

No. 777,810.

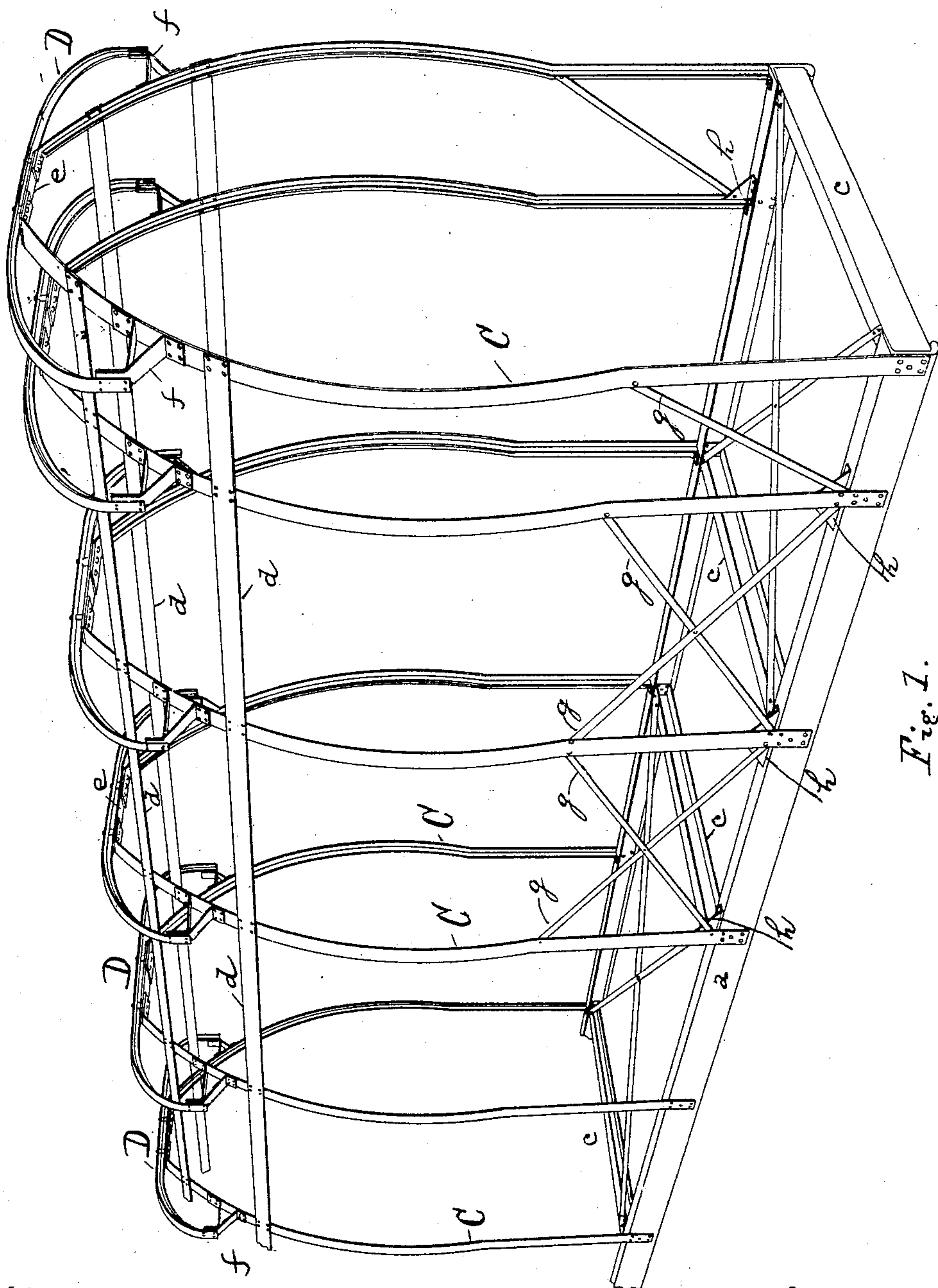
PATENTED DEC. 20, 1904.

