

951,239.

M. A. GARRETT.
TANK CAR.
APPLICATION FILED SEPT. 8, 1909.

Patented Mar. 8, 1910.
4 SHEETS—SHEET 1.

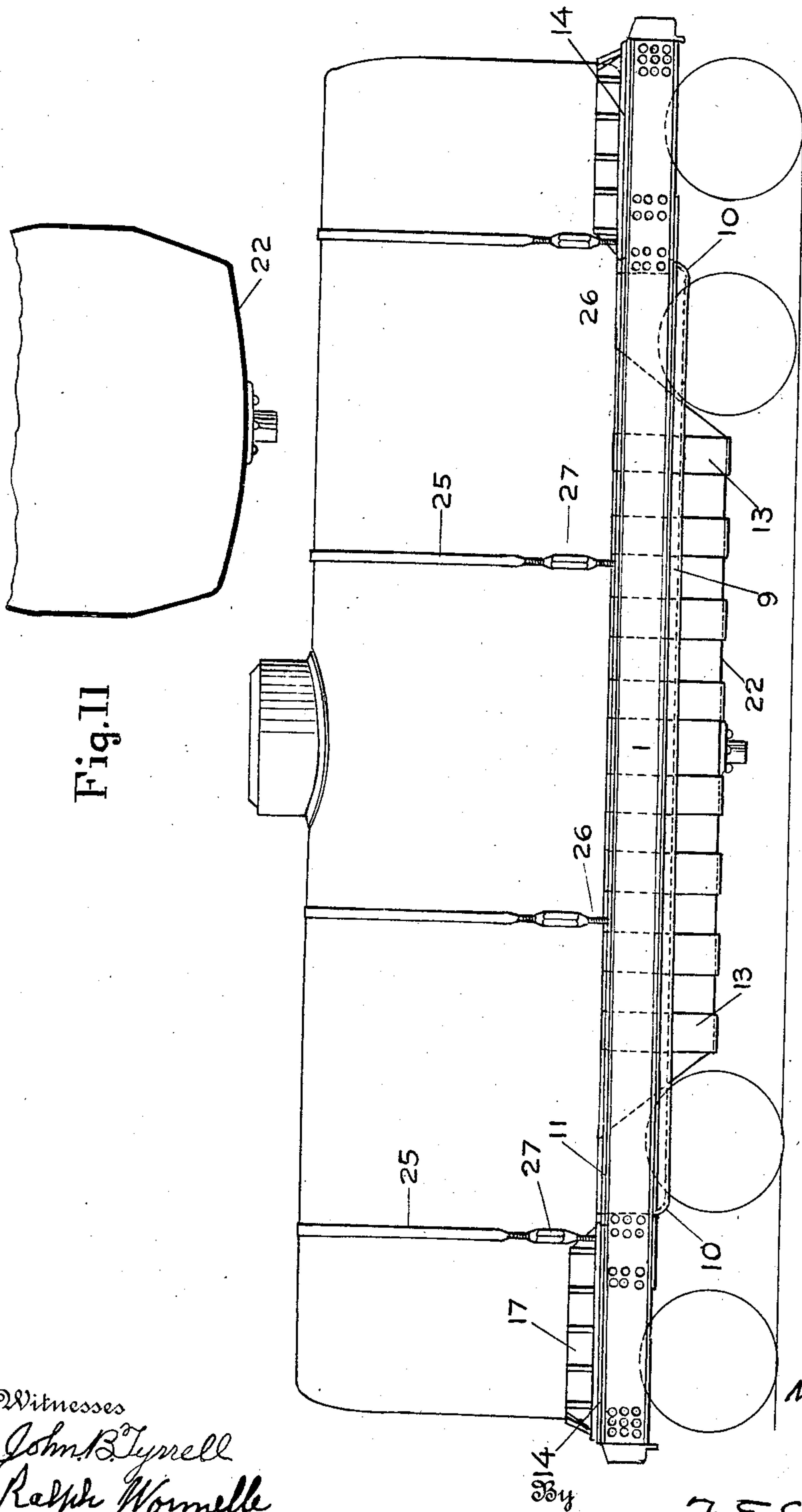


Fig. II

Fig. I

Witnesses
