

(No Model.)

4 Sheets—Sheet 1.

D. W. RIORDAN & E. J. MARTYN.

RAILWAY CAR.

No. 353,884.

Patented Dec. 7, 1886.

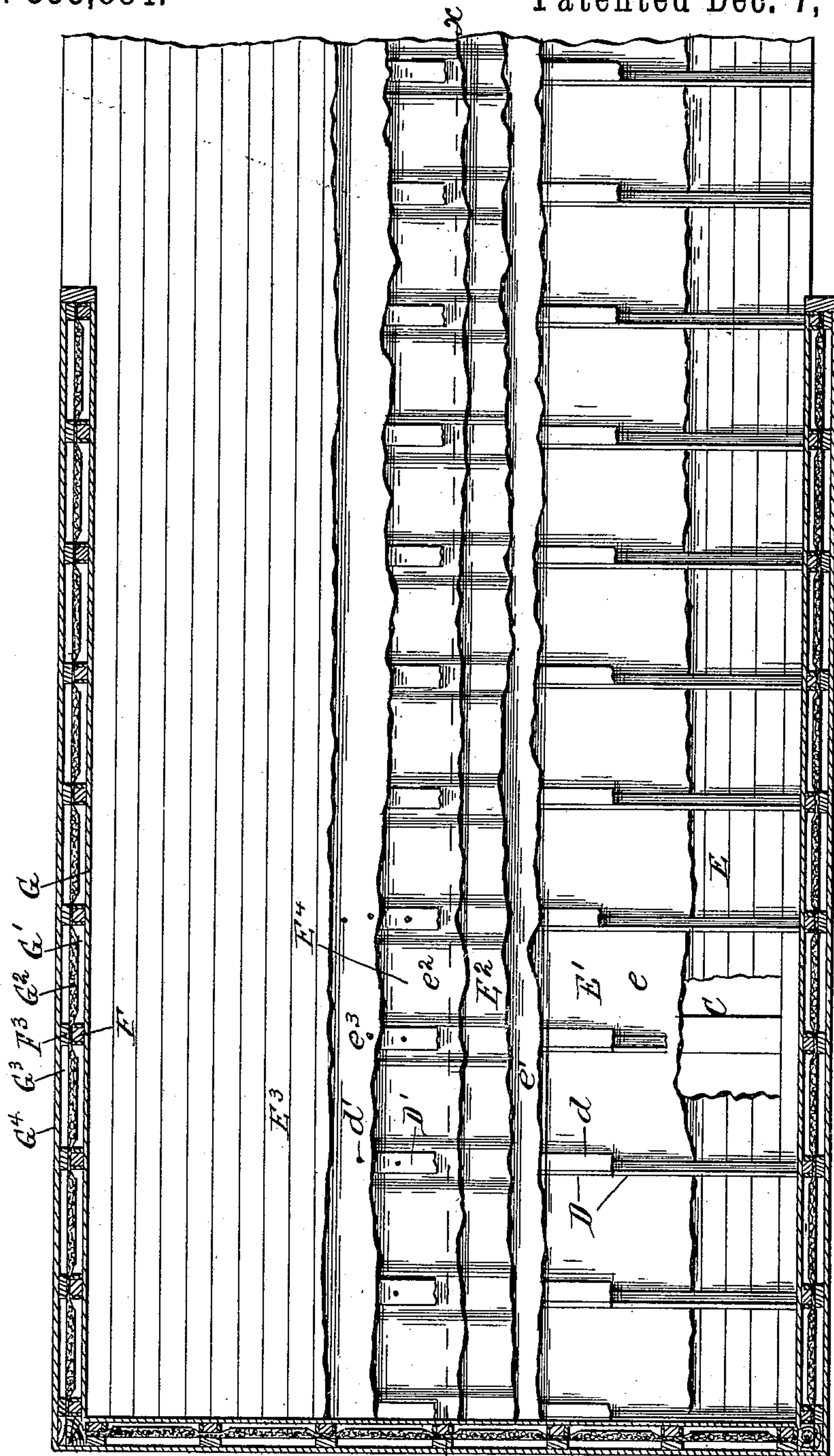


Fig 1

Witnesses

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