H. ROMÜNDER.
PASSENGER CAR.

APPLICATION FILED AUG. 20, 1903.

..NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

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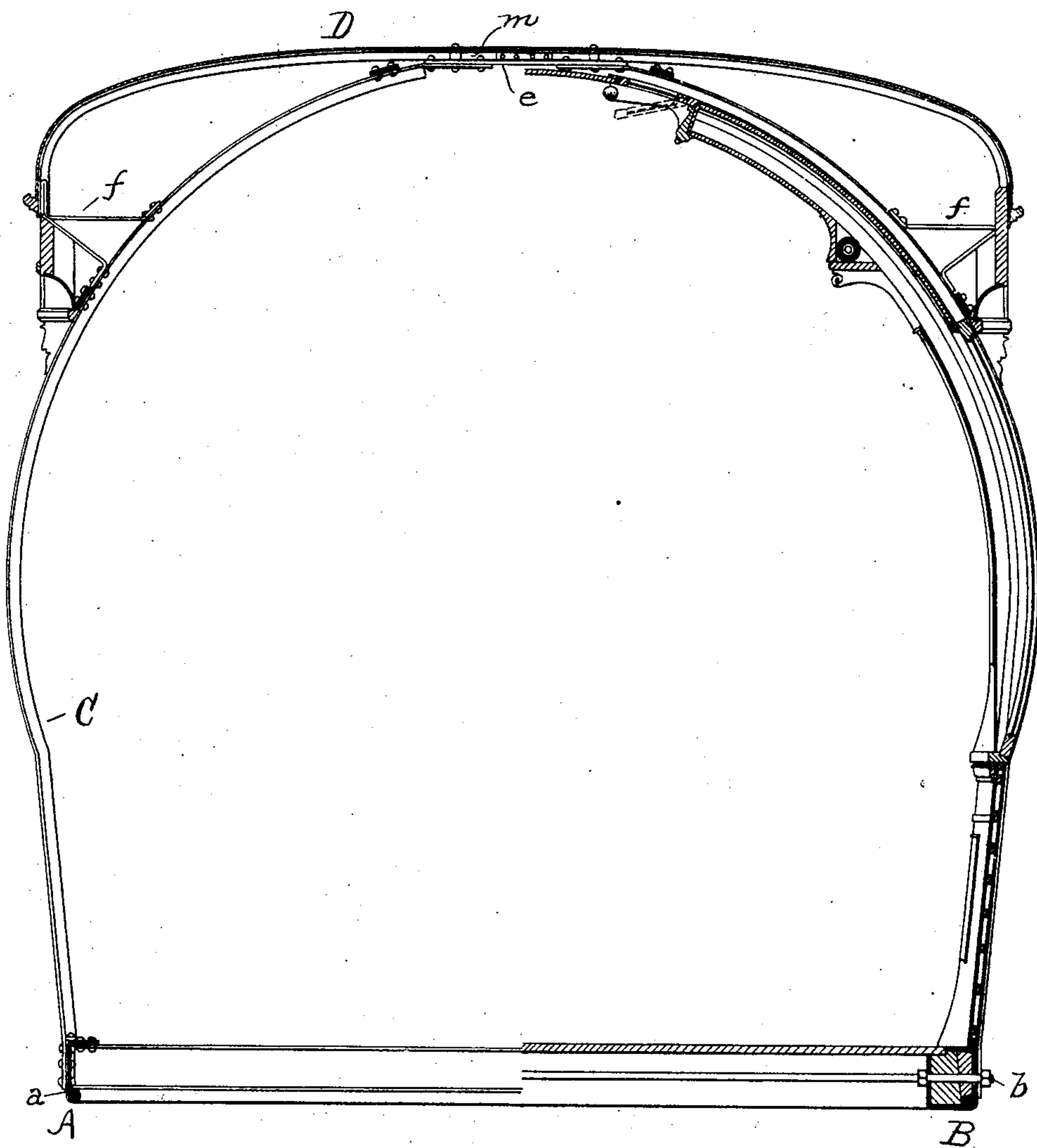


Fig. 2.

