No. 748,166. PATENTED DEC. 29, 1903.

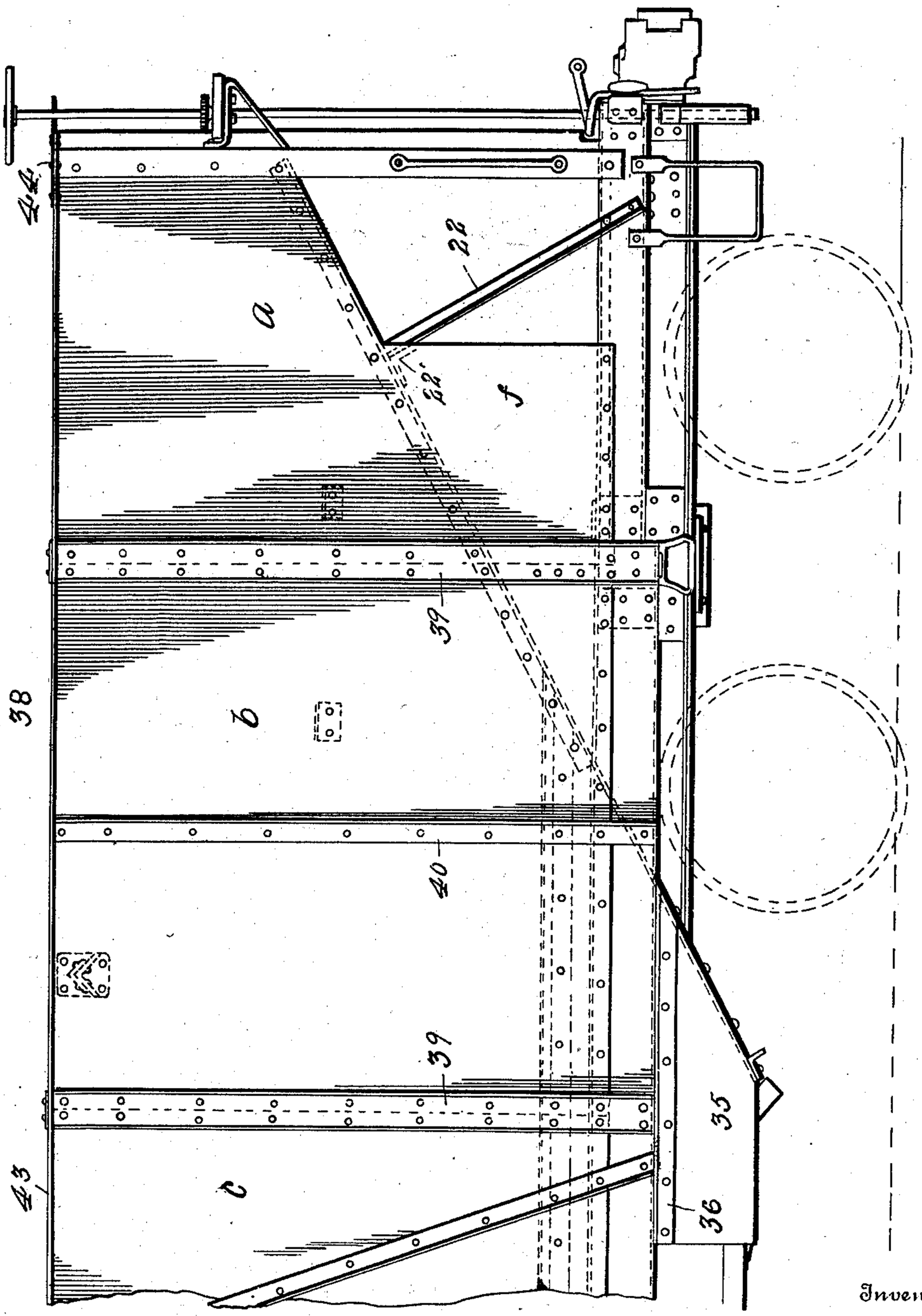
D. C. COURTNEY.

CAR CONSTRUCTION.

APPLICATION FILED AUG. 6, 1903.

NO MODEL. 6 SHEETS—SHEET 1.

FIG. 1.



