframe, continuous center sills extending throughout the length of the underframe and comprising commercial shapes, and bolsters, each comprising a commercial shape and extending continuously from side to side of the underframe through the webs of said center sills and lying with its upper surface in the plane of the upper surface of the center sills.

23. In a car underframe, a continuous longitudinal sill extending from end to end of the underframe and comprising a commercial shape, and a continuous cross member comprising a commercial shape extending from side to side of the underframe through the webs of said center sills and lying with its upper surface flush with the upper surface of the longitudinal sill.

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

ROBERT E. FRAME.

Witnesses:

T. H. GIBBS,

FLORENCE O'CONNOR.