

W. C. JUTTE.  
STEEL BARGE.

APPLICATION FILED NOV. 9, 1904.

2 SHEETS—SHEET 1.

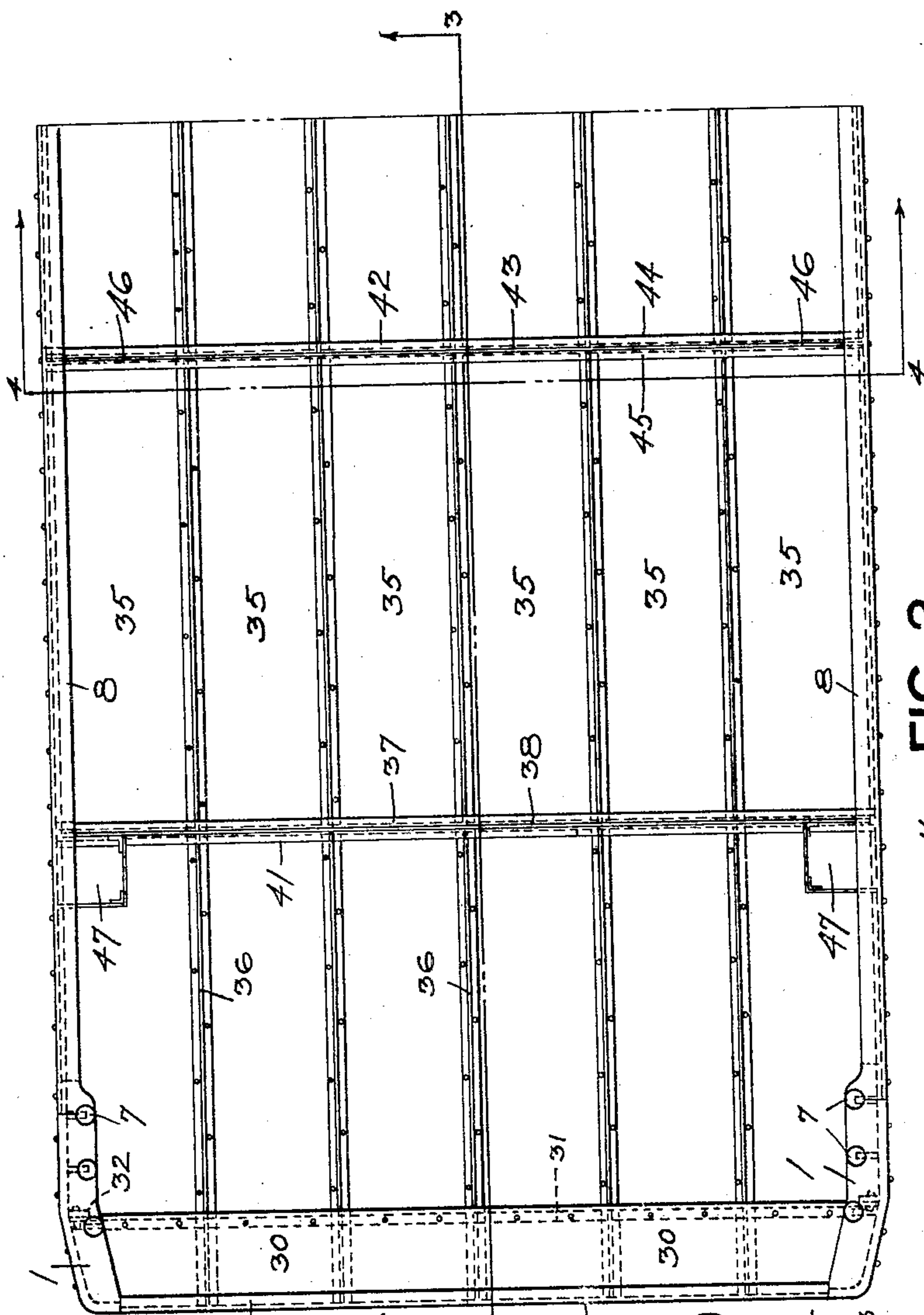


FIG. 1

FIG. 9