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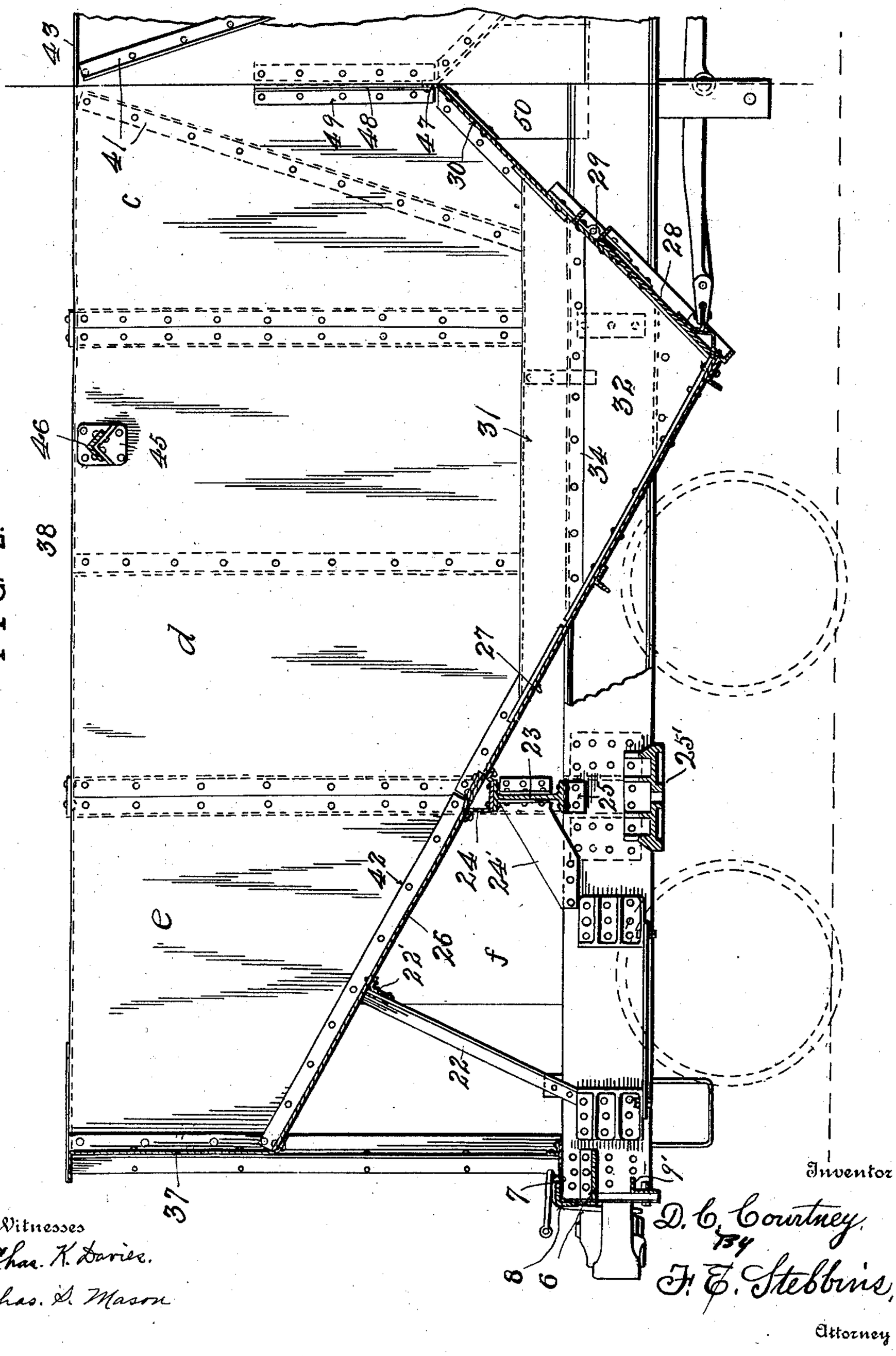
NO MODEL. 6 SHEETS—SHEET 2

FIG. 2.