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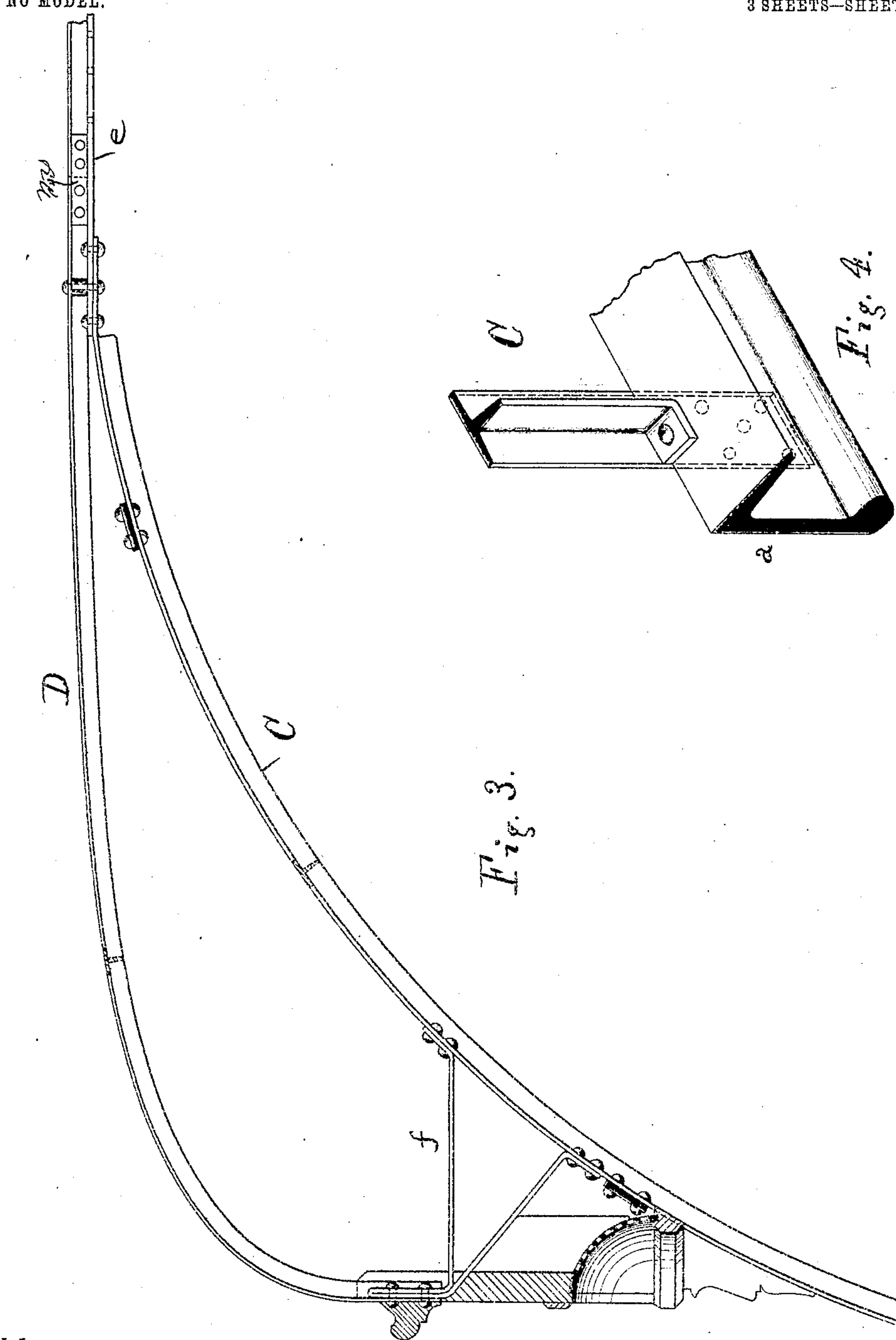
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APPLICATION FILED AUG. 20, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

HERMANN ROMÜNDER, OF BLOOMSBURY, NEW JERSEY.