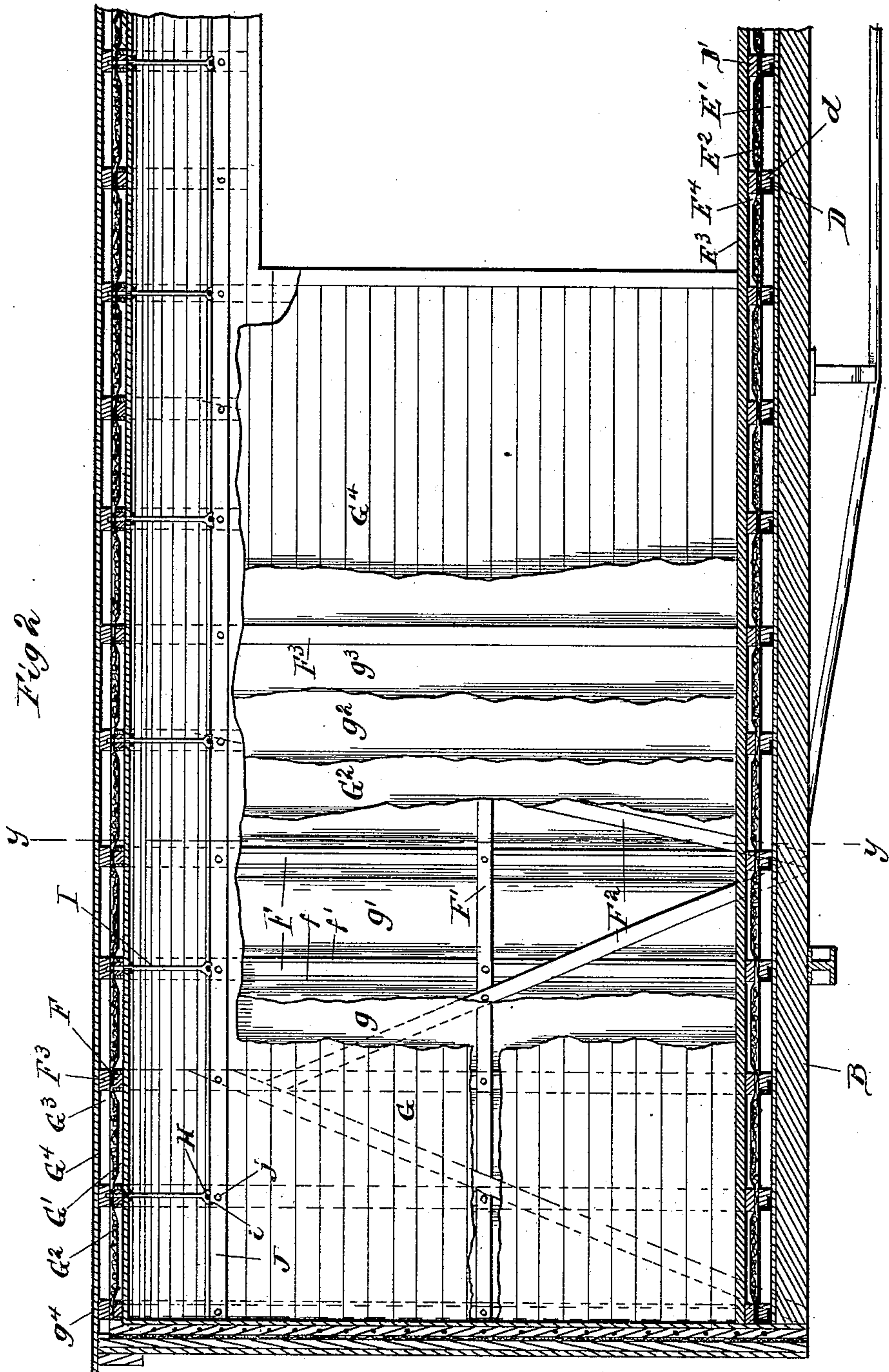
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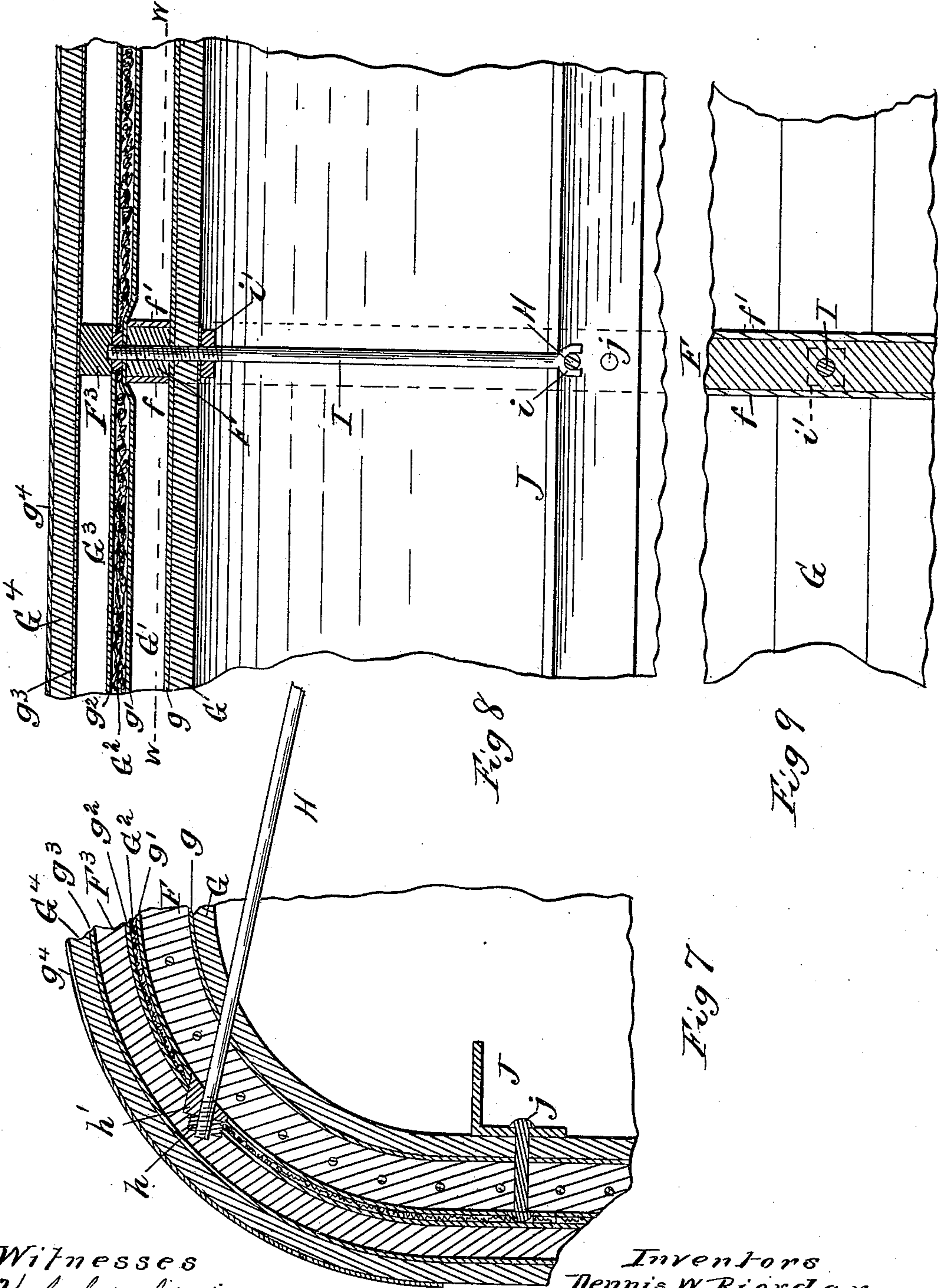
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# UNITED STATES PATENT OFFICE.