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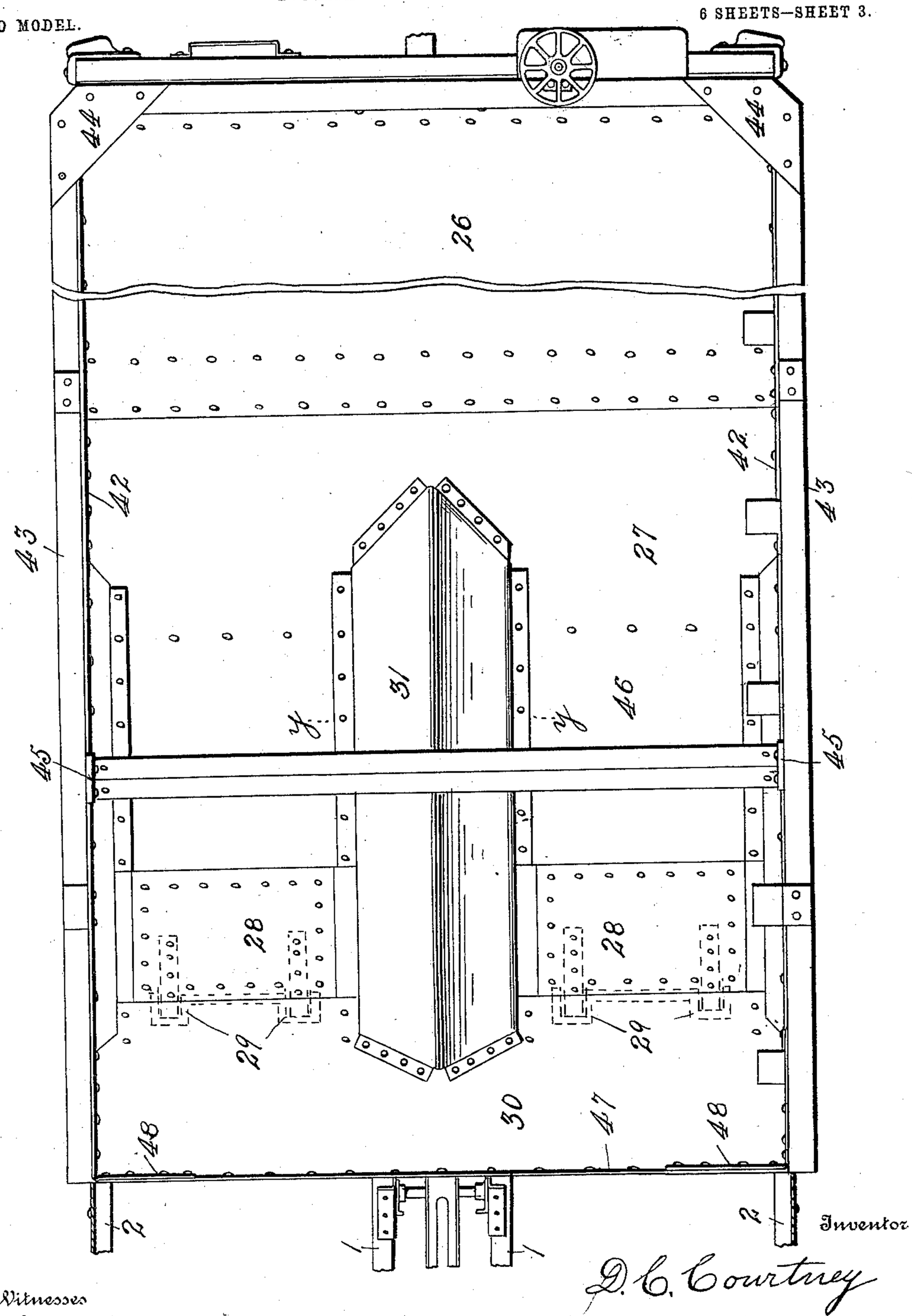
NO MODEL. 6 SHEETS—SHEET 3.

FIG. 3.



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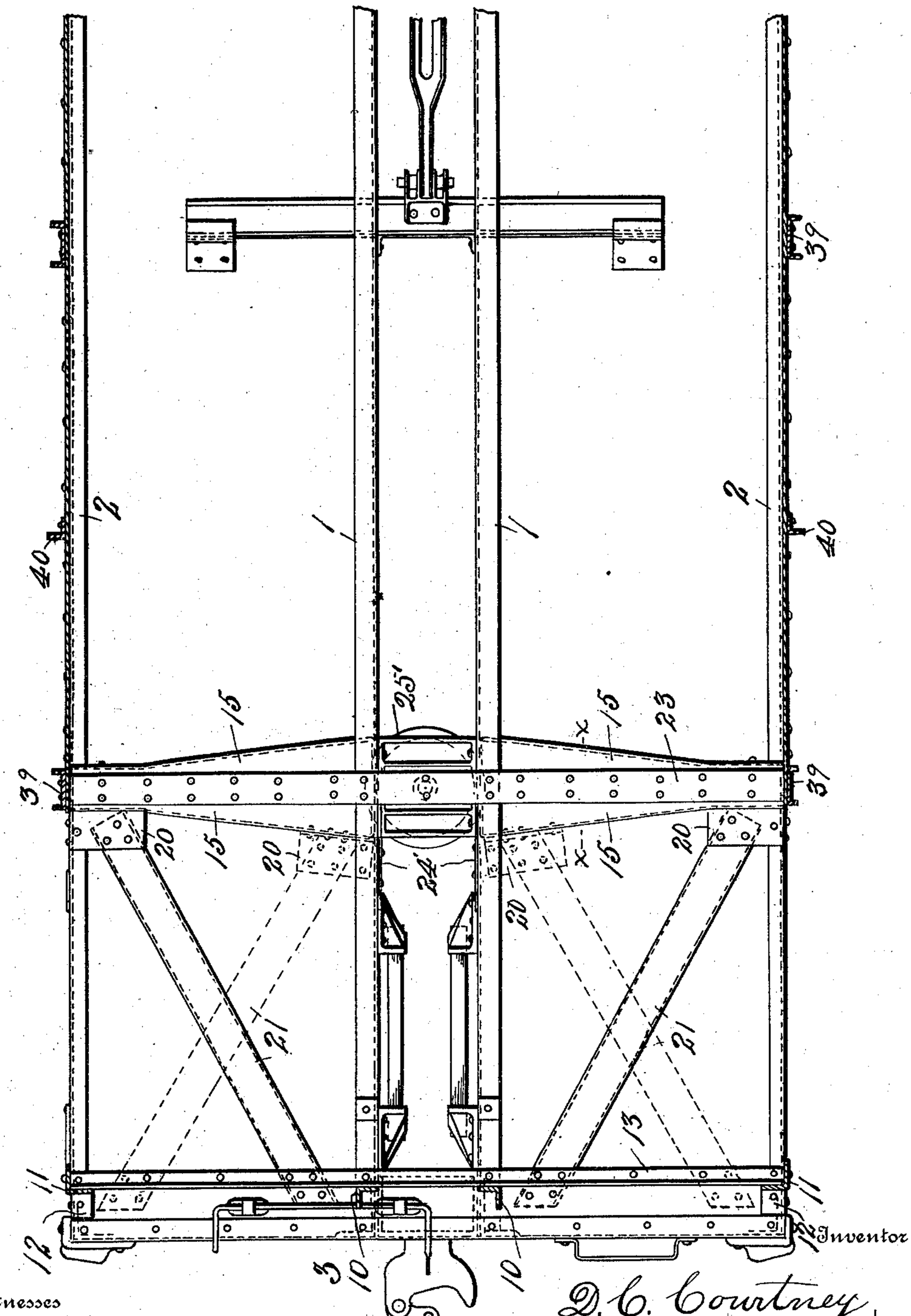
NO MODEL. 6 SHEETS—SHEET 4.