PASSENGER-CAR.

SPECIFICATION forming part of Letters Patent No. 777,810, dated December 20, 1904.

Application filed August 20, 1903. Serial No. 170,130.

To all whom it may concern:

Be it known that I, HERMANN ROMÜNDER, a citizen of the United States, and a resident of Bloomsbury, county of Hunterdon, and State of New Jersey, have invented certain new and useful Improvements in Passenger-Cars, of which the following is a specification.

My invention relates to new and useful improvements in the construction of passenger-cars; and the objects of my invention are to provide a car much stronger and more substantially built, more rigid, and of greater resisting power than those now generally manufactured and used, the framework being a metal skeleton construction, preferably covered with wood, either solid wood or wood veneer, or otherwise, and combining great strength and durability with simplicity and cheapness of construction. To accomplish these objects, I make the frame of the car of metal, preferably using partly T-iron, partly angle and channel iron, and partly metal bars, and also make the separate metal pieces which the skeleton frame is principally composed of of a fixed pattern and shape and length, so that the material can all be made in stock and used for cars of any desired lengths and widths, and the woodwork covering this metal skeleton frame I make, preferably, of wood-veneer plates consisting of a number of layers of wood veneer, the grain of alternate layers being preferably reversed and all the layers united under heat and pressure by means of any suitable waterproof cementing composition—such, for example, as a compound of glue and potash—whereby they are rendered impervious to moisture and atmospheric influences and form practically one homogeneous plate of wood much stronger and more durable than a considerably thicker board with the grain running all in one direction. To that end I provide this metal skeleton frame with a rigid metal bottom frame consisting of side and cross sills of required lengths corresponding to the length and width of the car, a rigid side or body frame consisting principally of longitudinal side ribs or posts extending practically the full length of the car on both sides in certain fixed distances apart, and lateral stiffening-bars on both sides of the car, and a

rigid roof-frame consisting principally of curved rafters overhanging the side framing and suitably fastened to the side posts and supported at the outer ends preferably by brackets, which are also secured to the side posts, all of metal, preferably of steel, and carefully and strongly riveted together.

One form of my invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the skeleton frame of part of a passenger-car embodying my invention. Fig. 2 is a transverse vertical section of the car, showing the metal skeleton frame on one side and the complete wood covering on the other side, the rafters on both sides of the car being covered with the wood-veneer roof. Fig. 3 is a detail showing in section the upper part of the metal frame and woodwork of one-half of the car. Fig. 4 is an enlarged detail showing the way in which the metal frame of the side post is riveted to the side sill of the bottom frame.

Same letters indicate similar parts in the different drawings.

In constructing this steel skeleton frame the metal part of the bottom frame is first riveted together, which consists of side and cross sills, the side sills for medium-sized cars consisting, preferably, of bulb angle-iron *a*, as shown at A in Fig. 2, while large-sized heavy cars are preferably provided with an additional metal bar *b*, preferably of angle-iron, as shown at B, Fig. 2. To these metal side sills, which preferably reinforce wooden side-sill beams, the metal cross-sills *c c*, preferably consisting of channel-iron, are riveted, and these side and cross sills form a strong rigid bottom frame substantially of the length and width of the car-body. Along the side sills on both sides of the car longitudinal metal side posts or ribs *C C*, preferably of the shape as shown and consisting, preferably, of T-iron, are riveted in certain distances apart to the said bulb angle-iron *a* of the side sills, preferably, as is more clearly shown in Fig. 4. One or more lateral metal stiffening-bars *d* are riveted to the side posts at their upper portion, rendering the side frame absolutely rigid. The upper ends of each opposite set of side posts *C C* are connected either to each

other or to a connecting link-piece *e* of any desired length, preferably a metal bar, whereby the car-body may be made of any desired width, the same side posts being employed
5 for narrow and wide cars, the latter ordinarily requiring only a wider floor and a wider roof, any additional width required in the metal body-frame being produced by the link-pieces *e e*.