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Ralph Wormelle

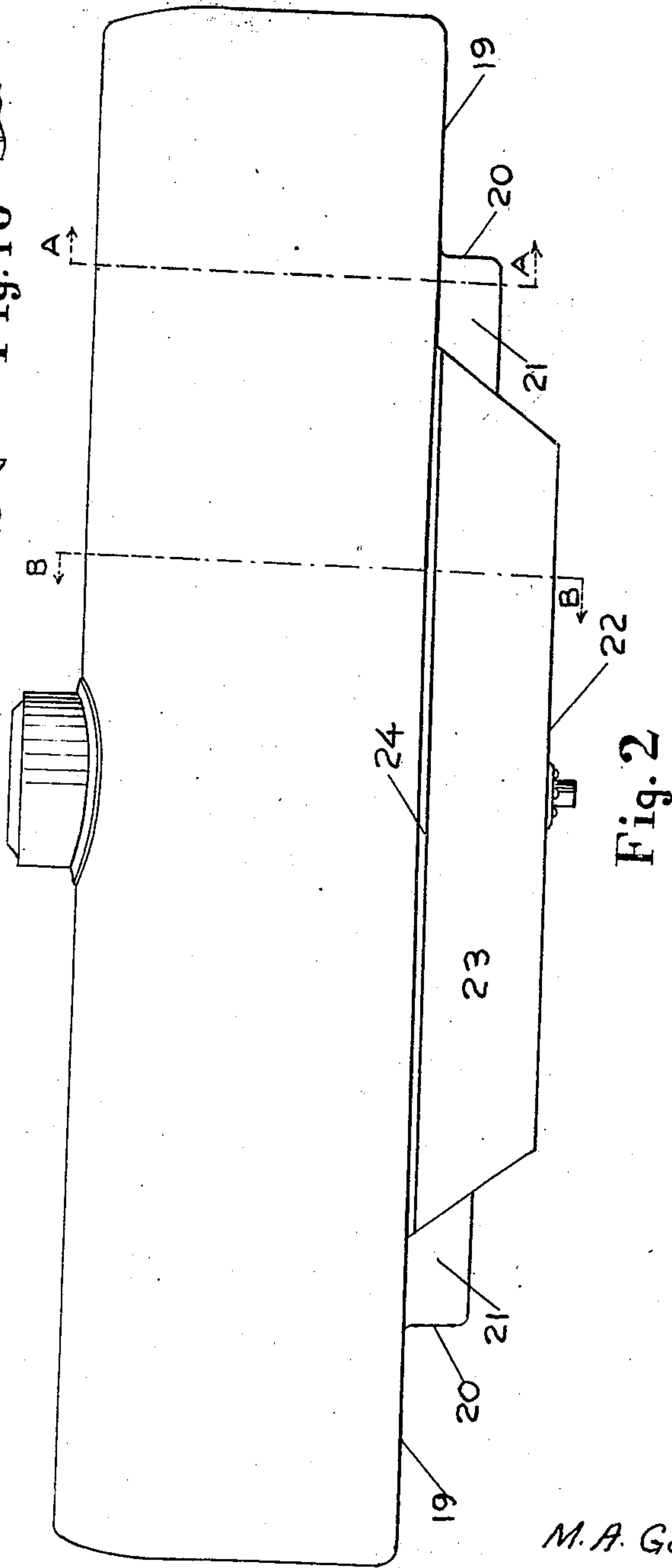
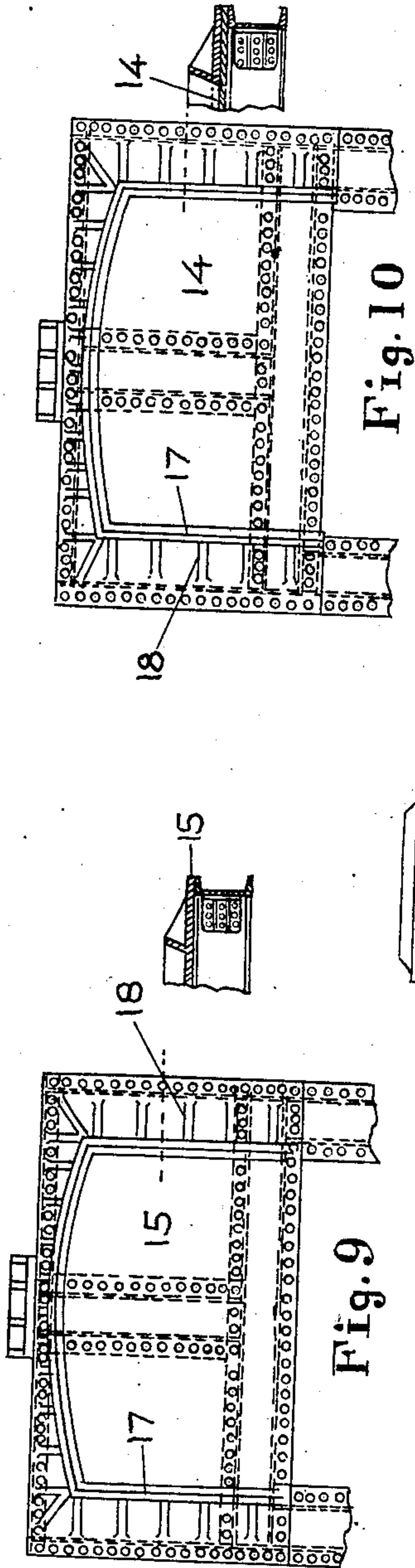
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4 SHEETS—SHEET 3.

