

April 9, 1963

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3,084,638

RAILWAY TANK CAR DOME PLATFORMS

Filed Jan. 26, 1960

4 Sheets-Sheet 1

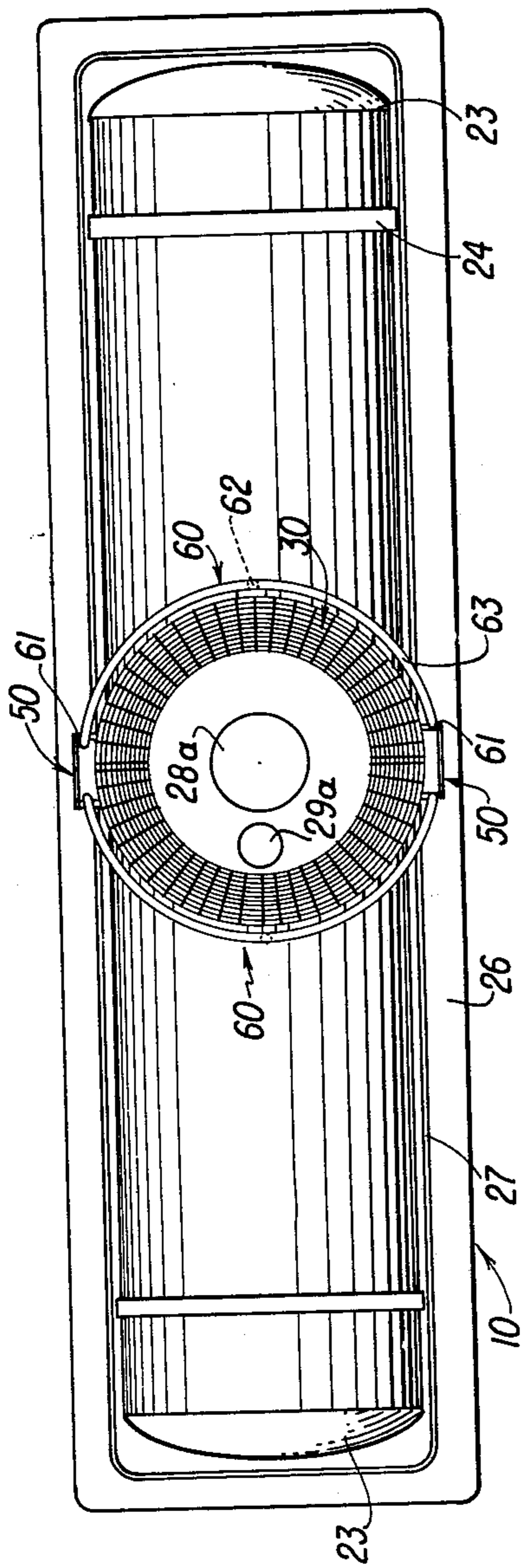


FIG 1

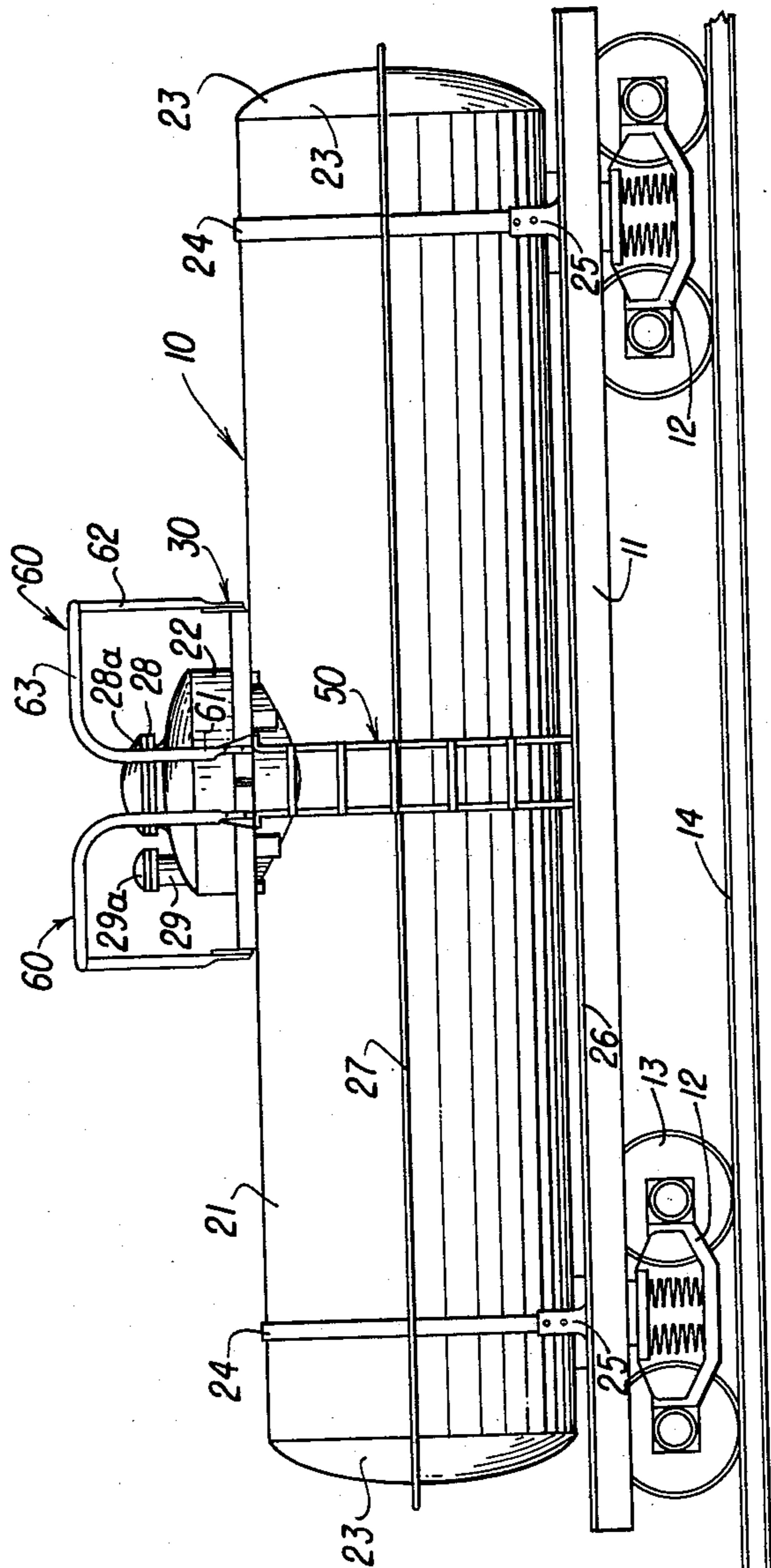


FIG 2

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4 Sheets-Sheet 2

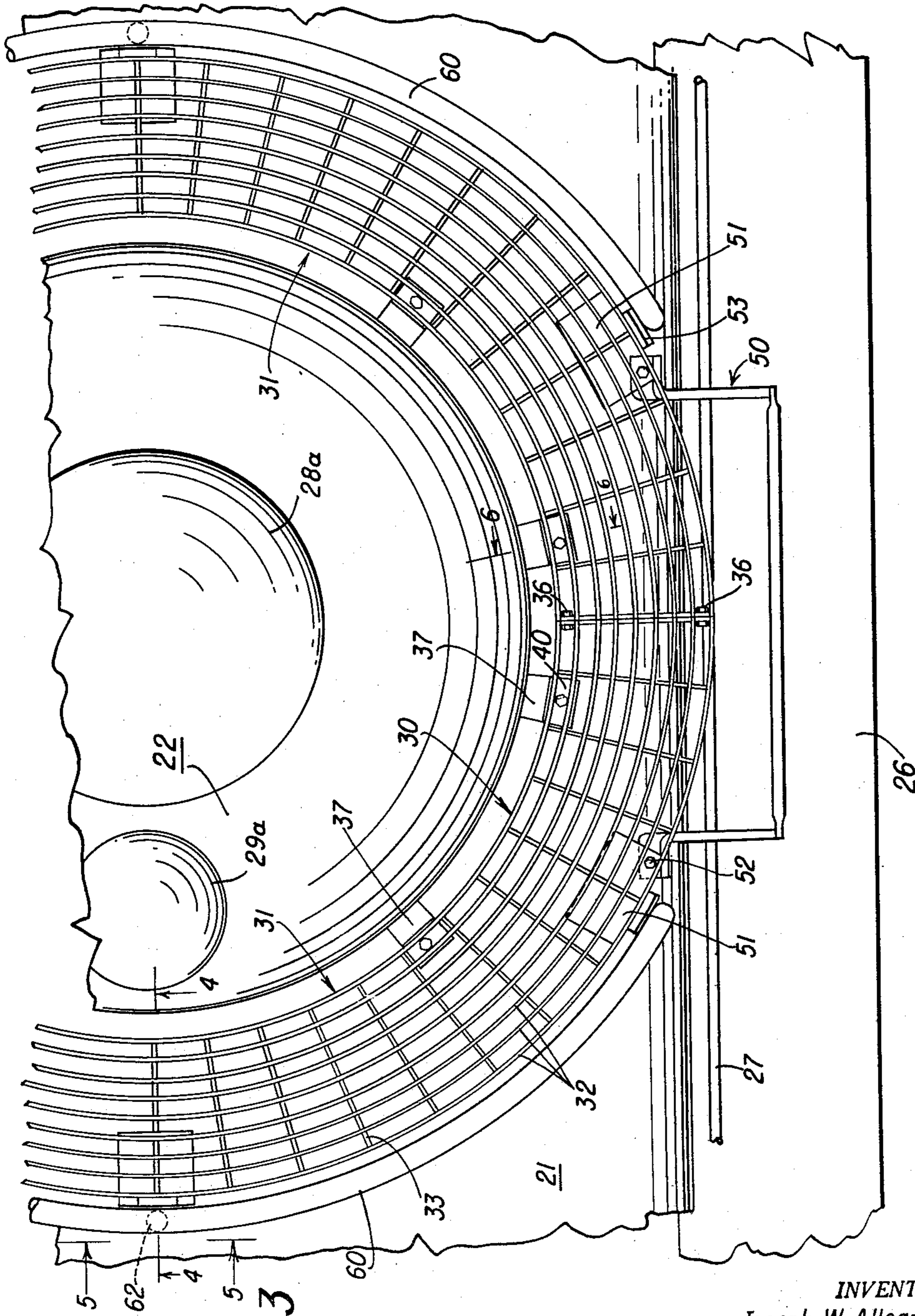


FIG. 3

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4 Sheets-Sheet 3

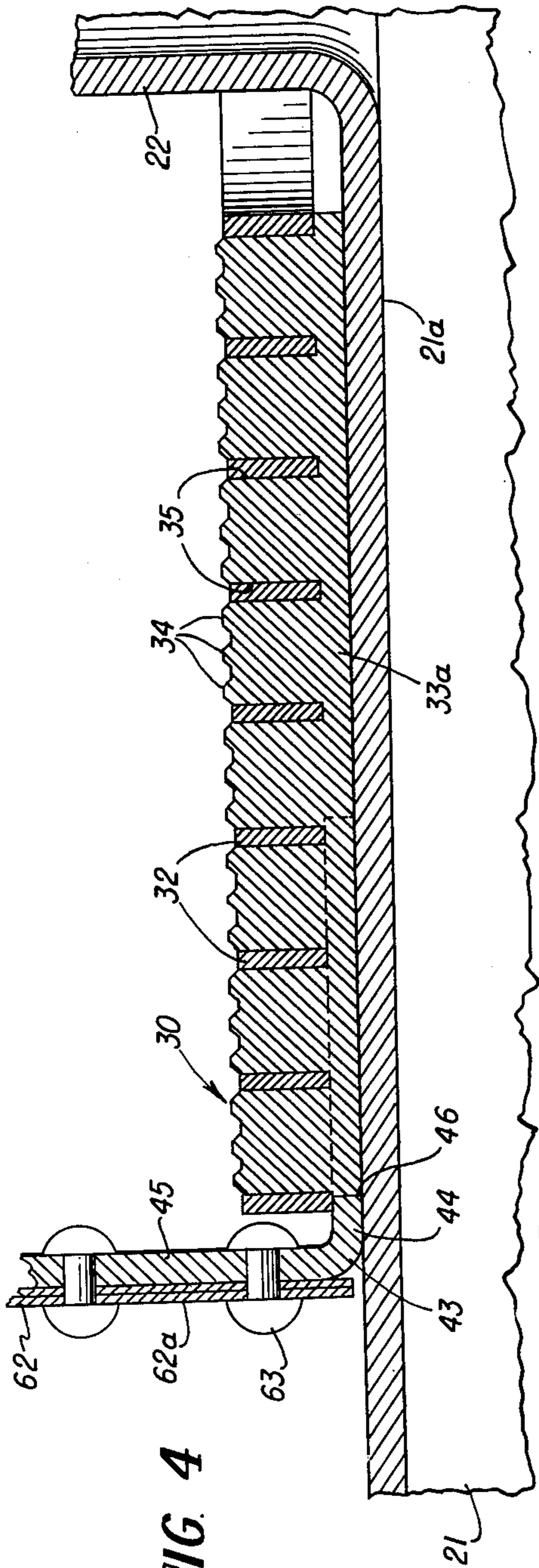


FIG. 4

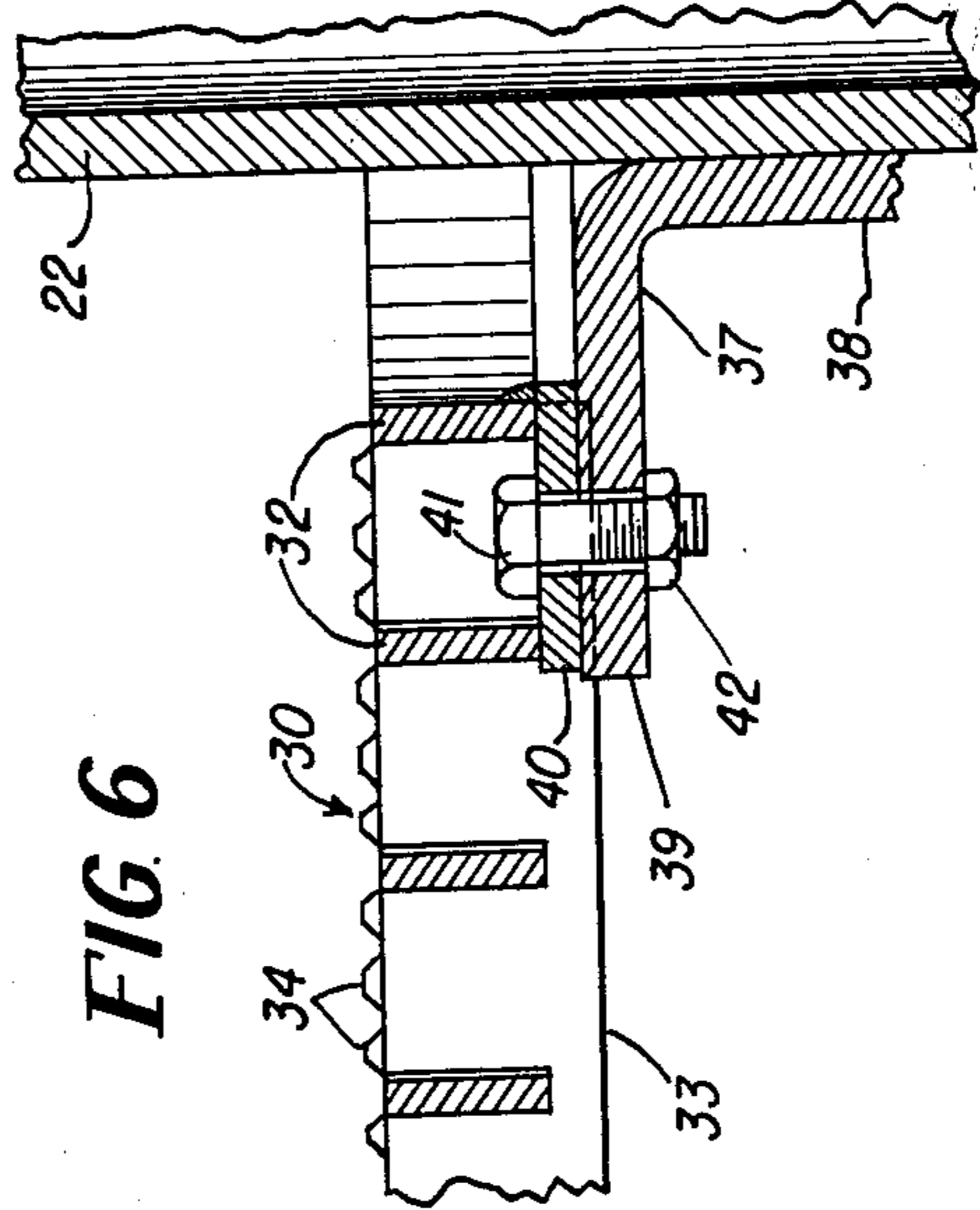


FIG. 6

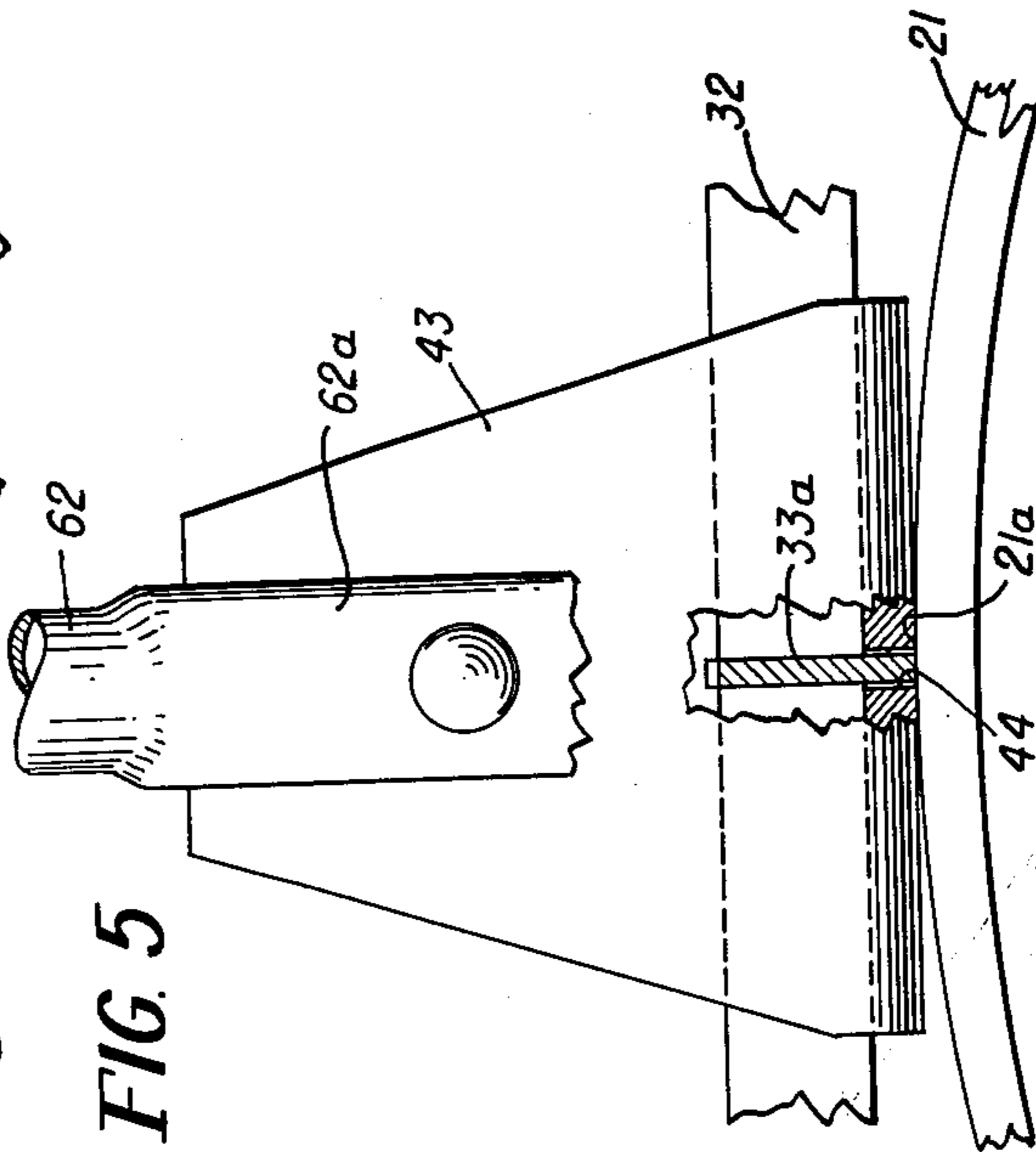


FIG. 5

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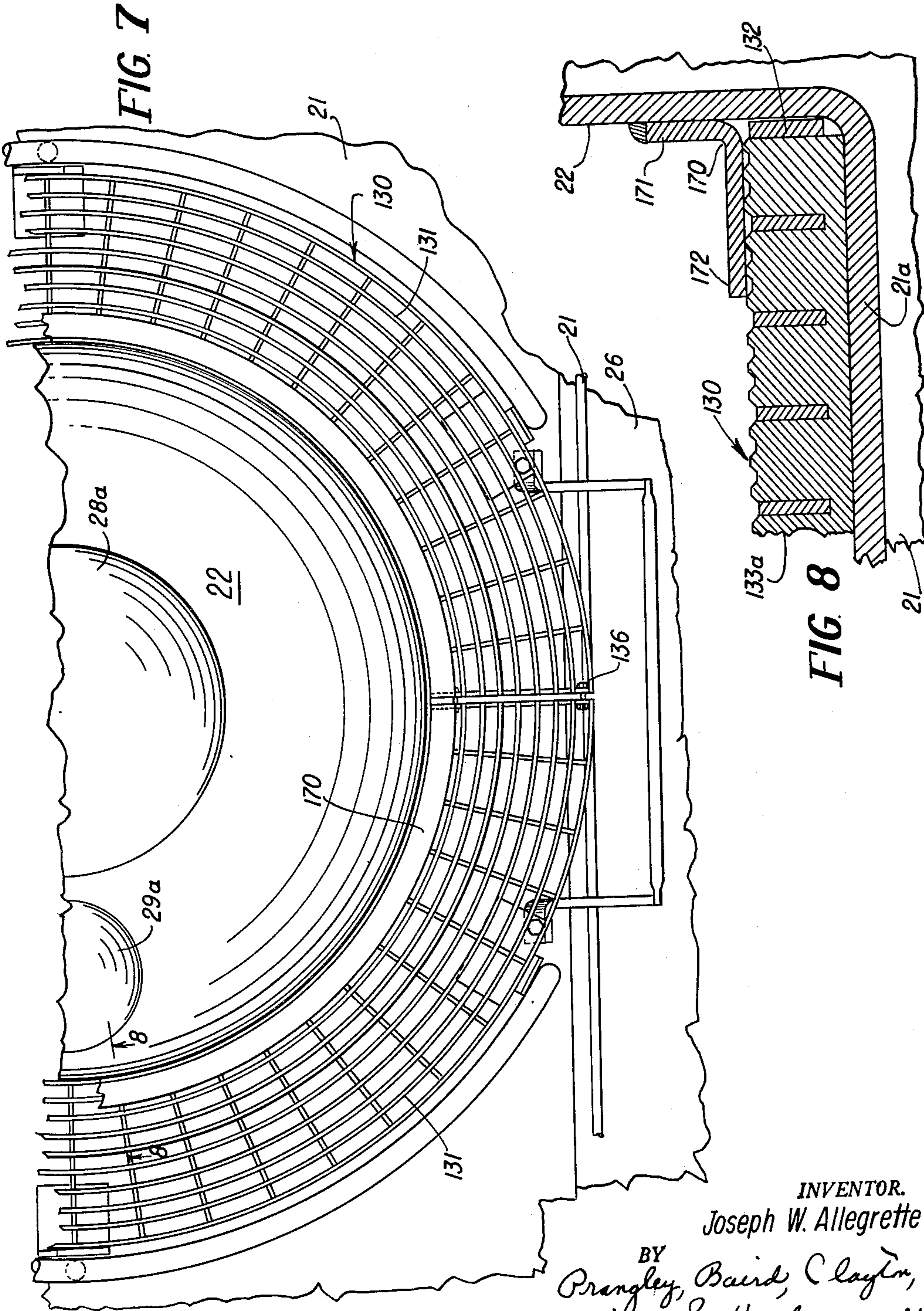
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RAILWAY TANK CAR DOME PLATFORMS

Filed Jan. 26, 1960

4 Sheets-Sheet 4