FIG. 4.



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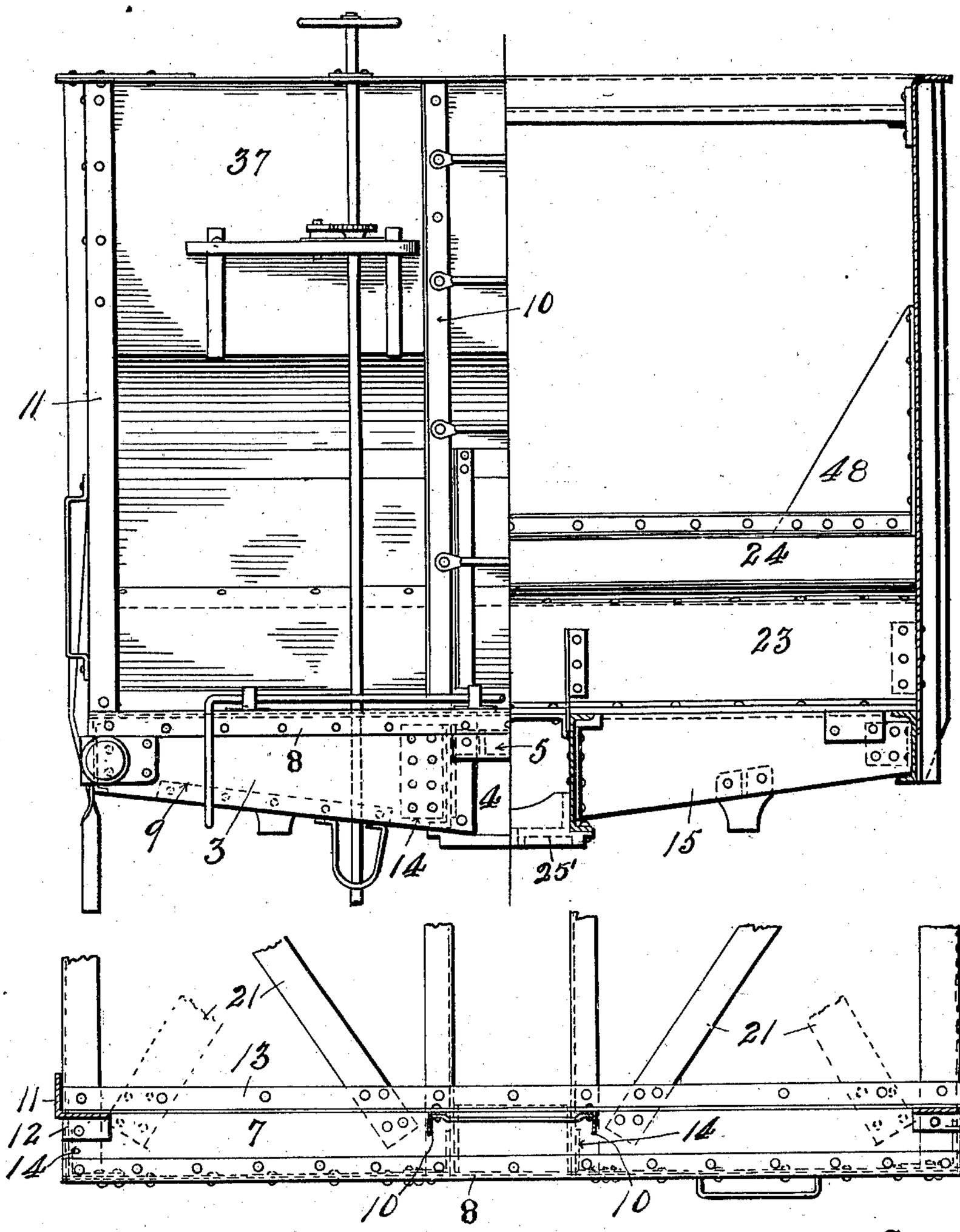
APPLICATION FILED AUG. 6, 1903.

NO MODEL. 6 SHEETS—SHEET 5.