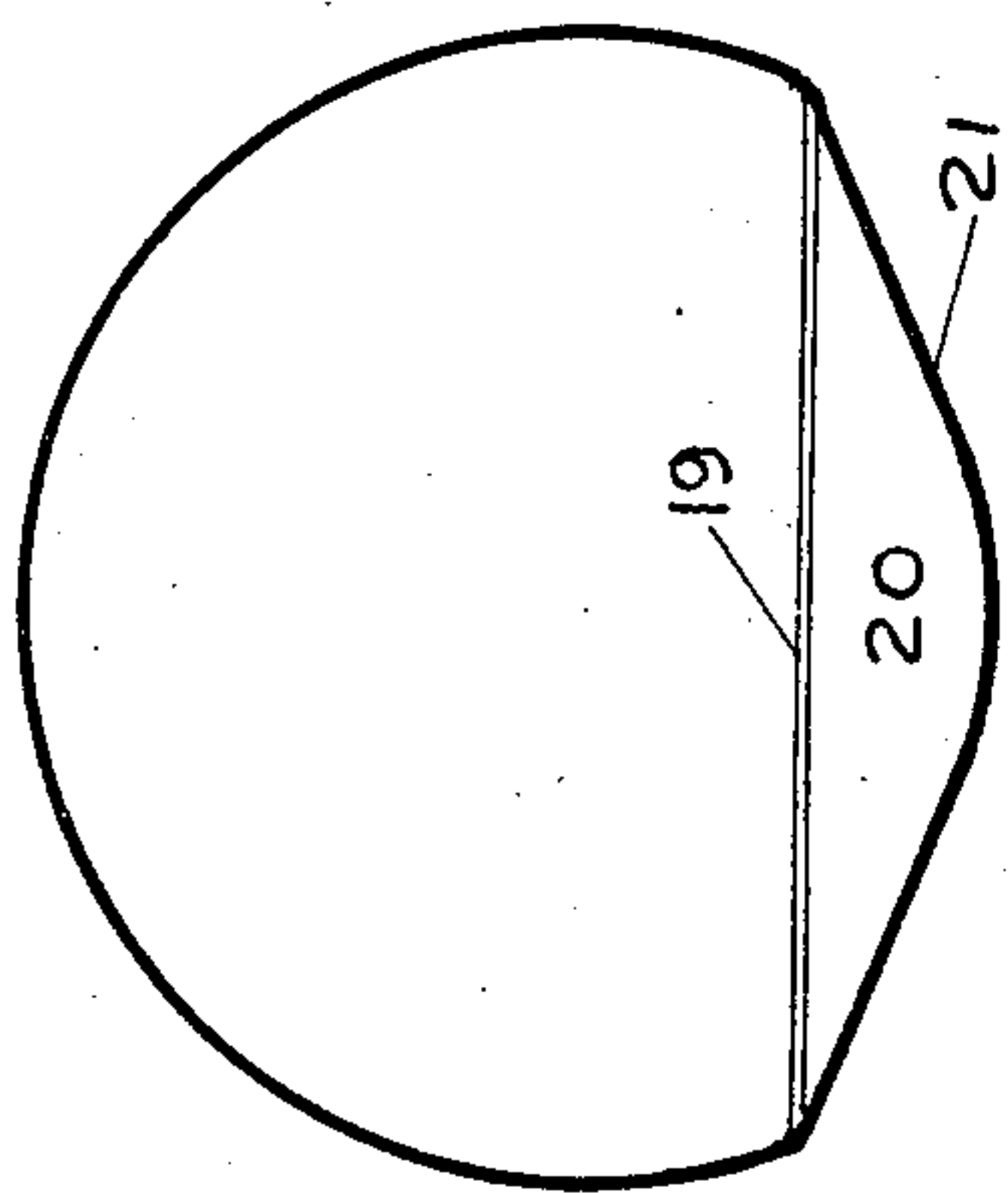


Fig. 4

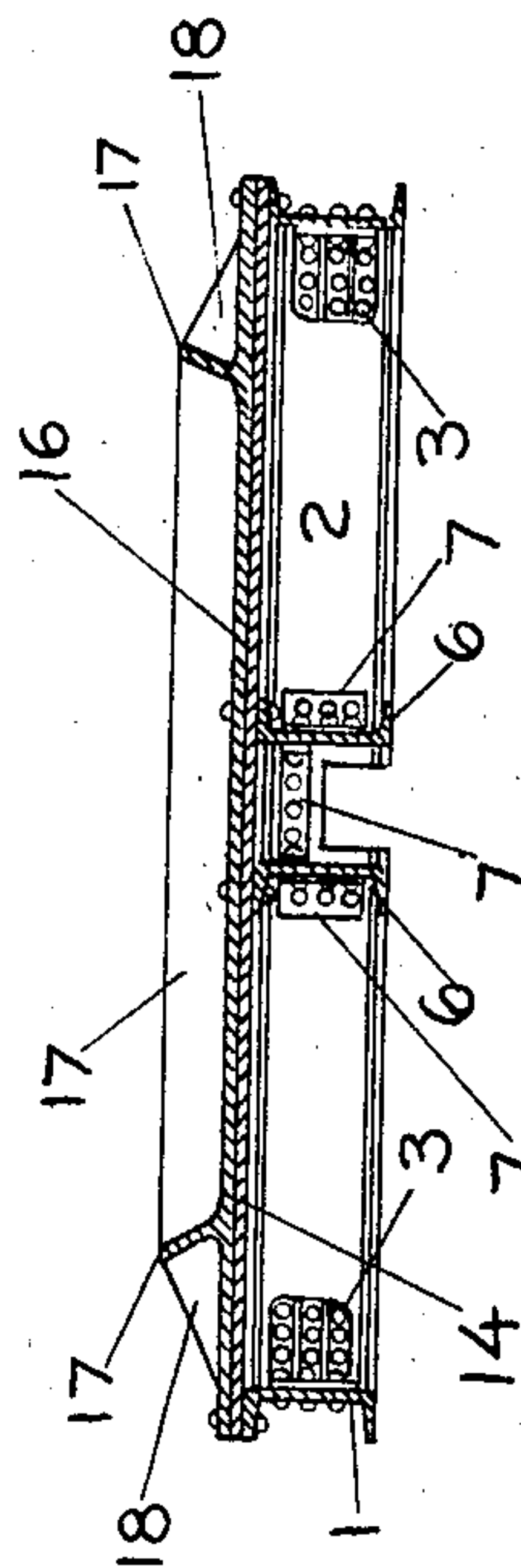


