Sept. 15, 1936. G. G. GILPIN 2,054,783

CAR CONSTRUCTION

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Fig. 3 Fig. 14

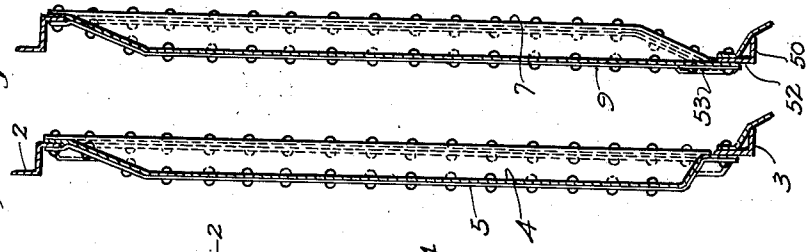


Fig. 1

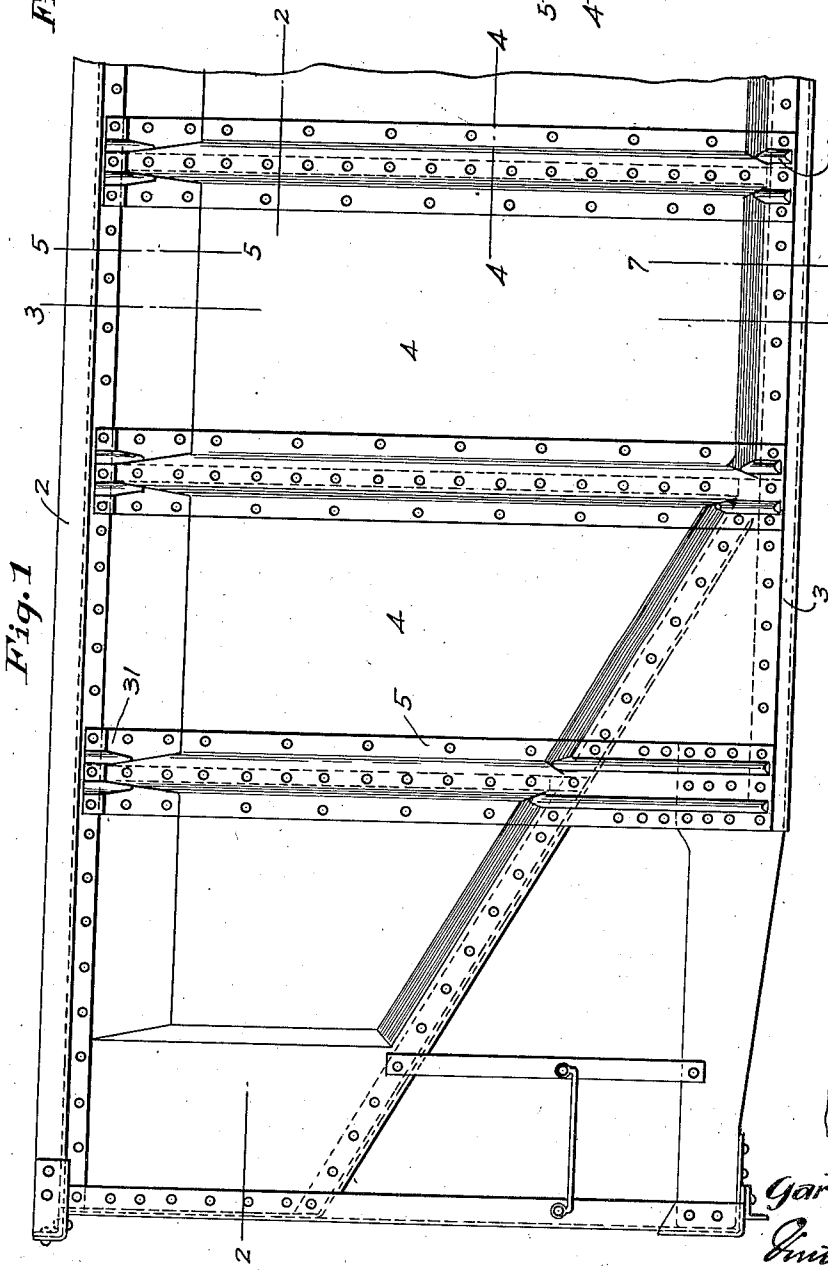
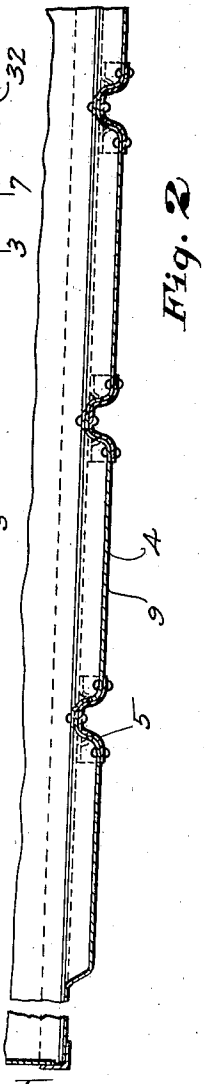