FIG. 5.



Witnesses FIG. 6.

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APPLICATION FILED AUG. 6, 1903.

NO MODEL. 6 SHEETS—SHEET 6.

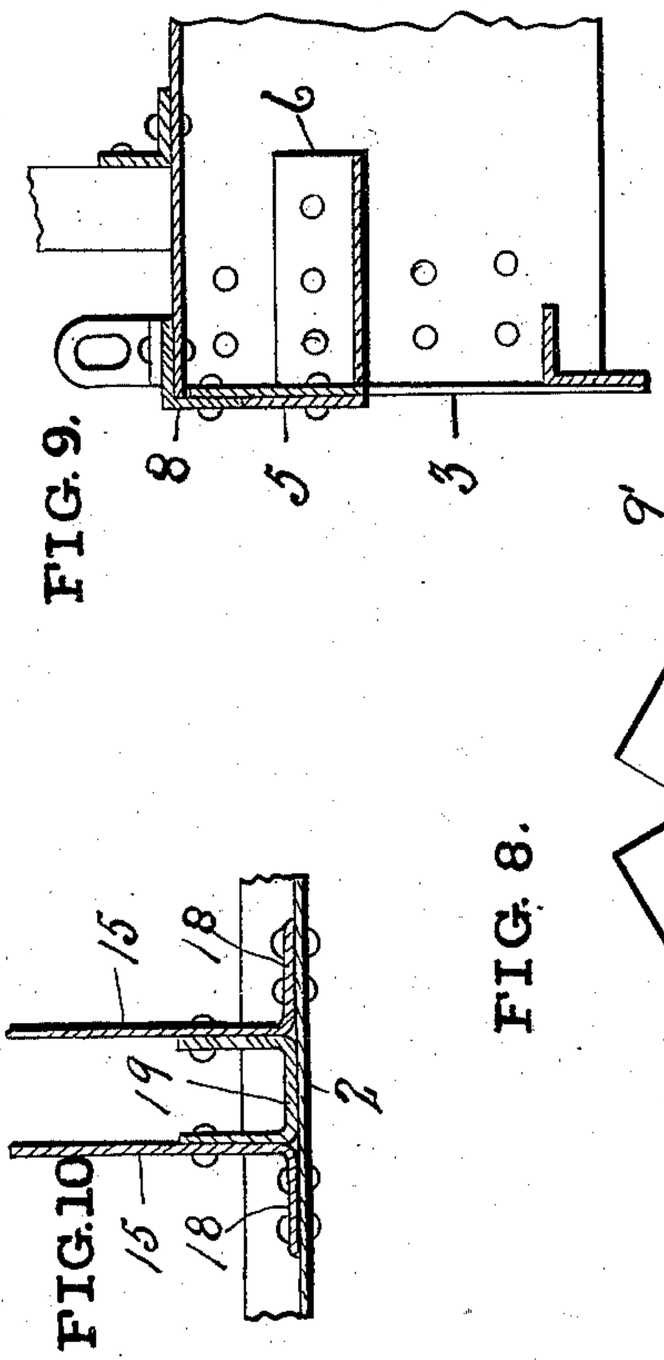

FIG. 9.