10 The curved metal rafters *D D*, consisting, preferably, of *T*-iron, may be made of one continuous piece spanning the entire width of the car, but are preferably made of two pieces, each one covering only one-half of the
15 width of the car, so that the same rafters can be used for narrow and wide cars, while any space that may remain open between the inner ends of each opposite set of rafters extending from side to side of the car may be
20 filled by suitable lengths of metal bars or other material *m*, (see Figs. 2 and 3,) as desired, so as to form one continuous support for the roof material from side to side of the car. These rafters *D D* are fastened at their outer
25 ends, preferably, to supporting braces or brackets *f f* or otherwise, which brackets are preferably made of metal bars and riveted to the side posts and at the center or top to the upper ends of the side posts or to the link-pieces
30 *e e*, connecting each opposite set of side posts.

The metal side posts are preferably straight and substantially vertical in their lower portion and curved on the arc of a circle in their upper portion for the purpose of utilizing
35 large curved side windows movable in grooves provided in the wood covering of the metal side posts; but my roof and bottom frame construction may be used as well for an almost or entirely straight side-post construction
40 and suitably riveted thereto.

The side posts and rafters, owing to their peculiar construction, being made of a fixed pattern and shape are interchangeable and reversible, so that there are no rights or lefts,
45 without regard to the width of the car.

The entire metal skeleton frame is carefully and strongly riveted together and then the woodwork is applied, preferably covering the metal skeleton frame almost, if not entirely,
50 on the inside and on top, as required.

The woodwork is either of solid wood or wood-veneer plates, and the latter are used, preferably, as they are cheaper, stronger, lighter, and more durable than solid wood
55 and also water and weather proof, owing to the process I utilize, thereby obviating the shrinking and swelling to which wood is otherwise subject. I use these wood-veneer plates preferably for the roof, the inner ceiling, the
60 roof-panels, and the side-section panels, as illustrated partly in Fig. 2, one half of the illustration showing the metal frame only, while the other half shows the framework covered with the woodwork and completely finished.

65 These wood-veneer plates consist of a number

of layers of wood veneer, the grain of alternate layers being preferably reversed and all the layers united under heat and pressure by means of any suitable waterproof cementing composition—such, for example, as a com-
70 pound of glue and potash—whereby they form practically one homogeneous plate of wood impervious to moisture and atmospheric influences. This wood-veneer plate is much
75 stronger and more durable than a considerably-thicker board with the grain running all in one direction, and for the roof of the car these wood-veneer plates obviate the use of tongue-and-grooved boards, which must be bent and shaped by hand and secured to the
80 rafters, then covered with canvas and painted to produce a weatherproof roof as now commonly constructed. I press these wood-veneer plates in large sheets into the required shape to cover the metal rafters and fasten
85 them thereto preferably with rivets or otherwise, when the plates may be painted, if desired; but they require no canvas or other covering material, the wood-veneer plates, as stated above, being water and weather proof,
90 and thus providing one continuous strong roof extending over the entire upper portion of the car from side to side and from end to end.

In order to strengthen the car-body still more
95 laterally, additional lateral metal braces *g* and corner-plates *h* may be provided between adjoining side posts, as shown in Fig. 1, in the first, second, and third side sections, between the first and fourth side posts, or omitted, as
100 shown, in the fourth and fifth section, without changing the nature of my invention, and it is optional whether one or more or all the side sections are provided with these additional lateral metal braces and corner-plates
105 or not.

While I have referred throughout the specification to riveting as the means employed in securing the component metal parts of the device together, I am aware that other known
110 means of uniting said parts may be employed without departing from the spirit and scope of my invention. In referring to the method of uniting the parts by "riveting" in the claims, I equally apply said term as an example and
115 intend it to embrace all proper and suitable means of union between the parts.

