No. 667,667. Patented Feb. 12, 1901.

W. P. BETTENDORF.

TRUSS BEAM.

(Application filed June 21, 1900.)

(No Model.) 2 Sheets—Sheet 1.

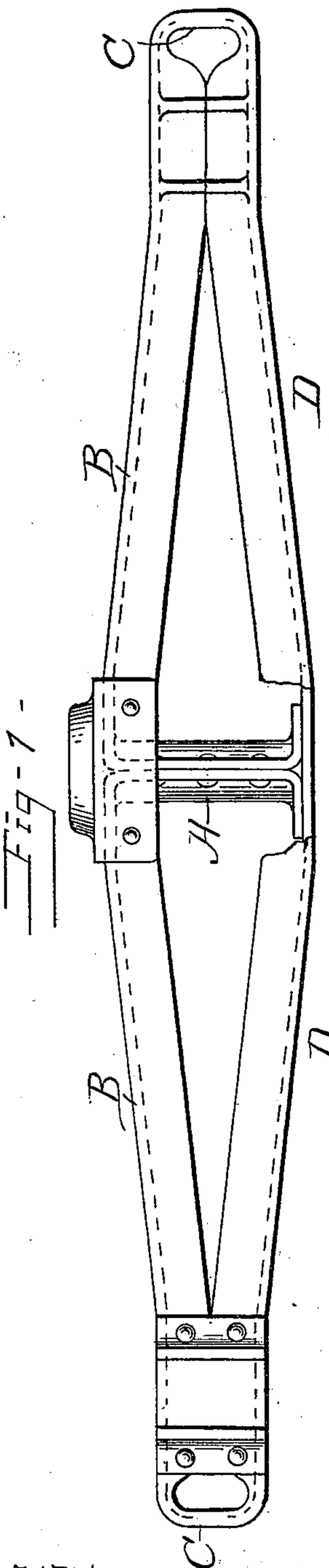

Fig. 1.

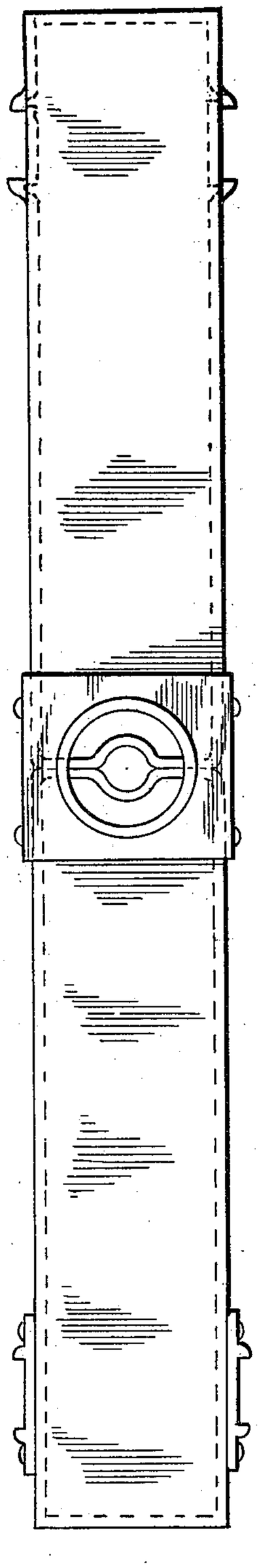

Fig. 2.

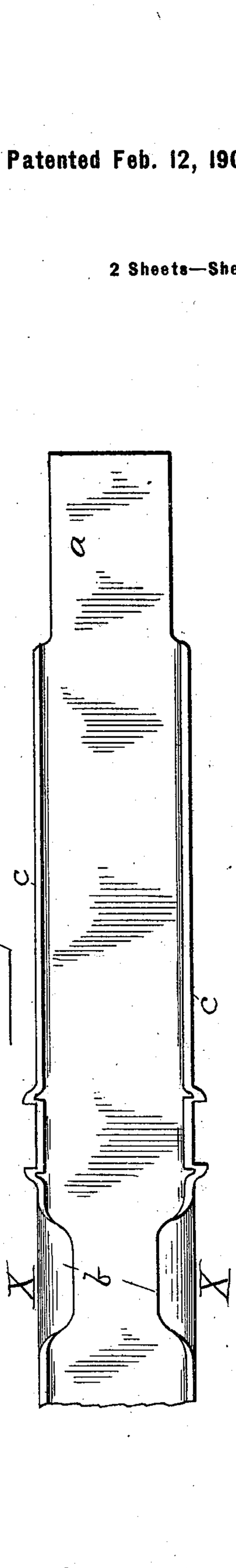

Fig. 3.