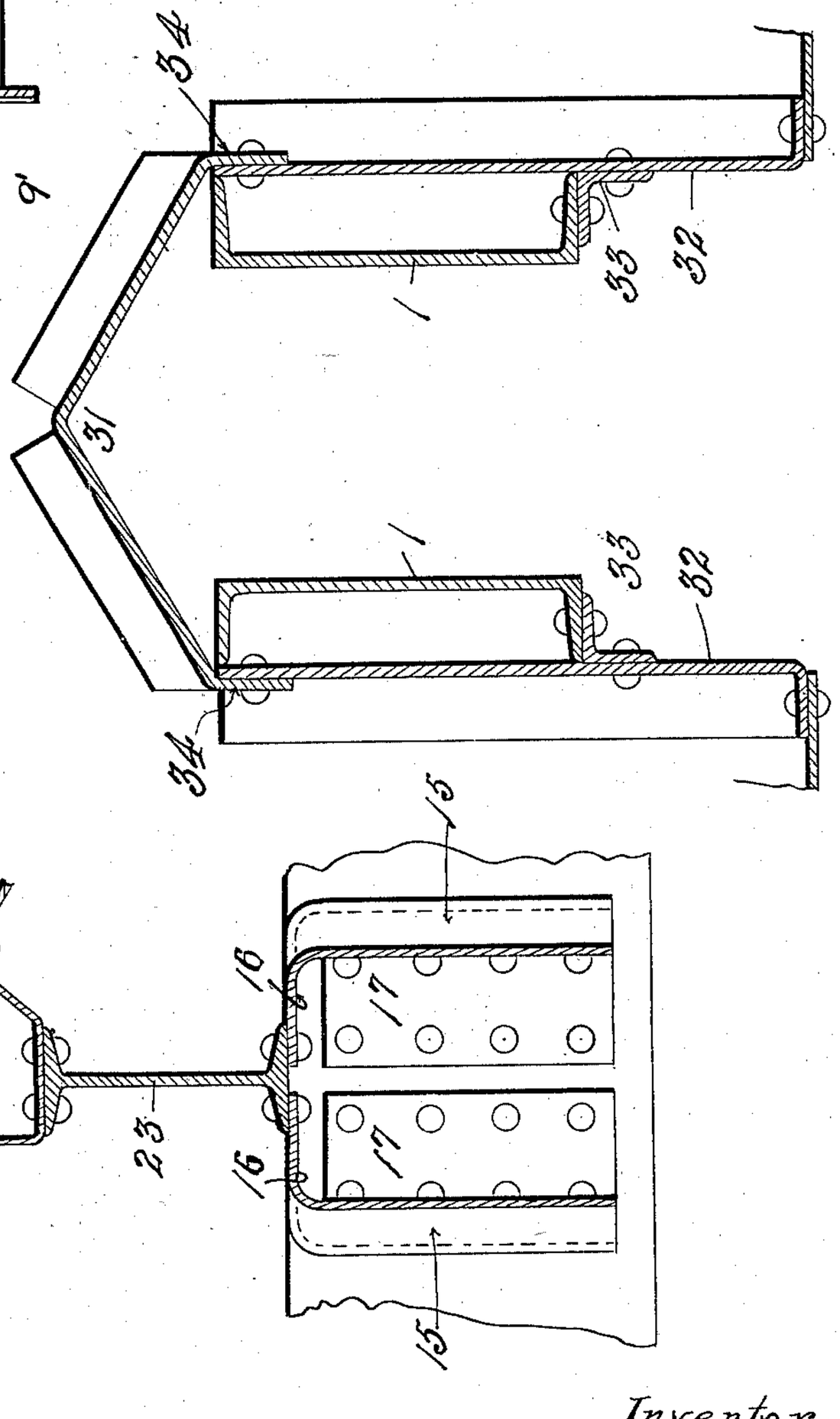

FIG. 8.

FIG. 10.