Fig. 2



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Sept. 15, 1936. G. G. GILPIN 2,054,783

CAR CONSTRUCTION

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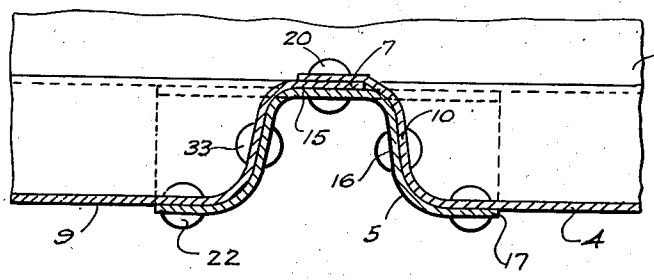


Fig. 4

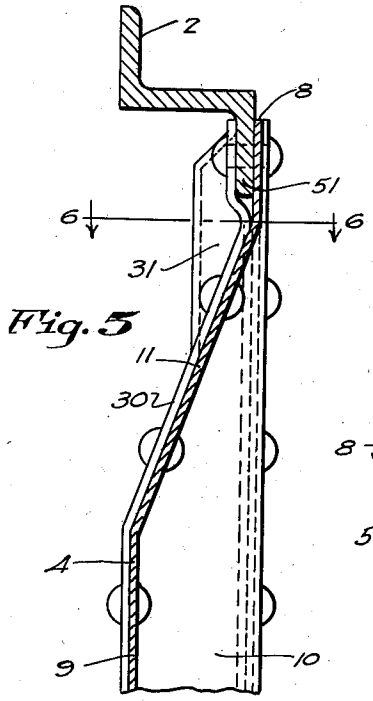


Fig. 5

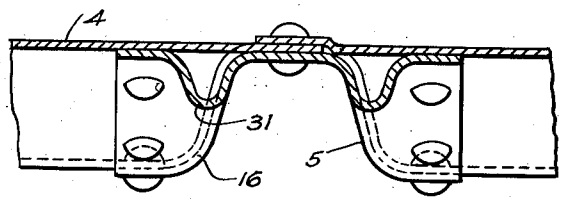


Fig. 6

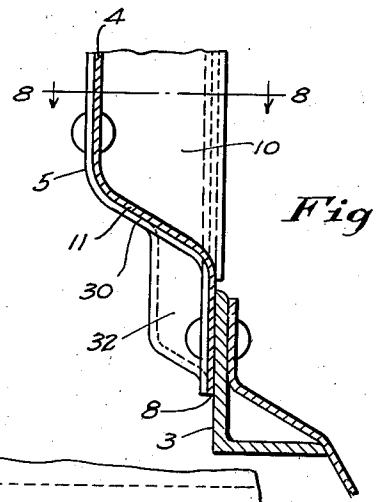


Fig. 7

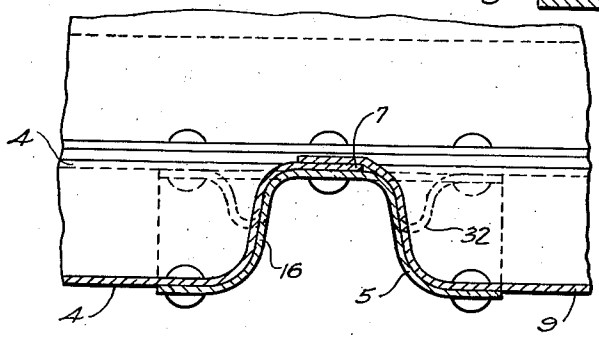


Fig. 8

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CAR CONSTRUCTION

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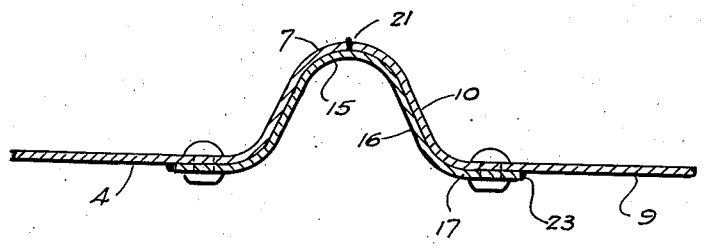


Fig. 9

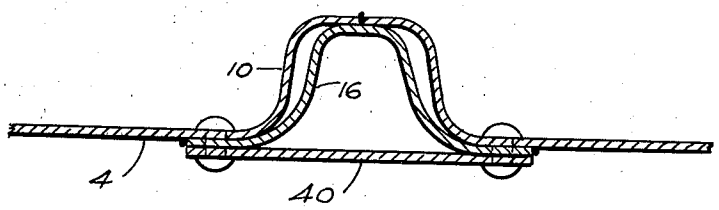


Fig. 10

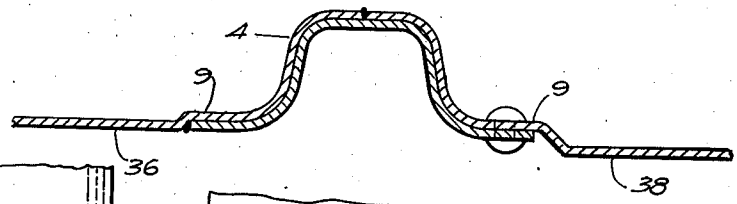


Fig. 11

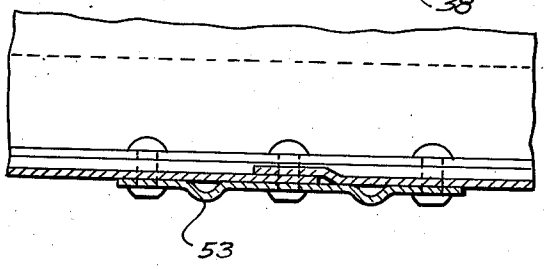


Fig. 13

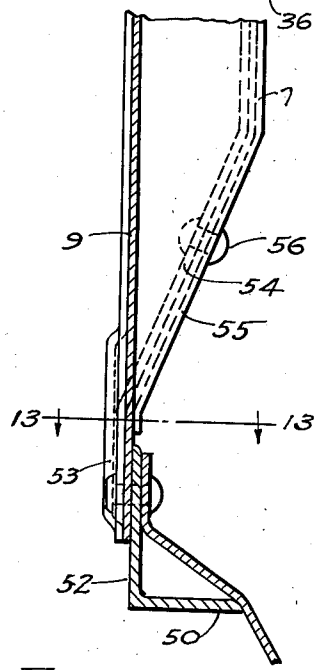


Fig. 12

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Patented Sept. 15, 1936 2,054,783

UNITED STATES PATENT OFFICE

2,054,783

CAR CONSTRUCTION

Garth G. Gilpin, Riverside, Ill., assignor to Union Metal Products Company, Chicago, Ill., a corporation of Delaware

Application August 24, 1933, Serial No. 686,526

16 Claims. (Cl. 105—409)

The invention relates to railway cars and more particularly to side walls of open top railway cars. These side walls perform two functions. First, they are the load retaining means, and secondly, they are girders carrying the major portion of the weight of the lading to the body bolsters from whence it is transferred to the trucks. In certain types of railway cars my construction may also be used.

An object of the invention is to provide a very light and strong car wall which can be quickly and economically made, installed and repaired.

Such walls must be very light, as it is expensive to transport dead weight in a car and such walls must be very strong as girders to carry the load referred to above and must be very strong as vertical beams to carry the horizontal thrust of the lading, which is very great on account of the impact thereof due to the movements of the car when running. The parts of the wall must be capable of easy assemblage because replacements frequently are necessary on account of wearing out of the parts, corrosion and wrecks.