Witnesses:-
Louis L. Thomason
M. Friel.

Inventor:-
William P. Bettendorf
By Frank D. Thomason.
Atty

No. 667,667. Patented Feb. 12, 1901.

W. P. BETTENDORF.

TRUSS BEAM.

(Application filed June 21, 1900.)

(No Model.) 2 Sheets—Sheet 2.

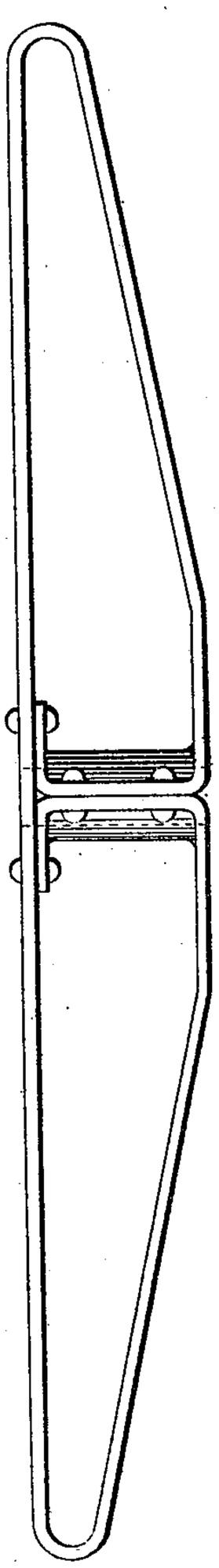

Fig. 4.

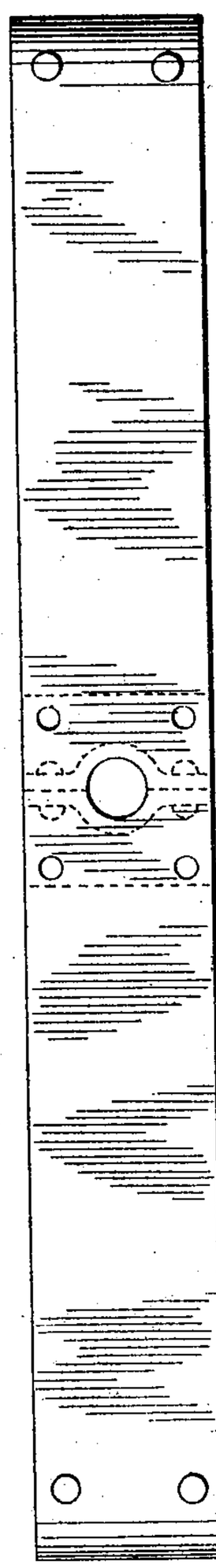

Fig. 5.

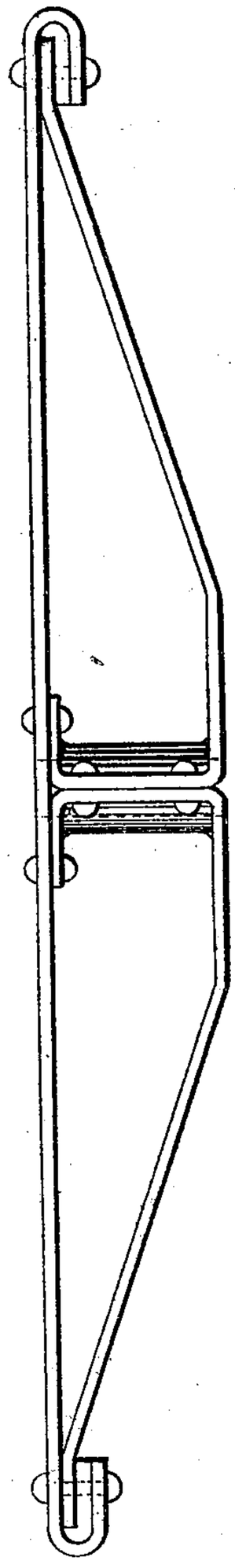

Fig. 6.

Witnesses.

J. W. Myers
J. M. Friel.

Inventor.

William P. Bettendorf
By Frank D. Thomson
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM PETER BETTENDORF, OF DAVENPORT, IOWA.

TRUSS-BEAM.

SPECIFICATION forming part of Letters Patent No. 667,667, dated February 12, 1901.

Application filed June 21, 1900. Serial No. 21,032. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PETER BETTENDORF, a citizen of the United States, and a resident of Davenport, Scott county, Iowa, have invented certain new and useful Improvements in Truss-Beams, of which the following is a full, clear, and exact description.