Fig. 7

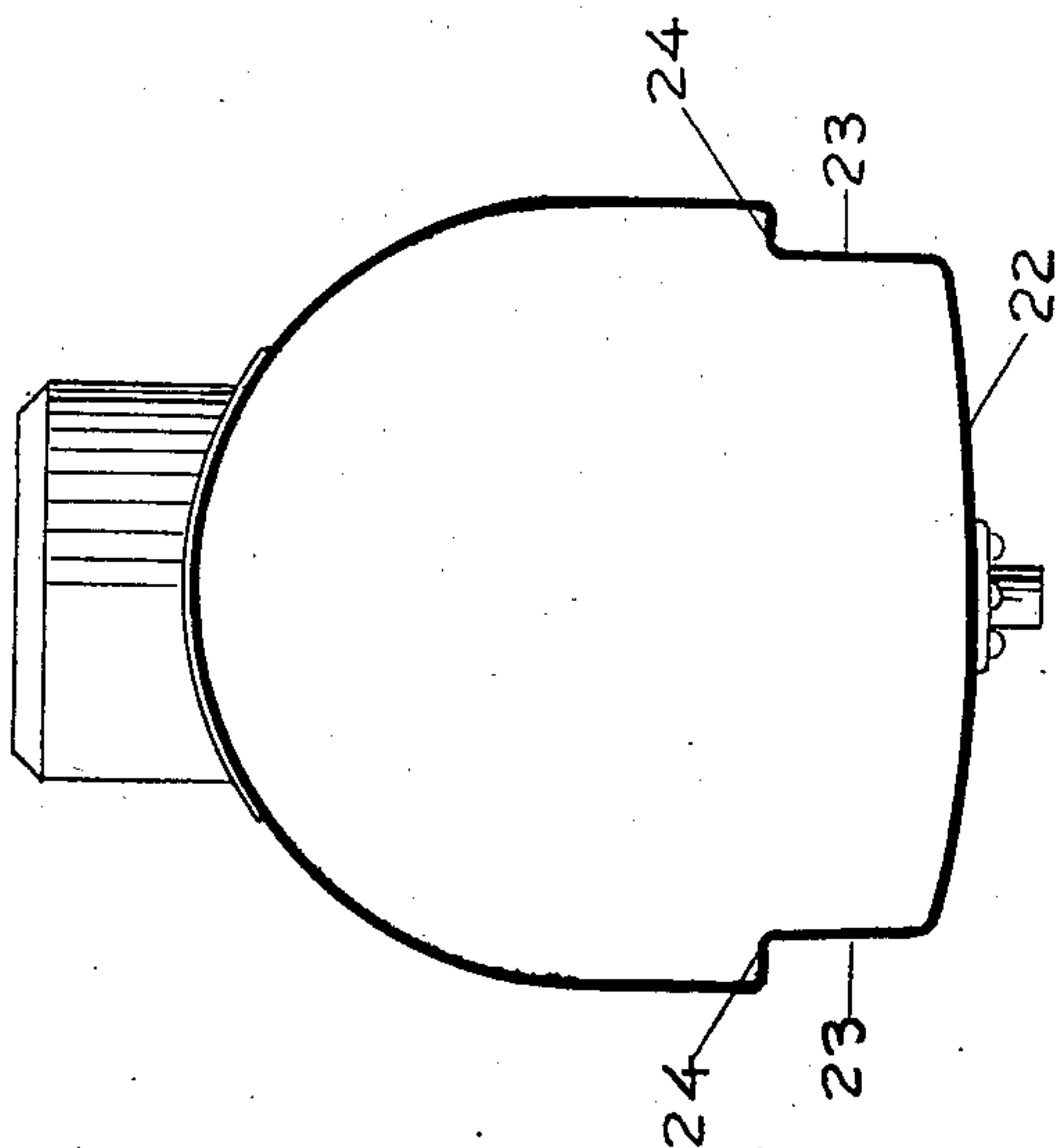


Fig. 3

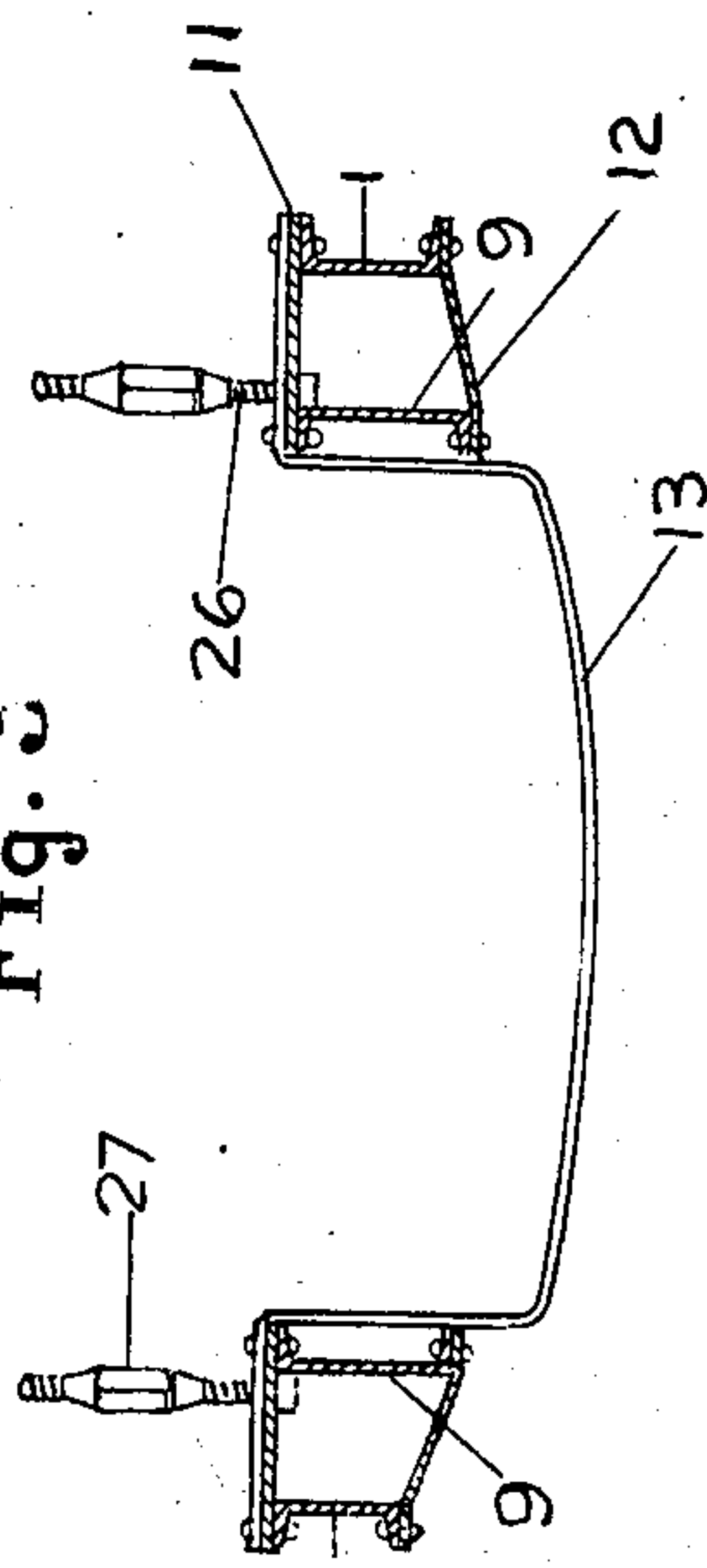


Fig. 8

Witnesses

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4 SHEETS—SHEET 4.