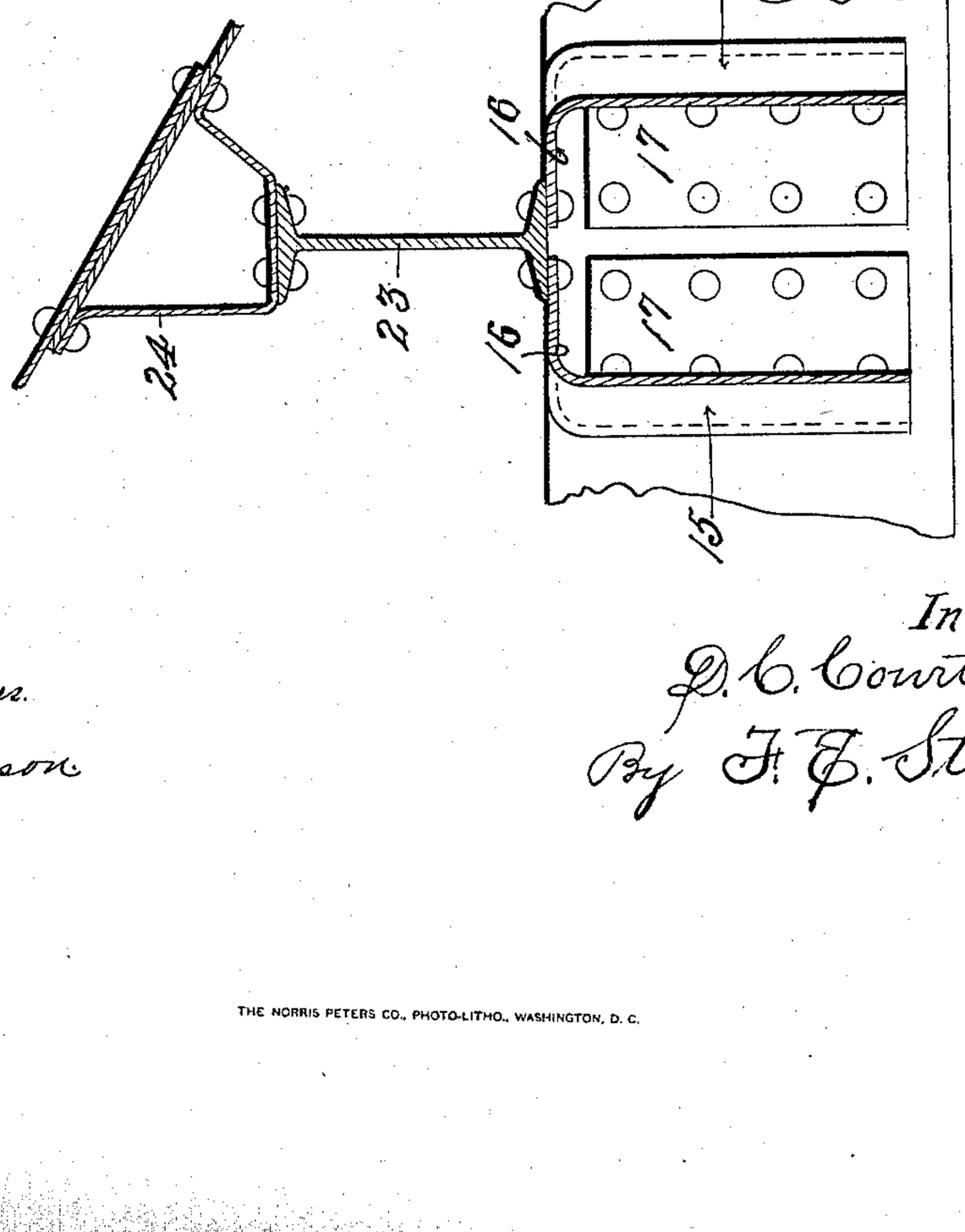

FIG. 7.

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No. 748,166. Patented December 29, 1903.

UNITED STATES PATENT OFFICE.

DANIEL CHARLES COURTNEY, OF ALLEGHENY, PENNSYLVANIA.

CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 748,166, dated December 29, 1903.

Application filed August 6, 1903. Serial No. 168,432. (No model.)

To all whom it may concern:

Be it known that I, DANIEL CHARLES COURTNEY, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Car Construction, of which the following is a specification.

My invention relates to car construction, and especially to the type known as "hopper-bottom" or dump cars, the object being the production of a car which shall be comprised for the most part of rolled metallic shapes or beams and plates, such as may be purchased in open market and do not require the use of special machinery, such as dies, in their formation, which shall be comparatively light in weight and strong and durable, which shall be so constructed that it may be easily and cheaply repaired when necessary, and which withal shall constitute a superior means for transporting large and heavy loads and withstanding the shocks and strains of severe service without injury to or the impairment of its constituent parts.

With this main end in view my invention consists in certain novelties of construction and combination of parts hereinafter set forth and claimed.

The accompanying drawings illustrate an example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principle.

Figure 1 is a side view in elevation of one-half of a hopper-bottom car. Fig. 2 is a section in elevation of one-half of the hopper-bottom car, the section being taken in a perpendicular plane passing between the center sills. Fig. 3 is a top plan view of Fig. 1. Fig. 4 is a plan view of the floor-frame, the side sills being shown in full, and the side plates of the hopper in section. Fig. 5 is a half-elevation end view and a half end sectional view illustrating the construction of the body-bolster and also the end sill. Fig. 6 is a top plan view of an end sill showing also the braces. Fig. 7 is an enlarged sectional view of the body-bolster, the section being taken on line $x\ x$ of Fig. 4. Fig. 8 is a section taken on line $y\ y$ of Fig. 3 and showing the deflecting-apron and center sills. Fig. 9 is a cross-section of the end sill, taken at the center. Fig. 10 illustrates in section the method of attaching the two flanged plates of the body-bolster to a side sill.

Referring to the several figures of the drawings, the numerals 1 1 designate the center sills extending from end to end of the car and consisting in this instance of steel channel-beams with their flanges turned outwardly; 2 2, the side sills, also consisting of steel channel-beams with their flanges turned toward each other; 3, the perpendicular end plate of an end sill; 4, a hole or notch in the end plate 3 for the passage of a draw-bar of a coupler; 5, a friction-plate which is adapted to be engaged by the coupler-head; 6, a section of a channel riveted to the two center sills in the rear of the friction-plate; 7, the top plate of the end sill; 8, an angle-iron riveted to the top horizontal plate and to the vertical end plate of the sill; 9, angle-irons riveted to the lower edge of the end plate; 9′, the carry-iron for the shank of the coupler riveted to the end plate 3 each side of the notch or hole in the end plate; 10, angle-iron posts located on the top flanges of the center sills; 11, angle-iron posts located on top of the side sills; 12, the feet of the angle-irons 11, which are riveted to the top flanges of the side sills; 13, an angle-iron riveted to the four posts and top plate 7 of the end sills and also to the top flanges of the sills; 14, angle-irons which secure the end plate of the end sill to the center and side sills by means of rivets; 15, four metallic elements or plates with top flanges constituting the body-bolster or a part thereof; 16, the top flanges of the angle-plates 15, which flanges face each other; 17, the inner end flanges riveted to the center sills; 18, the outer end flanges riveted to the side sills, as shown in Fig. 10; 19, a U-shaped filling-piece; 20, angle-plates riveted to the center and side sills and also to the body-bolster; 21, braces riveted to the angle-plates 20 and the top plate of the end sill, said braces in the illustrations being shown double or crossing each other, whereas in practice two braces may be employed when desired; 22, four braces for the end of the hopper secured at their lower ends to the sills and at their upper ends to the bottom of the hopper; 22′, a stiffening angle-

iron riveted to the posts 22 and also to the upper plate of the bottom of the hopper; 23, an I-beam located on top of the body-bolster proper and its lower flanges riveted to the two plates 15 15 of the body-bolster; 24, a U-shaped flanged plate having flanges which are riveted to the bottom of the hopper, its base being riveted to the top flanges of the I-beam; 24′, braces riveted to the I-beam and to the center sills; 25, a section of a channel-beam secured by rivets to the two center sills and also to the lower flanges of the I-beam.