Another object of the invention is to provide such a car wall wherein the stakes are covered by the side sheets of the car, and, therefore, not in contact with the lading, which construction protects the stakes against abrasion of the lading when the car is being loaded or dumped and also protects the stakes against corrosion (moist coal causes excessive corrosion).

Another object of the invention is to provide a car wall so that the component parts thereof may be secured together by bolting, riveting or welding.

Another object is to provide a car wall wherein the component parts can be made of pressed steel plates between reciprocating dies.

Another object is to provide a car wall to obtain the maximum cubical capacity of the car commensurate with the strength requirements.

Another object is to provide a car which will dump the entire lading when turned upside down in an unloading machine.

In the drawings:

Fig. 1 is a part of the side elevation of a railway car equipped with my improved side wall.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is an enlarged section on line 4—4 of Fig. 1.

Fig. 5 is a section on line 5—5 of Fig. 1.

Fig. 6 is a section on line 6—6 of Fig. 5.

Fig. 7 is an enlarged section on line 7—7 of Fig. 1.

Fig. 8 is a section on line 8—8 of Fig. 7.

Fig. 9, 10, and 11 show modified constructions of the post and associated parts.

Figs. 12, 13, and 14 show a modified construction, wherein Fig. 13 is a section on line 13—13 of Fig. 12.

In the form of the invention illustrated the car wall comprises an upper chord 2, a lower chord 3, a plurality of wall sheets 4 secured to the upper and lower chords and a plurality of stakes 5 disposed between adjacent sheets and secured to the chords and to the sheets.

Each wall sheet 4 has side 7 and end 8 marginal portions, a central portion 9 offset in a spaced apart plane substantially parallel to the plane of the marginal portions 7—8 and side 10 and end 11 connecting web portions. Each stake comprises a middle part 15 and spaced apart side flanges 16, each of the side flanges being provided with a reflange 17. (See Fig. 4). The side marginal portions of adjacent sheets and the middle part of the stake are secured together by the rivet 20, as shown in Fig. 4, or by the weld 21, as shown in Fig. 9. When welded, the side flanges 16 of the stakes and the webs 10 of the sheets may be closer together, thereby increasing the cubical capacity of the car. The reflanges 17 of the stake 5 are preferably also attached to the central portions 9 of adjacent sheets by rivets 22 or weld 23. This construction provides co-operation between the adjacent sheets and the stake to form a very strong structure, both as a beam to resist the horizontal load thrust and as a strut between the upper and lower chords of the side wall.

The flanges 16 and reflanges 17 of the stake at the end of the stake merge to substantially a common plane for attachment to a frame member, such as the upper or lower chords 2—3. This common plane is preferably the plane of the middle part 15 of the stake.

The sloping parts 30 of these reflanges 17 are preferably in close proximity to and secured to the end webs 11 of the wall sheet. One or both ends of the stake are preferably provided with one or more stiffening ribs or corrugations 31—32 extending from adjacent the end of the stake and merging into the side flanges 16 of the stake and the sloping part 30 of the reflange.

The side webs 10 of adjacent sheets are preferably in close proximity to the side flanges 16 of the stake to increase the cubical capacity of the car and may also be secured thereto by the rivets

33 or welded, but these elements may be spaced apart, if desired, as shown in Fig. 10. Fig. 11 shows a modified construction wherein the offset portions 9 of the wall sheets 5 are provided with another offset portion 36 (or panel) in a spaced apart plane from the offset portion 9 of the wall sheet. These panels further increase the cubical capacity of the car and are preferably positioned with their outer surfaces substantially flush with the outer surfaces of the reflanges, as shown at 36. If rivets 37 are used the panel may be moved outwardly until the outer surfaces 38 thereof are substantially flush with the outer part of the rivet heads.

In cars hauling very heavy loads I provide straps 40 extending between and secured to the reflanges of the stake to prevent the stake from spreading, as shown in Fig. 10. These straps may be applied at intervals to the stake or a cover plate may be used extending between the opposite ends of the stake.