The object of my invention is to save labor and material in the construction of a truss-beam and at the same time build the same out of one continuous commercial form of metal and in such a manner as to avoid the use of bolts and rivets at the points where the shearing strain is greatest. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of a truck-bolster for cars embodying my invention, showing the flange at the center of length of the tension member broken away. Fig. 2 is a plan view of the same. Fig. 3 is a plan of one end of the blank used in the construction thereof. Fig. 4 is a side view of a body-bolster for cars embodying my invention. Fig. 5 is a plan view of the same. Fig. 6 is a side view of a body-bolster for cars, showing a modification of my invention.

In the drawings, A represents a strut or king-bolt bearing of a truck-bolster for cars. B B represent the compression members or corresponding inclined branches of the upper frame of said bolster extending in opposite directions from the center of length or from said king-bolt bearing. C represents the corresponding ends or return-bends of said bolster, and D represents the tension member or lower frame of the bolster.

In the form of truss-beam shown in the first two figures of the drawings the king-bolt bearings, the compression members, the ends or return-bends, and the tension members are made of one continuous strip of channel-beam. To do this, the ends *a* of the section of channel-beam employed for the purpose are stripped or denuded of the flanges and made narrower than the remainder of the length of the web thereof between said flanges, and the portions *b*, utilized to form the ends or return-bends of the bolster, have the flanges *c c* pressed inward, so as to lap against the web, substantially as shown at X X, Fig. 3 of the drawings.

In forming the truss-beam a section of channel-beam is used of a length corresponding to twice the length of the truss-beam plus the length of the portion used to attain the desired height and plus twice the height of the strut or king-bolt bearing. The stretch of beam between the portions *x* thereof is given the shape shown by the lower tension member of the truss shown in Fig. 1—that is, the portion of the beam on each side of the horizontal part supporting the lower end of the strut is inclined upward slightly to a point near where the column-guides are located, whereupon they extend horizontally. The ends of the truss are then made by bending the beam at *x* until the edges of the flanges of the channel-beam come in contact with the edges of the flanges of the horizontal end portions of the lower tension member, to which they are secured by welding or otherwise. The object in mashing or bending the flanges of the portion *x* of the channel-beam inward is to remove the resistance they would otherwise present to the bending of the channel-beam to form the ends of the truss. It will of course be understood that instead of displacing the flanges of said channel-beam at *x* in the manner just described they could be cut away or otherwise displaced to permit of the ends being easily formed. From the horizontal end portions of the truss the channel-beam inclines upward to form the compression members of the truss to the point where the female bearing-plate E is secured thereto, whereupon their course is horizontal to the point coinciding with the center of length of the truss-beam, where the end portions of the channel-beam *a*, which have been denuded of their flanges, meet and bend and extend vertically downward to the central horizontal portion of the lower or tension member, whereupon their extremities are flanged laterally to form a basal flange, which is bolted or otherwise seamed to the web of said lower member. Between the compression and tension members of the truss the flangeless ends of the channel-beam bear against each other and are bolted or other-

wise secured together and when the truss-beam is utilized as a bolster for cars the central portion of each is so shaped as to form a tubular bearing F for the king-bolt.

Ordinarily when the truss-beam is used for a truck-bolster for cars column guide-plates G are secured to the flanges of the horizontal end portions of the flanges of both the compression and tension members by riveting or otherwise and assist in keeping the edges of the flanges of said members in contact, substantially as shown by the construction of the left-hand end of the bolster shown in Figs. 1 and 2. If desired, however, the use of column guide-plates may be dispensed with and the guides made by pressing vertical guide-ridges *e e* in the flanges of the channel-beams on either side of the bent end portion thereof, which are located at such a distance apart that when the truss is properly formed said guide-ridges will come in vertical alinement and form between them on each side of the bolster suitable guideways for the columns of the side frames of car-trucks.

In Figs. 4 and 5 I show a body-bolster of cars which embodies a different form and modified construction of my improved truss-beam. In this body-bolster I employ a suitable length of heavy plate metal. The upper member K of the truss is horizontal and continuous from end to end, and the lower members *k* are made by bending the plates and inclining the same downward at corresponding angles from the ends of the truss to a point at or near the center of length of the bolster, then bending the end portions M M where they come in contact at a point coinciding with the center of length of the truss upward to the upper member, and then flanging their extremities, so as to permit their being riveted or otherwise secured to the upper member. The end portions N of the plate bear against and are secured together by rivets or otherwise, and between their side edges the metal thereof is given a semitubular shape, so that together they form a suitable bearing for the king-bolt.