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RAILWAY TANK CAR DOME PLATFORMS

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Filed Jan. 26, 1960, Ser. No. 4,732

6 Claims. (Cl. 105—358)

The present invention relates to railway tank car dome platforms, and more particularly to such platforms constructed substantially entirely of steel stock of standard commercial forms and shapes.

It is the general object of the invention to provide in a railway tank car, a dome platform of substantially annular configuration and of open-work construction and fabricated substantially entirely of steel stock of standard commercial forms and shapes.

Another object of the invention is to provide in a railway car, a dome platform of the character noted, that may be largely prefabricated independently of the railway tank car and then subsequently assembled upon the railway tank car in a simple and economical manner.

A further object of the invention is to provide a railway tank car dome platform of the character noted, that may be readily installed as an appliance upon an existing railway tank car in a simple and ready manner.

Further features of the invention pertain to the particular arrangement of the elements of the railway tank car dome platform, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a plan view of a railway tank car incorporating a dome platform embodying the present invention;

FIG. 2 is a side elevational view of the railway tank car;

FIG. 3 is an enlarged fragmentary plan view of the railway tank car and the dome platform incorporated therein;

FIG. 4 is a greatly enlarged fragmentary vertical sectional view of the railway tank car and the dome platform, taken in the direction of the arrows along the line 4—4 in FIG. 3;

FIG. 5 is another greatly enlarged fragmentary vertical sectional view of the railway tank car and the dome platform, taken in the direction of the arrows along the line 5—5 in FIG. 3;

FIG. 6 is still another greatly enlarged fragmentary vertical sectional view of the railway tank car and the dome platform, taken in the direction of the arrows along the line 6—6 in FIG. 3;

FIG. 7 is an enlarged fragmentary plan view, similar to FIG. 3, of the railway tank car incorporating a modified form of the dome platform; and

FIG. 8 is a greatly enlarged fragmentary vertical sectional view, similar to FIG. 6, of the railway tank car and the dome platform, taken in the direction of the arrows along the line 8—8 in FIG. 7.

Referring now to FIGS. 1 and 2 of the drawings, there is illustrated a railway tank car 10 embodying the features of the present invention and comprising an elongated narrow underframe 11 mounted adjacent to the opposite ends thereof upon a pair of trucks 12 carrying flanged track wheels 13 of standard railway track gauge and cooperating with the track rails of an associated railway track, indicated at 14. More particularly, the opposite ends of the underframe 11 are provided with the usual body bolsters, not shown, that are connected to the bolsters of the trucks 12 by associated king pins, not shown, thereby accommo-

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dating articulation of the underframe 11 with respect to the trucks 12, in the usual manner.