I claim—

1. A metal skeleton frame for passenger-cars, composed of a metal bottom frame, con-
120 sisting of side and cross sills, a metal side or body frame, consisting of reversible and interchangeable metal side posts or ribs and lateral stiffening bars or braces, the lower part of said side posts being preferably
125 straight and substantially vertical and the upper part curved on the arc of a circle, and so arranged at the top that the upper ends of each opposite set of said side posts may be riveted together or to a metal link-piece con-
130

necting them, whereby the car may be manufactured of any desired width; and the metal roof-frame, consisting of reversible and interchangeable curved rafters overhanging the side framing, and of bars or brackets, all carefully and strongly riveted so as to form a rigid metal skeleton frame, substantially as shown and described.

2. A metal skeleton frame for passenger-cars composed of a number of reversible and interchangeable metal side posts, the lower portion of which is preferably straight and substantially vertical, while the upper portion is preferably curved on the arc of a circle, the side posts being riveted at the bottom to the side sills of the bottom frame and so arranged at the top that the upper ends of each opposite set of side posts may be riveted together or to a link-piece, preferably of metal, connecting them, whereby the car may be manufactured of any desired width; lateral metal stiffening-bars riveted to the side posts, thereby serving to bind them together and giving the metal frame great lateral stiffness; and reversible and interchangeable bent metal rafters, preferably secured at the outer bent ends to metal brackets or supporting-braces, riveted to the side posts, and at the top to the upper ends of the side posts or to the link-pieces connecting said side posts.

3. A metal skeleton frame for passenger-cars composed of metal side and cross sills, consisting preferably of angle and channel iron, securely riveted together, forming the rigid metal bottom frame of the car, substantially of the length and width of the car-body; a number of reversible and interchangeable metal side posts; preferably of T-iron, riveted at the bottom to the side sills and extending at fixed distances apart the entire length of the said side sills on both sides of the car, the upper ends of each opposite set of side posts being riveted together or to a link-piece, preferably of metal, whereby the car may be made of any desired width; lateral stiffening-bars, preferably of metal secured to the side posts at their upper portion and extending the whole length of the metal frame on both sides of the car-body and additional lateral stiffening-bars between two or more or all the side posts at their lower portion and suitably secured thereto and metal corner-plates connecting one or more or all the side posts with the side sills thereby giving the metal skeleton frame great lateral stiffness, and a number of reversible and interchangeable curved metal rafters, preferably of T-iron overhanging the side framing and suitably secured to the side posts and preferably supported at their outer bent ends by brackets or other means also secured to the side posts.

4. In a passenger-car a number of reversible and interchangeable metal side posts preferably of T-iron extending practically the full

length of the car on both sides and riveted at the bottom to the metal side sills of the metal bottom frame of the car, which said side sills preferably consist of bulb angle or angle-iron and at the top to each other or to metal link-pieces connecting each opposite set of side posts whereby the car can be made narrow or wide as required; lateral metal stiffening bars or braces riveted to the side posts to secure great lateral stiffness; reversible and interchangeable curved rafters preferably of T-iron, suitably secured to the side posts and sufficiently braced to support the roof of the car which preferably consists of water and weather proof wood-veneer plates forming practically one continuous roof suitably secured to said curved metal rafters and extending over the entire upper portion of the car from side to side and from end to end.

5. In a passenger-car, metal side posts and metal rafters consisting preferably of T-iron and being of a fixed pattern and shape so that there are no rights or lefts, all the side posts and rafters being reversible and interchangeable without regard to the width of the car; a metal bottom frame to which the lower ends of the metal side posts are riveted and lateral metal stiffening bars or braces all riveted together and forming a rigid metal skeleton frame adapted to be used for cars of any desired width; the construction of the side of the car being independent of the width of the car, the same side posts and rafters being employed for narrow and wide cars which ordinarily necessitate only a wider floor and a wider roof, any additional width required in the metal frame being produced by link-pieces of required length, preferably of metal, riveted to the top ends of opposite side posts, and strips or bars of metal or other material, secured to the inner ends of each opposite set of rafters, filling any space that may remain open between same, and thus forming one continuous support for the roof material.