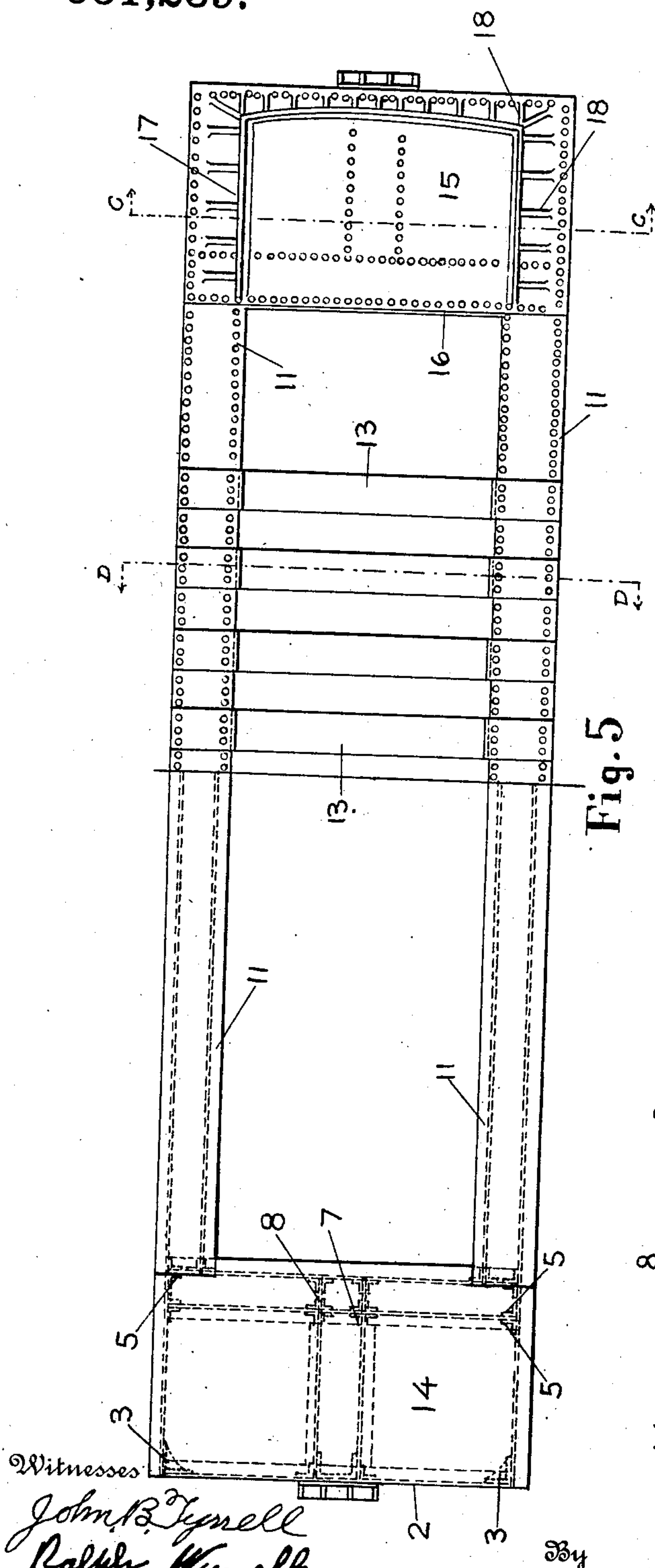


Fig. 5

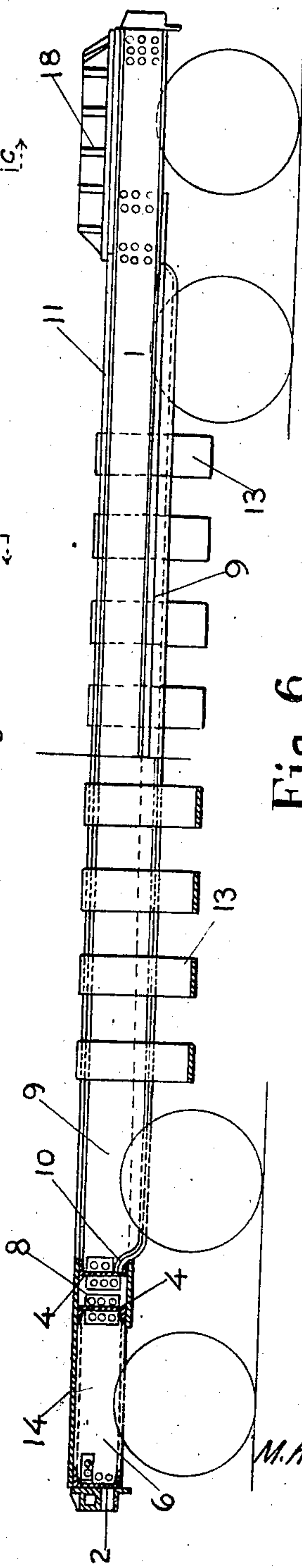


Fig. 6

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UNITED STATES PATENT OFFICE.

MYERS A. GARRETT, OF CHICAGO, ILLINOIS.

TANK-CAR.

951,239.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed September 8, 1909. Serial No. 516,767.

To all whom it may concern:

Be it known that I, MYERS A. GARRETT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tank-Cars, of which the following is a specification.

Heretofore the common practice has been to construct tank cars by forming a supporting frame having center sills, and mounting the tank proper, which generally has been of a cylindrical shape, upon the frame and above the center sills. For tanks of limited capacity such construction was, for the most part, unobjectionable. With the increase in the size of the tank the center of gravity was raised so far that on curves the car tipped over and many wrecks resulted. Further, in buffing the frame has often been shifted relative to the tank, or the latter shifted relative to the former, due to the inertia of the tank and its contents, or to the momentum of the same relative to the frame.

The object of my invention is to obviate the objections appertaining to tank cars constructed as described, and as otherwise constructed, and to provide a tank car of relatively large capacity, relatively low center of gravity when loaded, and with a tank made separate from the frame and removably anchored thereto in such a way that the tank and frame shall preserve their fixed relative positions each to the other under all conditions of service.

My invention consists in constructing a frame with strong and rigid ends for the entire width of the frame at and in front of the body bolsters, uniting the outer ends of the body bolsters by strong girders so as to leave a relatively large unobstructed open space at the center, and supporting upon said frame a tank, the center lower part or wall of which occupies a position below the lower horizontal plane of the body bolsters, and relatively near the road bed.

It further consists in certain novelties of construction and combinations of parts as hereinafter set forth and claimed.

The accompanying drawings illustrate one complete example of the embodiment of the invention and three modifications constructed according to the best specific modes of procedure I have so far devised for the purpose.

Figure 1 is a side view in elevation of the frame and tank. Fig. 2 is a side elevation of the tank removed from the frame. Fig. 3 is a cross section near the center of the tank on line B—B. Fig. 4 is a cross section of the tank on line A—A. Fig. 5 is a top plan view of the frame; the straps and end casting being removed from the left hand half thereof. Fig. 6 is a half sectional and half side elevation view of the frame. Fig. 7 is a cross section of Fig. 5 on line C—C. Fig. 8 is a cross section of Fig. 5 on line D—D. Fig. 9 shows the end casting riveted directly to the flanges of the beams which constitute the end frame; the cover plate being omitted. Fig. 10 shows the casting with the horizontal inner web omitted. Fig. 11 shows a modification of the tank.