In Fig. 6 is shown a body-bolster for cars, the upper member R of which is made of a heavy section of plate, the ends of which are bent under correspondingly, so as to retain the ends of the lower tension members S. The lower tension members consist of two corresponding sections of metal plates, the ends of which are seated in suitable fillers *s* and confined in the book-shaped end of the upper members R of the bolster by means of the bolts or rivets *r*. After they leave the embrace of the ends of the upper member said lower members incline downward at corresponding angles to points at or near the center of the bolster, at which point their end portions come into contact, are bent vertically upward, and secured to the upper member substantially the same as shown in Fig. 4.

What I claim as new is—

1. A truss-beam whose compression and tension members, and strut are made of one continuous suitably bent section of metal plate or beam.

2. A truss-frame having a compression and a tension member, one of which has ends terminating at the center of length and bent toward and brought in contact with the other member and connected.

3. A truss-beam having a compression and a tension member, one of which has ends terminating at the center of length of the truss which have extensions bent toward and brought in contact with the other member and connected thereto.

4. A truss-beam having a compression and a tension member made of one continuous section of metal plate or beam, the ends of which meet at the center of length of one of said members are secured together, and are bent toward and extend to the other member.

5. A truss-beam having a compression and a tension member made of one continuous section of metal plate or beam, the ends of which meet at the center of length of the compression member are secured together and are bent toward and extend to the other member.

6. A truss-beam having a compression and a tension member made of one continuous section of metal plate or beam, the ends of which meet at the center of length of the compression member, are bent parallel and secured to each other and extend and are connected to the central portion of the tension member.

7. A truss-frame having a compression and a tension member made of one continuous section of flanged metal beam, the ends of which are denuded of their flanges, meet and are secured together at the center of length of one of said members and are bent toward and are connected to the other members.

8. A truss-frame having a compression and a tension member made of one continuous section of metal plate or beam, the ends of which meet and are secured together at suitable points between the ends of the truss-beam to complete one of said members and are bent toward and extend and are secured to the other member.

9. A truss-beam having a compression and a tension member made of one continuous section of flanged metal beam which at the ends of said truss-frame has its flanged portion displaced, and has its ends meet and secured together to form a strut.

10. A truss-frame having a compression and a tension member made of one continuous section of flanged metal beam the flanged portion of which at the ends of said truss-frame are displaced and the ends of said continuous beam denuded of its flanges and meeting and secured together intermediate said truss-frame to form one of said members and bent toward and secured to the opposite member to form a strut for the truss-frame.

11. A truss-frame having a compression and

a tension member made of one continuous section of channel-beam the flanges of the portions of which forming the ends of said truss-frame being displaced and the ends thereof denuded of their flanges and secured together to form one of said members and bent toward and connected to the other member to form a strut for said truss-beam.

12. A truss-frame having a compression and a tension member made of one continuous section of channel-beam the metal of the flanges of the part forming the ends of said truss-frame being suitably disposed of to permit of the same being bent and the ends meeting at a suitable point along the length of one of said members and bent toward and connected to each other and to the other member to form a strut.

13. A truss-frame having a compression and a tension member made of one continuous section of channel-beam the flanges of the portions thereof forming the ends of said truss-frame being displaced and the flanges on each side of said displaced portion being provided with outwardly-projecting ridges which meet and are suitably secured together and form column-guides, and the ends of said channel-beam meeting and being secured together at a suitable point along the length of one of said members.

14. A truss-frame having a compression and a tension member made of one continuous section of channel-beam the flanges of the portions thereof forming the ends of said truss-frame being displaced and the flanges on each side of said displaced portion being provided with outwardly-projecting ridges which meet and are suitably secured together and form column-guides, and the ends of said channel-beam meeting and being secured together at a suitable point along the length of one of said members and bent toward and connected with the opposite member to form a strut for said truss-frame.

15. A truss-frame having a compression and a tension member made of one continuous section of flanged beam, the metal of the flanged portion of the part of which forming the ends of the truss-frame being suitably disposed of to permit said beam being bent, and the edges of the flanges on either side of the bent portion of the beam meeting and suitably secured together, and the ends of said flanged beam being brought together and united at a suitable point along the length of one of said members.

16. A truss-frame having a compression and a tension member made of one continuous section of flanged beam, the metal of the flanged portion of the part of which forming the ends of the truss-frame being suitably disposed of to permit said beam being bent, and the edges of the flanges on either side of the bent portion of the beam meeting and suitably secured together, and the ends of said flanged beam being brought together and united at a suitable point along the length of one of said members, and bent toward and secured to the other member of said truss-frame to form a strut.

WILLIAM PETER BETTENDORF.

Witnesses:
MARCIA FRIEL,
FRANK D. THOMASON.