6. In a passenger-car a metal frame preferably consisting of side and cross sills, substantially of the length and width of the car-body; a number of interchangeable and reversible metal side posts the lower portion of which is preferably straight and substantially vertical and the upper portion curved on the arc of a circle; and a number of reversible and interchangeable curved rafters, all riveted together to form a rigid metal skeleton frame; the said side posts being so arranged at the top that the upper ends of each opposite set of said side posts may be riveted together or to a link-piece, being preferably of metal, connecting them, whereby the car can be manufactured of any desired width; and wood covering the said metal skeleton frame, the said wood covering and woodwork of the car being either solid wood or water and weather proof wood-veneer plates, suitably secured to or connected with the metal skeleton frame;

said wood-veneer plates consisting of two or more layers of wood veneer, the grain of alternate layers being preferably reversed, and all the layers being united by a waterproof cementing composition under heat and pressure, thereby forming practically one homogeneous plate of wood, impervious to moisture and atmospheric influences.

7. A passenger-car provided with a metal bottom frame, consisting preferably of side and cross sills; a number of metal side posts and metal rafters, suitably riveted together to form a rigid metal skeleton frame to which the woodwork and detail finish of the car is suitably attached; the woodwork consisting partly of solid wood and partly wood-veneer plates made of a number of layers of wood veneer with the grain of alternate layers preferably reversed, and all the layers united by a waterproof cementing composition under heat and pressure, whereby they are rendered impervious to moisture and atmospheric influences, will not shrink or swell, and form practically one homogeneous plate of wood.

8. In a passenger-car a number of interchangeable and reversible curved metal rafters, of a fixed pattern and shape, suitably connected to the side or body frame of the car, each rafter being substantially of a length equal to one-half of the width of the car, so that the same rafters can be used for cars of any desired width, any space that may remain open between the inner ends of each opposite set of rafters being filled by suitable lengths of metal bars or other material, connecting the said rafters, so as to form one continuous support from side to side of the car, for the roof material, substantially as shown and described.

9. In a passenger-car a number of interchangeable and reversible curved metal rafters suitably connected to the side or body frame of the car, each rafter being of a fixed pattern and shape and length, so that the same rafters may be used for cars of any desired width, the inner ends of each opposite set of

rafters being riveted together or to a strip or bar of metal or other material, of suitable length, so as to form one continuous support for the roof material, the said rafters spanning the entire width of the car and overhanging the side or body frame; the roof material consisting of wood-veneer plates of required shape covering the metal rafters and suitably fastened thereto, and thus providing one continuous strong roof, extending over the entire upper portion of the car from side to side and from end to end; each wood-veneer plate being composed of a number of layers of wood veneer, the grain of alternate layers being preferably reversed and all the layers united by a waterproof cementing composition under heat and pressure, whereby they form practically one homogeneous plate of wood, impervious to moisture and atmospheric influences.

10. In a metal skeleton frame passenger-car a rigid metal bottom frame, substantially of the length and width of the car, and consisting of metal side and cross sills, suitably riveted together; and a rigid metal side or body frame, consisting of a number of metal side posts or ribs and lateral stiffening bars or braces, suitably connected, and so arranged that the upper ends of each opposite set of said side posts may be riveted to a metal link-piece of suitable shape and length, connecting them, whereby the car may be manufactured of any desired width; and a rigid metal roof-frame, consisting of curved metal rafters of a fixed pattern and shape, and metal brackets or bars, suitably connected, the said rafters spanning the entire width of the car and overhanging the side or body frame, all suitably connected to form a rigid metal skeleton frame, substantially as described.

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Witnesses:

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