Also, the underframe 11 carries upon the top thereof a tank adapted to carry fluid ladings and comprising a substantially horizontal body section 21 of substantially cylindrical configuration and an upstanding dome section 22 of substantially cylindrical configuration, the dome section 22 having a diameter smaller than that of the body section 21 and being arranged on the top of the central portion of the body section 21. The opposite ends of the body section 21 are closed by the usual convex ends 23; and the tank, as a whole, is retained in place upon the top of the underframe 11, in a conventional manner, including the pair of longitudinally spaced-apart tank bands 24 embracing the adjacent portions of the body section 21 respectively adjacent to the ends 23. Each of the tank bands 24 is of substantially U-shape, the ends thereof being suitably secured to the top of the underframe 11, by fixtures, as indicated at 25. Also, the top of the underframe 11 carries a suitable running board 26 disposed adjacent to the perimeter thereof and surrounding the body section 21; and the body section 21 carries a conventional surrounding handrail 27 positioned above the running board 26 and disposed in a substantially horizontal plane passing through the longitudinal axis of the body section 21.

The dome section 22 may be entirely conventional in construction and arrangement; whereby it may carry an upstanding dome hatch 28 provided with a cooperating removable hatch cover 28a, as well as one or more upstanding suitable extensions 29, each provided with a cooperating removable cover 29a. The tank car 10 comprises various control instrumentalities that are conventionally housed within the hatch 28 that are manually controlled, manipulated and inspected by a person after removal of the hatch cover 28a from the associated hatch 28; and likewise, a drain valve handle is conventionally housed within the tubular extension 29 that is manually controlled or manipulated by a person after removal of the hatch cover 28a from the associated extension 29. The construction and arrangement of the instrumentalities and control devices that are housed within the hatch 28 and within the tubular extension 29 are entirely conventional and are not described in particularity in the interest of brevity.

Referring now to FIGS. 1 to 6, inclusive, a substantially annular platform 30 is mounted in a substantially horizontal plane upon the adjacent two top crown-shaped portions, indicated at 21a in FIGS. 4 and 5, of the body section 21 and in closely surrounding relation with respect to the lower portion of the dome section 22; which platform 30 is of rigid structure and of composite construction including two complementary arcuate-shaped platform segments 31 of substantially identical construction and arrangement and securely fastened together and also securely fastened to the adjacent lower portion of the dome section 22. More particularly, each of the platform segments 31 comprises a plurality of radially spaced-apart and arcuately extending grid members 32 and a plurality of angularly spaced-apart and radially extending grid elements 33 rigidly secured together to provide a unitary rigid open-work construction. More specifically, as best shown in FIGS. 4 and 6, each of the grid elements 33 essentially comprises a radially extending length of ribbon-like steel stock arranged in upstanding position and so that the top edge thereof is disposed substantially in the plane of the top surface of the platform 30, the top surface of the grid element 33 being serrated, as indicated at 34, so as to provide a sure footing for a person using the platform 30 in connection with an inspection or manipulation of the instrumentalities carried by the dome section 22 as

previously mentioned. Also, a plurality of radially spaced-apart slots 35 are formed in the upper portions of each of the grid elements 33; and each of the grid members 32 essentially comprises an arcuate length of ribbon-like metal stock arranged in upstanding position and located in a circumferentially spaced-apart row of the slots 35 formed in the cooperating grid elements 33, and so that the top edge thereof is also disposed substantially in the plane of the top surface of the platform 30. Accordingly, the grid member 32 and the grid elements 33 are disposed in intersecting relation to provide the open-work construction of the platform 30; and preferably each of the elements 32 and 33 is formed of steel stock of standard shape and form.

Referring now more particularly to FIGS. 4 and 5, it will be appreciated that the two radially extending grid elements 33 disposed on opposite sides of the dome section 22 and in a vertical plane passing through the longitudinal central axis of the body section 21 directly engage the two corresponding top crown-shaped portions 21a of the body section 21; and for the purpose of identification, each of these two grid elements 33 mentioned has been given the reference character 33a, and the adjacent top crown-shaped portion of the body section 21 has been given the reference character 21a, as previously noted. In view of the foregoing, it will be understood that the two diametrically oppositely extending grid elements 33a respectively engage the associated two top crown-shaped portions 21a of the body section 21; whereas the remainder of the radially extending grid elements 33 project outwardly over the body section 21 due to the curvature of the substantially cylindrical body section 21.

As previously explained, the grid members 32 and the grid elements 33 are suitably secured together, as by welding, in order to provide the rigid composite construction of each of the platform segments 31; and as best shown in FIG. 3, the adjacent abutting ends of the platform segments 31 are rigidly secured together utilizing nuts and bolts, as indicated at 36; whereby the platform segments 31 are thus detachably secured together.