In the modification shown in Figs. 12, 13, and 14 the upper (2) and lower (50) chords, or at least the vertical flanges 51—52 thereof, are positioned in spaced apart parallel planes, which condition is frequently met in car construction. The wall sheets extend between the upper and lower chords and are secured to the flanges thereof. The marginal portions 7 of the sheets are substantially in the plane of the upper flange 51 for the major portion of their length and in the plane of the lower flange 52 for the remainder of their length. The central portion 9 of the sheets (extending between the marginal portions) is substantially in the plane of the lower flange 52 for the major portion of its length and in the plane of the upper flange 51 for the remainder of its length. At the lower end of the stake the middle part 15 thereof merges into substantially the plane of the reflanges 17 of the stake and is secured to the flange 52 of the lower chord 50 and also preferably to the side sheets. At the upper end of the stake the reflanges 17 of the stake merge into substantially the plane of the middle part 15 of the stake and are secured to the flange 51 of the upper chord and also preferably to the side sheets. The corrugations 53 are long enough to overlap the flange 52 and the sloping part 54 of the stake.

I prefer that the sloping parts 54 of the stake at the top and bottom thereof conform to the sloping parts 55 of the wall sheets so as to obtain a neat construction and, if desired, the sloping parts of the stake and wall sheets may be secured together by welding or by a rivet 56.

The accompanying drawings 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, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. A wall for an open top railway car having an upper chord, a lower chord, a vertical stake connecting said chords, said stake comprising a middle part and spaced apart flanges, each having a reflange, and a wall sheet on each side of said stake, each sheet having a side margin and a portion offset therefrom to increase the cubical capacity of the car, the side margins of the sheets being secured to the middle part of the stake, said sheets completely overlapping the stake so as to protect the stake against abrasion and chemical action of the lading.

2. A wall for a railway car comprising a stake comprising a middle part and spaced apart side flanges, each provided with a reflange, and wall sheets, each having a side margin, a portion offset therefrom, a web connecting the margin and the offset portion, and a panel in a spaced apart plane from said offset portion, the side margins of adjacent sheets and the middle part of the stake being secured together, the outer surface of the panel being substantially flush with the outer surface of the reflanges.

3. A wall for a railway car comprising a stake comprising a middle part and spaced apart side flanges, each provided with a reflange, and wall sheets, each having a side margin, a portion offset therefrom, a web connecting the margin and the offset portion, and a panel in a spaced apart plane from said offset portion, the side margins of adjacent sheets and the middle part of the stake being secured together, rivets securing the offset portions of the sheets to the reflanges, respectively, of the stakes, the outer surface of the panel being substantially flush with the outer part of the heads of the rivets.

4. A wall for a railway car comprising a stake comprising a middle part and spaced apart side flanges, each provided with a reflange, wall sheets, each having a side margin, a portion offset therefrom, a web connecting the margin and the offset portion, and a panel in a spaced apart plane from said offset portion, said webs being in close proximity to said side flanges, the side margins of adjacent sheets and the middle part of the stake being secured together.

5. A wall for a railway car comprising a stake comprising a middle part and spaced apart side flanges, and wall sheets, each having side and end margins and a central portion offset therefrom, the side margins of adjacent sheets and the middle part of the stake being secured together, the offset portions of the sheets and the flanges of the stake merging into a substantially common plane for attachment to a frame member of the car.

6. A wall for a railway car comprising a frame member, a stake comprising a middle part and spaced apart side flanges, and wall sheets, each having side and end margins and a central portion offset therefrom, the side margins of adjacent sheets and the middle part of the stake being secured together, the offset portions of the sheets and the flanges of the stake merging into substantially the plane of the marginal portions of the sheet, said merged elements being secured to said frame member.

7. A wall for a railway car comprising a stake comprising a middle part and spaced apart side flanges, each provided with a reflange, and wall sheets, each having side and end margins and a central portion offset therefrom, the side margins of adjacent sheets and the middle part of the stake being secured together, the offset portions of the sheets being secured to the adjacent reflange of the stake, the offset portions of the sheets, the flanges and the reflanges of the stake merging into a substantially common plane for attachment to a frame member of the car.