DENNIS W. RIORDAN AND EDWARD J. MARTYN, OF CHICAGO, ILLINOIS.

## RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 353,884, dated December 7, 1886.

Application filed July 17, 1886. Serial No. 208,307. (No model.)

*To all whom it may concern:*

Be it known that we, DENNIS W. RIORDAN and EDWARD J. MARTYN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway-Cars, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a plan section of a car embodying our invention; Fig. 2, a central longitudinal vertical sectional view of the same, taken on the line *xx* of Fig. 1; Fig. 3, a transverse sectional view taken on the line *yy* of Fig. 2; 15 Fig. 4, a detail sectional view taken on the line *zz* of Fig. 3, looking in the direction of the arrow; Fig. 5, a detail plan section taken on the line *vv* of Fig. 3; Fig. 6, a detail view showing the connection between the sills and 20 the uprights; Fig. 7, a detail transverse sectional view showing the construction of the top of the car; Fig. 8, a detail central longitudinal sectional view of the same, and Fig. 9 a detail plan section taken on the line *ww* 25 of Fig. 8. Figs. 1, 2, and 3 are on the same scale with respect to each other. Figs. 4, 5, 6, 7, 8, and 9 are on the same scale with respect to each other, but on a larger scale than the remaining figures.

30 Like letter refer to like parts in all the figures of the drawings.

Our invention relates to railway-cars, and more particularly to the structure or framing of the car-body, and has for its object to produce a car of superior strength and simplicity 35 of construction, and possessing at the same time a higher degree of strength, durability, and much less weight than cars of ordinary construction; and to these ends our invention 40 consists in certain novel features, which we will now proceed to describe, and will then particularly point out in the claims.