Referring to Figs. 1 to 8, the numeral 1 designates side steel channel beams extending the entire length of the frame and with their flanges extending outwardly; 2, the channel end sills, in this instance with the flanges extending inwardly, but they may extend outwardly; 3, webbed connection angles riveted to the webs of the beams 1 and the end sills at their junctions; 4, two parallel channel beams at each end spaced apart and joining the beams 1, 1 and located at a suitable distance from the end sills and constituting body bolsters; 5, connection angles riveted to the webs of beams 1, 1 and beams 4 at their points of junction; 6, two parallel channel beams at each end located between an end sill and body bolster and constituting draft and buffer beams; 7, connection angles uniting the beams 6 at their ends to the end sills and body bolsters; 8, spacing or filling plates or blocks located between the two channel beams forming a body bolster and secured to said beams by connection angles, as shown; 9, two channel beams, in this instance of greater depth than the beams 1, located a suitable distance inwardly from and parallel with beams 1 and connected at their ends with the body bolsters through the medium of connection angles, the lower flanges of the ends of said beams being bent upwardly at 10 so as to rest upon the flanges of the channel beams forming parts of the body bolsters; 11 and 12, top and bottom metallic cover plates riveted to the flanges of beams 1 and 9 throughout their entire lengths between the body bolsters, thus forming two very rigid

box girders at the sides of the frame extending between the body bolsters; 13, a series of U-shaped metallic supporting plates, or straps, spaced apart, with their central portions located a suitable distance below a horizontal plane coinciding with the bottoms of the bolsters and with their ends bent to lie in frictional contact with the top cover plates and riveted to them, or to them and the flanges of beams 1 and 9, as shown; 14, metallic cover plates each of the width of the end of the frame and located above the body bolster, side sills and end sill; and 15 are two steel castings, one at each end of the frame, each casting having a horizontal web 16, a raised flange 17 obliquely disposed to the web and extending around three sides of the same, and vertical strengthening ribs or webs 18 outside the flange and uniting the web and flange; said casting being secured in position by rivets passed through the web of the casting, the cover plate 14, the flanges of beams 1, the end sill, the draft beams and both the channels constituting the body bolster.

As shown and described, the combination of parts forms a very rigid structure with a relatively large and unobstructed open space between the body bolsters and the side box girders, which structure is adapted to withstand strains from all directions. In buffing the strains are at first taken by the draft sills, body bolsters and castings and transmitted to the side box girders which abut the body bolsters, cover plates and horizontal webs of the castings and are in line with the side flanges of the castings. Center sills may thus be omitted from the frame. Furthermore, the box girders are stiff enough to support the load between body bolsters without truss rods, though truss rods may be used if desired, and they are also stiff enough to prevent spreading or displacement sidewise.

In Fig. 9 the casting 15 is shown riveted direct to the flanges of the side sills, end sill and body bolster, the cover plate 14 being omitted.

In Fig. 10 the cover plate is present, but the horizontal inner web 16 omitted, the flange occupying the same position as in other forms.

The tank is of the general shape shown. The upper part above a horizontal plane coinciding with the top surface of the frame is of an arched or semi-cylindrical shape and closed at the ends, said tank being made of metal plates bent and riveted together in a well known way. The lower metallic plate or plates 19 of the tank at the ends are flat so that they lie in direct frictional contact with the entire top surfaces of the webs of the castings inside the flanges (or the cover plate 14 when the web 16 is omitted) and the front ends of the tank abut the end

flanges of the castings which are in line with, or parallel with, and above the end sills, so that the flanges of the end castings prevent endwise displacement of the tank. The side flanges of the castings also prevent sidewise displacement of the tank.

Back of each body bolster the bottom of the tank is fashioned to form substantially vertical walls 20, 20, which abut, or lie adjacent to, the vertical surfaces of the bolsters, and for a distance toward the center from these vertical walls the bottom of the tank is on the inside concave, as at 21, 21, to clear the truck wheels and frame. The vertical walls 20 and curved or concave bottom portions 21, 21 form heels, which, additional to the end flanges of the castings, prevent endwise movements of the tank.

The intermediate lower portions of the metal plates constituting the bottom of the tank between the trucks are bent, or fashioned, to form a horizontal or slightly concave wall 22, vertical walls 23, 23, and narrow horizontal surfaces 24, 24 at each side of the tank constituting flanges which frictionally engage and rest upon the inside top edge surfaces of the box girders, as shown. Obviously, the central portion of the tank is supported immediately by the straps 13 and mediately by the box girders, which latter in turn are supported at their ends by the body bolsters. The tank may be provided with a filling dome and a discharge spout having a valve of a well known construction or otherwise. The tank is anchored to the frame by a suitable number of straps 25 threaded at their ends, threaded bolts 26 passed up through the box girders, and turn-buckles 27, as will be clearly understood from an inspection of the drawings; but other means for the purpose may be employed. As shown in Fig. 11, the horizontal seats 24, 24 at the sides of the tank may be omitted and the entire weight taken directly by the straps.

The car comprising the frame and tank connected therewith, as shown and described, has a relatively low center of gravity when the tank is filled with oil or other liquid and thus it will not tip over on curves. The tank can easily be removed from the frame when repairs of either the tank or frame are necessary. The frame itself is so constructed that it will effectively resist strains imparted from any direction, and especially those incident to drawing and buffing, by reason of the presence of the end castings with their wide webs and the box girders, and the tank itself is securely anchored against endwise movements, or displacement, relative to the frame by reason of the presence of the flanges at the ends of the castings and the heels formed in connection with the tank, which heels abut, or lie, adjacent the body bolsters.