Also the platform 30 is supported intermediate the two top crown-shaped portions 21a of the body section 21 by a plurality of brackets 37, as shown in FIGS. 3 and 6. Each of the brackets 37 is substantially L-shaped, the vertical leg 38 thereof being suitably secured, as by welding, to the adjacent outer surface of the dome section 22, and the horizontal leg 39 thereof projecting radially outwardly below the inner circumferential portion of the platform 30. More particularly, a plurality of the brackets 37 cooperate with each of the platform segments 31; and specifically, the horizontal leg 39 of each of the brackets 37 cooperates with a metal plate 40 that is arranged between a pair of the grid elements 33 and in bridging relation with the two innermost grid members 32; which plate 40 may be suitably secured, as by welding, to the two grid members 32, as illustrated in FIG. 6. Accordingly, the plate 40 is rigidly secured to the platform 30 and is, in turn supported upon the top surface of the leg 39 of the cooperating bracket 37; and the plate 40 is securely fastened to the supporting leg 39 by an arrangement including a bolt 41 provided with a cooperating nut 42, as shown in FIG. 6; the shank of the bolt 31 projecting through aligned openings respectively formed in the elements 40 and 39 and receiving the nut 42 on the lower end thereof. Accordingly the platform 30 is also supported by the brackets 37 carried by the dome section 22 and is detachably secured in place by the arrangement described above including the plates 40 and the cooperating removable fasteners 41-42.

Again referring to FIGS. 4 and 5, each of the grid elements 33a engaging a corresponding one of the top crown-shaped portions 21a of the body section 21 carries at the outer end thereof a member 43 having a substantially L-shape and including a horizontal leg 44 and a vertical leg 45. The central portion of the horizontal leg 44 of

the member 43 has an elongated slot 46 formed therein that receives the lower outer end portion of the grid element 33a; whereby the lower portion of the leg 44 of the member 43 is also arranged in engagement with the adjacent top crown-shaped portion 21a of the body section 21; and furthermore the upper portion of the leg 44 of the member 43 is arranged in direct engagement with a plurality of the grid members 32 disposed thereabove and in supporting relation therewith. In the arrangement, the leg 44 of the member 43 may be suitably secured both to the grid element 33a and to the outer engaged ones of the grid members 32 as by welding; whereby each of the members 43 forms an integral part of the structure of the platform 30.

Again referring to FIGS. 1 to 3 inclusive, the platform 30 carries two laterally spaced-apart ladders 50 disposed upon opposite sides of the body section 21, each of the ladders 50 extending between the platform 30 and the adjacent portion of the running board 26 so as to accommodate the movement of a person between the running board 26 and the platform 30 by climbing either one of the ladders 50. More particularly, the upper end of each of the ladders 50 is secured to the adjacent overhanging portion of the platform 30 by an arrangement including a pair of plates 51 respectively secured, as by welding, to the respective ends of the platform segments 31. In the arrangement, each side portion of each ladder 50 is detachably secured at the upper end thereof to the corresponding one of the plates 51 by associated fastener elements 52 that may take the form of bolts provided with removable nuts. Accordingly, the upper end of each of the ladders 50 is detachably secured in place by the fastening elements 52 and the plates 51; whereby the ladder 50 depends from the platform 30 projecting over the adjacent side portion of the handrail 27. The lower end of each of the ladders 50 may also be secured in any suitable manner, not shown, to the adjacent side portion of the running board 26. Thus, the two ladders 50 provide ready access from the opposite sides of the running board 26 to the opposite sides of the platform 30 disposed thereabove.

Referring again to FIGS. 1 to 3, inclusive, the platform 30 carries two longitudinally spaced-apart guard rail structures 60 extending upwardly above the dome section 22, each of the guard rail structures 60 providing an arcuate-shaped protective guard rail disposed at least partially in surrounding relation with respect to the platform 30. As best shown in FIGS. 1 and 2, each of the structures 60 is provided with two upstanding end legs 61 and an upstanding intermediate leg 62, as well as a substantially arcuate guard rail portion 63; which elements 61, 62 and 63 may be formed of suitable sections of steel pipe. As best illustrated in FIG. 3, each of the end legs 61 is secured to an upstanding lug 53 carried by a corresponding one of the plates 51; and, as best shown in FIGS. 3, 4 and 5, each of the intermediate legs 62 is secured to the vertical leg 45 of the adjacent one of the brackets 43. More particularly, the lower end of each of the intermediate legs 62 may be flattened, as indicated at 62a, and secured in place to the adjacent vertical leg 45 of the bracket 43 by a series of rivets 63. The lower ends of each of the end legs 61 may be secured in a similar manner to the corresponding one of the upstanding lugs 53 carried by the corresponding one of the plates 51. Accordingly, in the arrangement, the two adjacent end legs 61 of the two structures 60 are disposed adjacent to the top of one of the ladders 50 and define an entrance from the ladder 50 onto the platform 30 between the two end legs 61 of the two structures 60, as clearly shown in FIG. 2.

Referring now to FIGS. 7 and 8, a modified form of the platform 130 is there illustrated that is essentially of the same construction as that of the platform 30, previously described; however, in this modified form of the platform 130, the two complementary arcuate-shaped platform segments 131 are so constructed that when the

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adjacent ends thereof are fastened together by the bolts 136, the innermost grid member 132 of the platform 130 is disposed in frictional engagement and in clamped relation with respect to the adjacent lower portion of the dome section 22, as clearly illustrated in FIG. 8. Moreover, in this modified form of the platform 130, it is not necessary to provide the supporting brackets carried by the dome section 22 (the brackets 37 that are employed to support the inner circumferential portion of the platform 30, as shown in FIG. 6).

More particularly, in the platform construction 130, the grid elements 133a engage the adjacent top crown-shaped portions 21a of the body section 21; and the innermost grid member 132 is disposed in tightly binding and clamped relation with respect to the adjacent lower portion of the dome section 22, as previously noted. In the arrangement, the clamping of the lower portion of the dome section 22 may be achieved by the innermost grid members 132 of the two complementary platform segments 131 by providing a small gap or space between the adjacent ends of the segments 131, as illustrated in FIG. 7; whereupon, the tightening of the bolts 136 with respect to the associated nuts pulls together the adjacent ends of the platform segments 131 achieving the clamping action above described.