In the drawings we have shown our improved construction of a railway-car as applied to a refrigerator-car, which is one of its many applications, it being of course understood, however, that the construction is equally applicable to ordinary cars.

50 We will first describe the construction of the floor or bottom of the car, in which A represents the side sills or sole-bars. These are

constructed of channel-irons U-shaped in cross-section and extending the entire length of the car. The central sill or bolster, B, consists of a timber of suitable dimensions extending the entire length of the car, and having 55 secured to its sides channel-bars B', as shown more particularly in Fig. 3 of the drawings. The side sills and central sill are connected at suitable intervals by transverse transoms C. 60 These transoms are constructed of I-beams, the ends of which are securely bolted to the channel-bars A, the central portion being depressed to pass underneath the central sill, B, as shown in Fig. 3. The flooring is supported by means 65 of angle-irons D, extending across the car at intervals, and resting upon the channel-bars A and central sill, B, to which they are securely fastened by bolts or rivets. Strips or battens 70 *d*, of wood, are employed in connection with these angle-irons to add to the structural strength, and to receive the nails or other fastening devices which secure the flooring and outer sheathing.

The flooring or the floor proper, which is 75 attached to the floor-framing just described, consists of an outer sheathing, E, of wood, having on its inner side a layer, *e*, of paper. An air-space, E', then occurs. Above the angle-irons D and strips *d* is arranged a layer 80 consisting of an internal layer, E<sup>2</sup>, of hair felt, with a layer of paper, *e'*, below it and a layer of paper, *e''*, above it, these being secured upon the wooden strips *d* by means of transverse battens D' and nails *d'*. A layer of paper, *e''*, and 85 the flooring E<sup>3</sup> are laid immediately above these battens D', forming a second space, E<sup>4</sup>. Of course it will be understood that in an ordinary car not intended for use as a refrigerator-car these protective layers of paper and 90 hair felt will be omitted, the sheathing being applied to the under side of the strips *d* and the flooring to the upper side thereof.

The sides and top of the car are formed in one continuous structure, the top being in the 95 shape of an arch. The principal elements of the framing of the top and sides are uprights F, consisting of a central strip of wood, *f*, with flat strips of strap-iron *f'* secured to each side thereof. Each upright has its lower end 100 connected to the side sill, A, as shown in Fig. 6 of the drawings, the said strips *f'* of iron



being bent around at right angles to the remaining portion at this point, so as to lie flat against the outer surface of the channel-bar A, and being secured thereto by bolts or  
 5 rivets, as shown. Each upright extends upward from the sill to the top of the car, where it is bent into the form of an arch to form the framing of the roof, being then carried down the opposite side and being secured to the sill  
 10 of that side, the arch and the upright portions all forming one continuous member. Longitudinal braces  $F'$  connect these members, and diagonal braces  $F''$  are employed upon the sides to increase the stiffness and strength of  
 15 this frame. The structure which is applied to this framing is identical with that which forms the flooring, and consists of an inner sheathing, G, having a layer of paper,  $g$ , applied to its outer side, and the whole being secured to  
 20 the members F on the inner side thereof. Next comes an air-space,  $G'$ , followed by a layer of hair felt,  $G^2$ , with a layer of paper,  $g'$ , on its inner side and a similar layer of paper,  $g^2$ , on its outer side. Strips or battens  $F^3$ , par-  
 25 allel to the members F, form an air-space,  $G^3$ , and to these strips or battens is secured the outer sheathing,  $G^4$ , provided on its inner side with a layer of paper,  $g^3$ , and on its outer side, so far as the roof is concerned, with a cover-  
 30 ing,  $g^4$ , of tin or sheet-iron.

The roof proper, or arched portion of the continuous structure forming the sides and roof, is additionally strengthened and braced by means of truss-rods H. These truss-rods  
 35 have their ends secured to the members F at the hip of the arch, each end extending entirely through the said members F, and receiving on its threaded extremity a nut,  $h$ , a suitable block or washer,  $h'$ , being interposed  
 40 between the member F and the nut, as shown more particularly in Fig. 7 of the drawings. The truss-rod H is V-shaped in its general form, the depressed central angle occurring at the central line of the car. At this point is  
 45 located a king-bolt, I, the lower forked end of which rests upon the truss-rod H, while its upper threaded end extends up through the member F, passing, of course, through the sheathing. Nuts  $i'$  serve to secure the king-  
 50 bolt to the member F at this point. It will, of course, be understood that one of these truss-rods and king-bolts is employed in connection with each member F, the whole serving to greatly strengthen and stiffen this por-  
 55 tion of the framing.