8. A wall for a railway car comprising a frame member, a stake comprising a middle part and spaced apart side flanges, each provided with a reflange, and wall sheets, each having side and end margins and a central portion offset therefrom, the side margins of adjacent sheets and the middle part of the stake being secured together, the offset portions of the sheets being secured to

the adjacent reflange of the stake, the offset portions of the sheets, the flanges and the reflanges of the stake merging into substantially the plane of the marginal portions of the sheet, said merged elements being secured to said frame member.

9. A wall for a railway car comprising an upper chord having a vertical flange, a lower chord having a vertical flange, said flanges being in spaced apart parallel planes, wall sheets attached to said flanges respectively, the marginal portions of the sheets being substantially in the plane of the upper flange for the major portion of their length and in the plane of the lower flange for the remainder of their length, the central portions of the sheets between said marginal portions being substantially in the plane of the lower flange for the major portion of their length and in the plane of the upper flange for the remainder of their length, and a stake having a middle part adjacent to and secured to the marginal portions of adjacent sheets, said stake having spaced apart flanges, each provided with a reflange which conforms to the shape of the adjacent central portions of the wall sheets, said stake being secured to the upper and lower chords respectively.

10. A wall for a railway car comprising an upper chord having a vertical flange, a lower chord having a vertical flange, said flanges being in spaced apart parallel planes, wall sheets attached to said flanges respectively, the marginal portions of the sheets being substantially in the plane of the upper flange for the major portion of their length and in the plane of the lower flange for the remainder of their length, the central portions of the sheets between said marginal portions being substantially in the plane of the lower flange for the major portion of their length and in the plane of the upper flange for the remainder of their length, and a stake having a middle part adjacent to and secured to the marginal portions of adjacent sheets, said stake having spaced apart flanges, each provided with a reflange which conform to the shape of and are secured to the adjacent central portions of the wall sheets, said stake being secured to the upper and lower chords respectively.

11. A wall for a railway car comprising an upper chord, a lower chord, and wall sheets, each sheet comprising marginal portions at the sides and top thereof and a central portion in a spaced apart substantially parallel plane, the lower parts of the side marginal portions merging into the plane of the central portion, the upper part of the central portion merging into the plane of the marginal portion, and a stake comprising a middle part and spaced apart flanges, each provided with a reflange, the lower portion of said middle part and the upper portions of the reflanges merging into the plane of the middle part, means to secure the lower parts of the wall sheets and the end of the stake to the lower chord, and means to secure the upper parts of the wall sheets and the end of the stake to the upper chord, the side marginal portions of adjacent wall sheets and the middle part of the stake being secured together.

12. A wall for a railway car comprising spaced apart horizontal frame members, spaced apart vertical stakes, each comprising a middle part and spaced apart flanges, each of said flanges being provided with a reflange, and wall sheets, each sheet having a side margin and a portion offset therefrom adjacent the reflange and panels in a spaced apart plane from said offset portions extending between the reflanges of adjacent stakes to increase the cubical capacity of the car, the side margins of the wall sheets being secured to the middle part of the adjacent stake.

13. A wall for an open top railway car having an upper chord, a lower chord, spaced apart stakes connecting said chords, each stake comprising a middle part and oppositely projecting flanges, and a wall sheet extending between said stakes with the side marginal portions thereof secured to said middle parts of the stakes, respectively, said wall sheet having a portion offset from the marginal portions and positioned adjacent said flanges, said sheet also having a panel projecting outwardly from the offset portions and extending therebetween to increase the cubical capacity of the car.

14. In an open top railway car having a horizontal chord, a stake comprising a middle part and spaced apart flanges each provided with a reflange, said flanges and said middle part merging into a common plane to form a marginal portion, means securing said marginal portion to said chord, said stake having a stiffening rib which overlaps the chord and merges into one of said reflanges.

15. In an open top railway car having a horizontal chord, a stake comprising a middle part and spaced apart flanges each provided with a reflange, said flanges and said middle part merging into a common plane to form a marginal portion, means securing said marginal portion to said chord, said stake having a stiffening rib on each side of the middle part thereof which overlap the chord and merge into said reflanges.

16. A stake comprising a middle part and spaced apart flanges, each provided with a reflange, said flanges and said middle part merging into a common plane to form a marginal portion for attachment to a frame member, said stake having a stiffening rib which overlaps said marginal portion and merges into one of said reflanges.

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