Also in this construction of the platform 130, an annular ring 170 is carried by the lower outer surface of the dome section 22, the ring 170 being substantially L-shaped in cross-section, including a vertical leg 171 and a horizontal leg 172. The vertical leg 171 is rigidly secured to the adjacent outer surface of the dome section 22, as by welding, while the horizontal leg 172 projects radially outwardly over the inner circumferential portion of the platform 130 engaging the top surface thereof, so as securely to clamp the platform 130 in its mounted position upon the top of the body section 21, as clearly shown in FIG. 8.

The modified form of the platform 130 is otherwise of the same construction and arrangement as the platform 30 previously described and is not reiterated in the interest of brevity.

In view of the foregoing, it is apparent that there has been provided in a railway tank car a dome platform of improved and simplified construction and arrangement; which platform may be readily applied either to a new tank car incident to the manufacture thereof or to an existing tank car as an appliance.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In a railway tank car including a substantially horizontal body section of substantially cylindrical configuration, and an upstanding dome section of substantially cylindrical configuration, said dome section having a diameter smaller than that of said body section and being arranged on the top of a portion of said body section located intermediate the ends thereof, whereby said body section includes two top crown-shaped portions respectively disposed on opposite sides of said dome section; the combination comprising a substantially annular platform assembly mounted in a substantially horizontal plane upon the adjacent two top crown-shaped portions of said body section and in closely surrounding relation with respect to the lower portion of said dome section, said platform assembly being of rigid structure and of composite construction including a number of complementary arcuate-shaped segments and means for securely fastening together said platform segments to produce said platform assembly and for clamping said platform assembly into frictional engagement with the adjacent surrounded lower portion of said dome section, each of said platform seg-

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ments including a plurality of radially spaced-apart and arcuately extending grid members and a plurality of angularly spaced-apart and radially extending grid elements rigidly secured together to provide a unitary rigid open-work construction, and upstanding structure carried by outer circumferentially spaced-apart portions of said platform assembly and extending upwardly above said dome section and providing a plurality of arcuate-shaped protective guard rails disposed at least partially in surrounding relation with respect to said platform assembly.

2. In a railway tank car including a substantially horizontal body section of substantially cylindrical configuration, and an upstanding dome section of substantially cylindrical configuration, said dome section having a diameter smaller than that of said body section and being arranged on the top of a portion of said body section located intermediate the ends thereof, whereby said body section includes two top crown-shaped portions respectively disposed on opposite sides of said dome section; the combination comprising a substantially annular platform assembly mounted in a substantially horizontal plane upon the adjacent two top crown-shaped portions of said body section and in closely surrounding relation with respect to the lower portion of said dome section, said platform assembly being of rigid structure and of composite construction including a number of complementary arcuate-shaped segments securely fastened together, a ring surrounding the lower portion of said dome section and rigidly secured thereto and projecting radially outwardly therefrom over the inner circumferential portion of said platform assembly and into abutting relation with the top surface thereof so as securely to clamp said platform assembly in its mounted position upon said body section, each of said platform segments including a plurality of radially spaced-apart and arcuately extending grid members and a plurality of angularly spaced-apart and radially extending grid elements rigidly secured together to provide a unitary rigid open-work construction, and upstanding structure carried by outer circumferentially spaced-apart portions of said platform assembly and extending upwardly above said dome section and providing a plurality of arcuate-shaped protective guard rails disposed at least partially in surrounding relation with respect to said platform assembly.

3. In a railway tank car including a substantially horizontal body section of substantially cylindrical configuration, and an upstanding dome section of substantially cylindrical configuration, said dome section having a diameter smaller than that of said body section and being arranged on the top of a portion of said body section located intermediate the ends thereof, whereby said body section includes two top crown-shaped portions respectively disposed on opposite sides of said dome section; the combination comprising a substantially annular platform assembly mounted in a substantially horizontal plane upon the adjacent two top crown-shaped portions of said body section and in closely surrounding relation with respect to the lower portion of said dome section, said platform assembly being of rigid structure and of composite construction including a number of complementary arcuate-shaped segments and means for securely fastening together said platform segments to produce said platform assembly and for securely fastening said platform assembly in its mounted position to the adjacent surrounded lower portion of said dome section, each of said platform segments including a plurality of radially spaced-apart and arcuately extending grid members and a plurality of angularly spaced-apart and radially extending grid elements rigidly secured together to provide a unitary rigid open-work construction, and upstanding structure carried by outer circumferentially spaced-apart portions of said platform assembly and extending upwardly above said dome section and providing a plurality of arcuate-shaped protective guard rails disposed at

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least partially in surrounding relation with respect to said platform assembly.

4. The railway tank car combination set forth in claim 3, wherein said grid members essentially comprise arcuate lengths of ribbon-like metal stock arranged in upstanding position and so that the top edges thereof are disposed substantially in the plane of the top surface of said platform assembly.

5. The railway tank car combination set forth in claim 3, wherein both said grid members and said grid elements are formed of ribbon-like metal stock arranged in upstanding position and in intersecting relation and so that the top edges thereof are disposed substantially in the plane of the top surface of said platform assembly.

6. The railway tank car combination set forth in claim 3, wherein said grid elements essentially comprise radial-

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ly extending lengths of ribbon-like metal stock arranged in upstanding position and so that the top edges thereof are disposed substantially in the plane of the top surface of said platform assembly.

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