25′ is a cast center-plate having flanges which are secured to the webs of the center sills, said center-plate completing the compression member of the bolster; 26, the upper floor-plate of the hopper; 27, the lower floor-plate of the hopper; 28, the doors of the hopper located upon opposite sides of the center sills; 29, the hinges of the doors; 30, one of the two inclined floor-plates located adjacent the center of the car and inclined in the direction of the doors; 31, a bent deflecting central portion of the floor or deflecting-apron located above the center sill; 32, two vertical side plates secured to the center sill, as shown in Fig. 8, and constituting the sides of the lower portion of the hopper; 33, angle-irons riveted to the lower flanges of the center sills and also to the plates 32 and which hold the latter in place.

34 designates the flanges of the apron 31, riveted to the top edges of the plates 32, as shown in Fig. 8 of the drawings; 35, the outer plate of the lower portion of the hopper; 36, an angle-plate which secures plate 35 to a side sill by means of rivets; 37, the end wall of the hopper; 38, the side walls of the car composed of metallic plates *a b c d e*, riveted to the outer sills at the bottom edges, the plates *a* on each side of the car having a portion *f*, which is located below the bottom proper of the hopper, and which serve as supporting means for the extreme ends of the hopper; 39, channel-posts, to which are riveted the meeting edges of the side plates, the ends of the posts also being riveted to the side sills; 40, angle-iron posts secured to the side plates of the hopper and also to the side sills; 41, angle-iron braces at the central portion of the hopper; 42, the edges of the floor-plates bent up and riveted to the side plates of the car; 43, the flanged edges of the side and end plates; 44, corner-braces riveted to the flanges 43, as shown in Fig. 3 of the drawings.

45 designates castings secured upon the inner surfaces of the plates constituting the sides of the hopper; 46, angle-iron stay-pieces riveted to the castings and serving to prevent the sides of the hopper from spreading; 47, the flanged edges of the two plates 30, which lie in frictional contact and are riveted together.

48 designates plate-braces located at the center of the car, as shown in Fig. 3 of the drawings; 49, angle-iron stiffening-pieces, and 50 designates two plates having flanges which are riveted to the bottom plates 30 and at their lower edges secured by rivets to the center sills.

From the foregoing description, taken in connection with the drawings, it becomes obvious that I have produced a hopper-bottom car comprised of rolled channel-beams or shapes and rolled metallic plates, such as may be purchased in open market, and that the only elements requiring the use of special machinery or dies in their formation are the U-shaped flanged plates, which are located upon the top flanges of the I-beams of the body-bolster and serve to support the floor of the hopper.

While I have illustrated but one example of the physical embodiment of my invention, I do not thereby intend to restrict its scope to such example in all its details, inasmuch as in practice various parts and elements may be replaced by others which will perform the same functions in substantially the same way. Such changes or substitutions as well as immaterial modifications I intend to embrace within the scope of my claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a car, of two metallic channel center sills with their flanges extending outwardly; two metallic side sills; metallic end sills; and two body-bolsters; each of said body-bolsters consisting of four flanged plates and a superimposed I-beam; the said plates being arranged in pairs and parallel between a center sill and a side sill and riveted at their ends to said sills, and their flanges riveted to the lower flange of the I-beam.

2. The combination with a car having steel center and side sills, of a body-bolster comprising four angle-plates 15 with top flanges 16, and an I-beam; said angle-plates 15 being arranged in pairs and riveted at their ends to the side and center sills, and the flanges 16 riveted to the lower flange of the superimposed I-beam.

3. The combination with a car having steel center and side sills, of a body-bolster comprised of flanged plates arranged in pairs between the center and side sills, and an I-beam having its lower flanges riveted to the flanges of the flanged plates; and a U-shaped flanged plate secured to the top flange of the I-beam and to the floor of the hopper.

4. The combination with a car having metallic center and side sills, of end sills, each comprising an end plate 3, top plate 7, an angle-iron 8, angle-iron 13, angle-irons 9 9, a friction-plate 5, a stiffening-channel 6, and a carry-iron.

5. The combination in a car, of metallic channel center and side sills; body-bolsters; cast center plates 25′ with flanges secured to the webs of the center sills and said center plates forming parts of the compression mem-

bers of the body-bolsters; metallic end sills; braces between the end sills and body-bolsters; hoppers made of side plates *a*, *b*, *c*, *d*, *e;* floor-plates 26, 27, 30, and deflecting-aprons 31, doors 28; and end posts 10 and 11; said side plates at their meeting edges being secured to channel-posts 39, said floor each side of the center line of the car being inclined and extending to the ends of the car and supported by braces 22 at the rear of the body-bolsters.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL CHARLES COURTNEY.

Witnesses:
BURNS ISNER,
NATHAN I. HALL.