It is obvious that in practice modifications may be introduced and substitutions made without constituting substantial departures.

What I claim is:

1. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a casting having a horizontal web and a projecting flange located above and adjacent the end sill.

2. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a casting having a horizontal web and a projecting flange extending about three sides of the horizontal web.

3. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a casting having a horizontal web, a projecting flange extending about three sides of the web and strengthening webs or ribs uniting the flange and outer edges of the horizontal web.

4. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a horizontally disposed cover plate riveted to the flanges of the body bolster, side sills and end sill and a casting having a projecting flange located entirely above the cover plate and adjacent the end sill and also two flanges, each located adjacent a side sill, said three flanges being adapted to confine and hold in place the bottom portion of an end of the tank.

5. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a cover plate, and a casting having a projecting flange extending about three sides of the cover plate.

6. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, and each end above the bolster and outwardly thereof provided with a cover plate, and a casting having a projecting flange and web extending about three sides of the cover plate, and strengthening webs or ribs uniting the flange and web.

7. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, metallic plates at and outwardly of the body bolsters, each plate being substantially of the width of the frame at the end, girders located inwardly from the side sills and substantially in the same horizontal plane as the bolsters and connecting the ends of the bolsters only, and top and bottom metallic cover plates, 11 and 12, riv-

eted to the flanges of the said girders and side sills.

8. A car frame for supporting a tank, said frame having body bolsters, end sills, and side sills, metallic plates at and outwardly of the body bolsters, each plate being substantially of the width of the frame at the end, and box girders, each consisting of a flanged side sill and a parallel flanged metallic beam with top and bottom cover plates riveted to the flanges of the side sill and metallic beam, connecting the ends of the body bolsters, whereby an open space is provided between the bolsters and girders to receive a tank.

9. A car frame for supporting a tank, said frame comprising flanged body bolsters, flanged end sills and flanged side sills; and castings each having a horizontal web and a projecting end flange, and the said web riveted to the flanges of the bolster and end sill.

10. A car frame for supporting a tank, said frame comprising flanged body bolsters, flanged end sills, and flanged side sills; and castings each having a horizontal web and a projecting flange extending about three sides of the web, and the web riveted to the flanges of the before specified flanged elements.

11. The combination in a tank car frame, of side sills, end sills and body bolsters consisting of flanged metallic beams, castings riveted in position at and outwardly of the body bolsters, each casting having a web and a projecting flange at its outer edge; and means supported by the side sills intermediate the body bolsters for receiving and supporting the middle portion of a tank.

12. The combination in a tank car frame having side sills, end sills and body bolsters consisting of flanged metallic beams, of castings riveted in position at and outwardly of the body bolsters, each casting having a web and a flange extending about three sides of the web.

13. The combination in a tank car frame having body bolsters and flanged beams, of horizontal cover plates riveted thereto, said plates being of the width of the ends of the frame; and box girders uniting the ends of the body bolsters, each of said girders consisting of flanged beams with top and bottom cover plates riveted thereto.

14. The combination in a tank car, of a frame having body bolsters, girders, each consisting of two flanged metallic beams with top and bottom cover plates riveted thereto, uniting the ends of the body bolsters so the space between the body bolsters and girders will be unobstructed; means located below the plane of the body bolsters for supporting a tank; and a tank with its lower part in a plane below the plane of the bolsters.

15. The combination with a tank car frame having an unobstructed open space between the body bolsters and side girders, of a tank with heels at its lower part adapted to occupy positions adjacent the vertical sides of the bolsters, in substance as set forth.

16. The combination with a tank car frame having an unobstructed space between the body bolsters and side girders, of metallic plates at opposite sides of the frame located above and outwardly of the body bolsters, a projecting flange adjacent each end of the frame, and a tank with horizontal under surfaces at the ends adapted to rest upon the metallic plates and adjacent to said flanges; means being provided for supporting the middle portion of the tank.

17. The combination with a tank car frame having an unobstructed space between the body bolsters and side girders, of metallic plates one at each end of the frame and located outwardly of the body bolsters, flanges about three sides of the plates at the ends of the frame, and a tank with horizontal under surfaces at the ends adapted to rest upon said plates and abut the flanges; means being provided for supporting the middle portion of the tank from the side girders.

18. The combination with a tank car frame having an unobstructed space be-

tween the body bolsters and side girders, of a tank with its ends supported by the body bolsters and provided with heels located adjacent the vertical inner surfaces of the body bolsters and its central portion extended downwardly below a horizontal plane coinciding with the bottoms of the bolsters; and means, as straps, secured to the side girders for supporting the central portion of the tank.

19. The combination with a tank car frame having body bolsters and castings with flanges in connection with the ends of the frame, of girders located substantially in the same plane as and uniting the ends of the bolsters only, so as to provide an open space between the bolsters and side girders; means, as straps, connecting the girders; a tank having its ends supported adjacent the flanges of the castings and its lower middle portion extending down below a horizontal plane coinciding with the bottoms of the bolsters, whereby the center of gravity of the car is lowered; and means for removably anchoring the tank to the frame.

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

MYERS A. GARRETT.

Witnesses:

N. MACHATTON
H. E. HINDS.