An angle-iron, J, is riveted by means of rivets  $j$  to the members F and sheathing G along the inner side of the car, near the top thereof, at the springing of the arched roof. This an-  
 60 gle-iron extends along the entire length of both sides of the car, and also across the ends thereof, and serves not only to strengthen and stiffen the structure, but also to form the point of attachment of the bars upon which the meat  
 65 or other article to be transported is hung in refrigerator-cars. The ends of the car are constructed in exactly the same manner as the

sides, and therefore need no detailed description here.

By reason of the construction which we have  
 just described we are enabled to produce a car  
 which possesses in a high degree both strength  
 and lightness. The structure possesses many  
 obvious advantages, which it is unnecessary to  
 detail here, the principal one being, however,  
 75 the construction of the sides of the roof in one continuous structure, thus adding greatly to the strength and simplicity of the car-body.

It is obvious that various modifications in the details of the construction we have just  
 80 described may be made without departing from the limits of our invention. For instance, although we have described our invention as applied to a refrigerator-car, it is obvious that the various layers of hair felt and paper may  
 85 be dispensed with and the outer and inner sheathings applied directly to the outer and inner sides of the members which form the framing. Moreover, various other modifica-  
 90 tions in unimportant features will readily suggest themselves, and we therefore do not wish to be understood as limiting ourselves strictly to the precise details hereinbefore described and shown in the drawings.

Having thus described our invention, what  
 we claim as new, and desire to secure by Let-  
 95 ters Patent, is—

1. In a railway-car, the combination, with the side sills, A, formed of channel-bars having their channels arranged on the inner side,  
 100 of the central sill, B, provided with channel-bars  $B'$ , arranged on each side thereof, and the transoms C, constructed of I-beams having their ends attached between the flanges of the channel-bars A and passing under the cen-  
 105 tral sill, substantially as and for the purposes specified.

2. In a railway-car, the combination, with the side sills and central sill, of the transoms C, constructed of I-beams, attached at their  
 110 ends to the side sills and passing under the central sill, substantially as and for the purposes specified.

3. In a railway-car, the combination, with the side and central sills and the transoms, of  
 115 the transverse angle-irons D, secured to and resting upon the sills, substantially as and for the purposes specified.

4. In a railway-car, the floor-framing consisting of the channel-bars A, forming the side  
 120 sills, the central sill, B, provided with channel-bars  $B'$ , the transoms C, secured to the channel-bars A and passing under the central sill, and the transverse angle-irons D, sub-  
 125 stantially as and for the purposes specified.

5. In a railway-car, the combination, with the side and central sills, of transverse angle-irons secured thereto, and strips or battens of wood equal to or exceeding in height the angle-  
 130 irons, to receive the flooring and sheathing, substantially as and for the purposes specified.

6. In a railway-car, the combination, with the sills and transverse angle-irons, of the transverse strips or battens  $d$  and  $D'$ , the



5 sheathing E, and flooring E<sup>3</sup>, each provided with an inner layer of paper, and the central layer of hair felt, E<sup>2</sup>, arranged between layers of paper and secured between the strips d and D', substantially as and for the purposes specified.

10 7. In a railway-car, the members F, composed of a central strip, f, of wood, and side pieces, f', of strap-iron, secured thereto, substantially as and for the purposes specified.

15 8. In a railway-car, the combination, with the side sills, of the members F, composed of a central strip of wood, f, and of side pieces, f', of metal, having their lower ends bent at right angle and secured to the sills, substantially as and for the purposes specified.

20 9. In a railway-car, the combination, with the transverse members of the arched roof, of the truss-rods having their ends secured to the said transverse members at the hips of the arch, and the king-bolts secured to the said members centrally and bearing upon the truss-rods, substantially as and for the purposes specified.

25 10. In a railway-car, the combination, with the arched members F, of the truss-rods H,

having their extremities secured to the said members at the hips of the arch, and extending inward and downward to the center of the car, and the king-bolts I, having lower forked 30 extremities, i, to rest upon the truss-rods, and having their upper ends secured centrally to the members F, substantially as and for the purposes specified.

35 11. In a railway-car, the combination, with the sides and arched top formed in one continuous structure, of the angle-iron J, secured thereto at the springing of the arch within the car, substantially as and for the purposes specified. 40

45 12. In a railway-car, the combination, with the inner and outer sheathing, each lined with paper, of two series of transverse strips or battens, and a central layer of hair felt inclosed between layers of paper and secured between 45 the two series of strips or battens, substantially as and for the purposes specified.

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