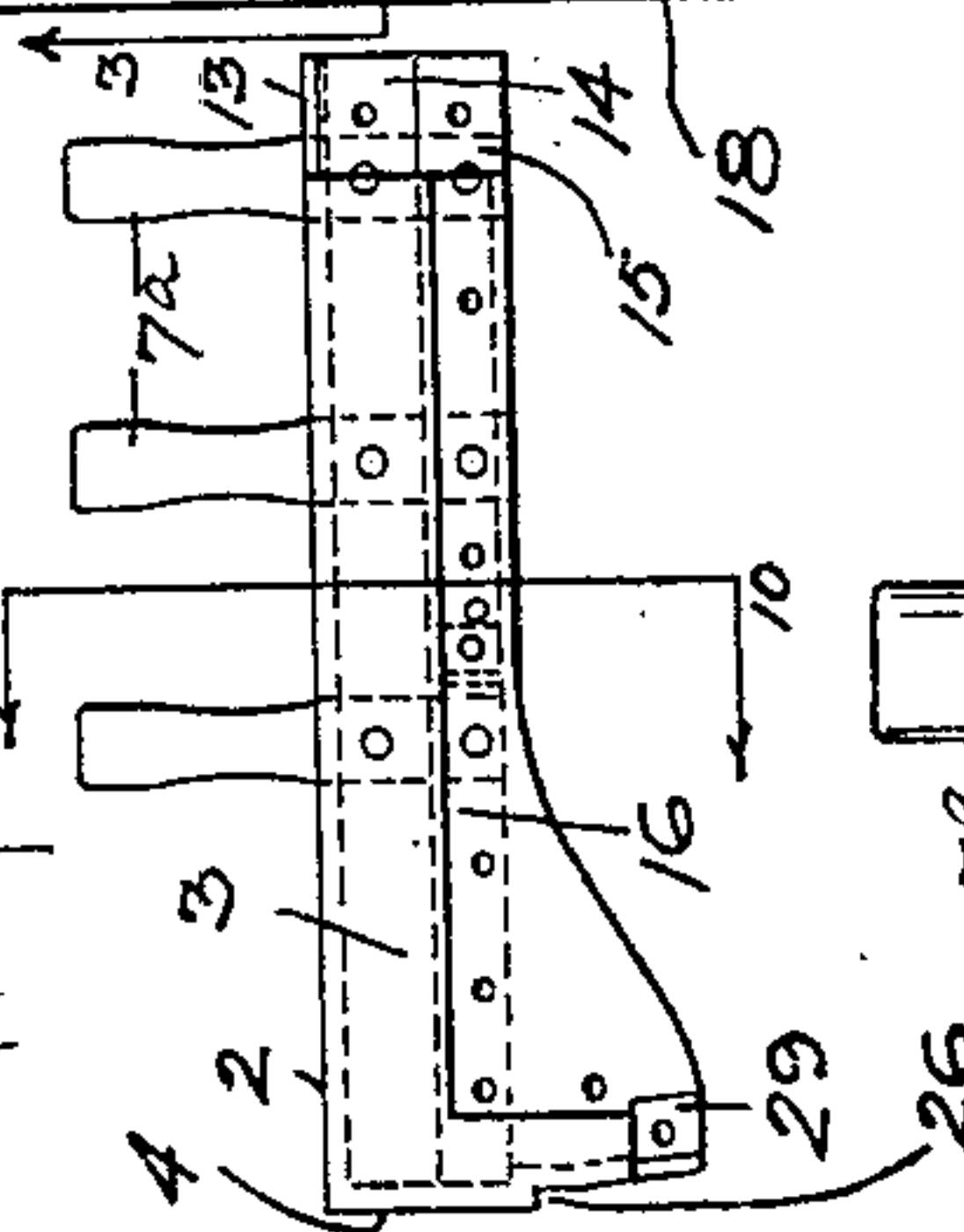


FIG. 10

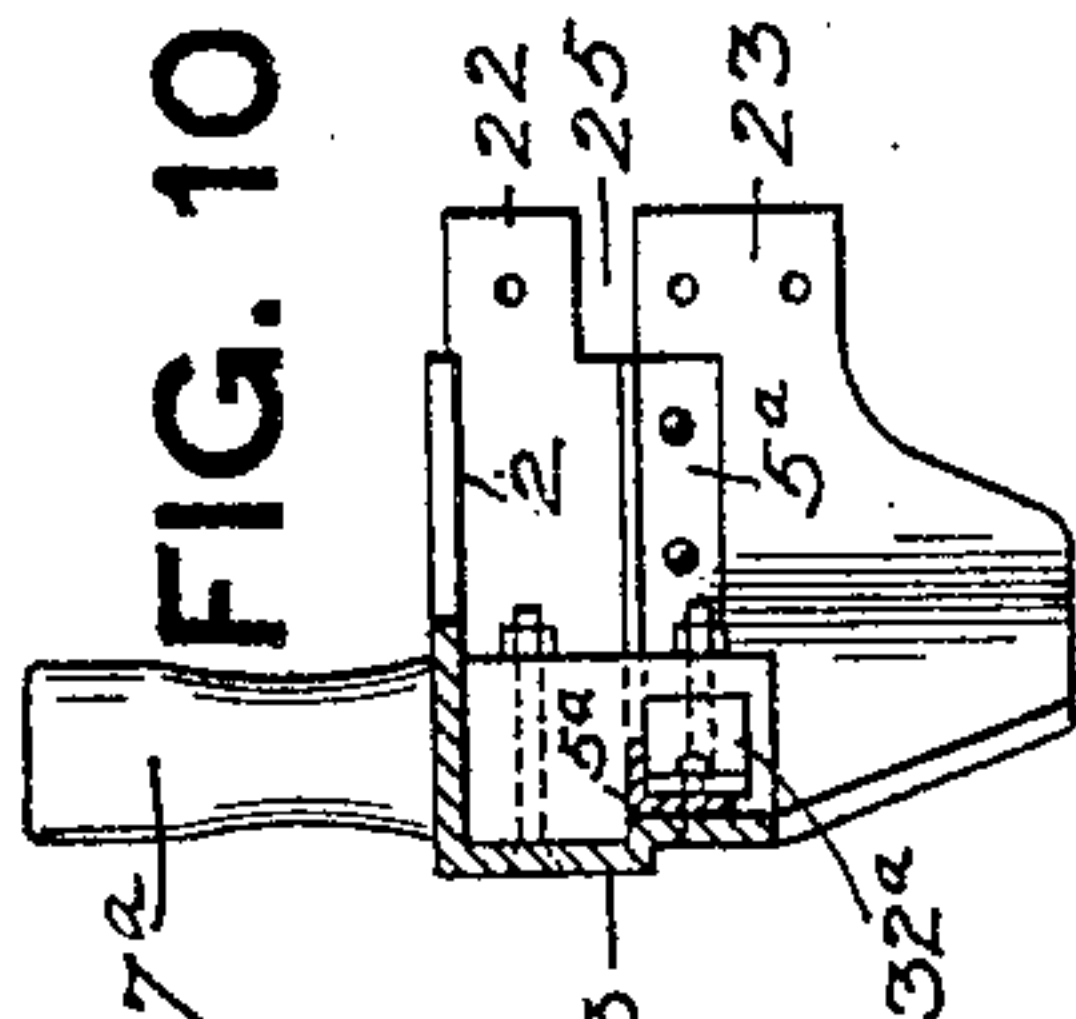
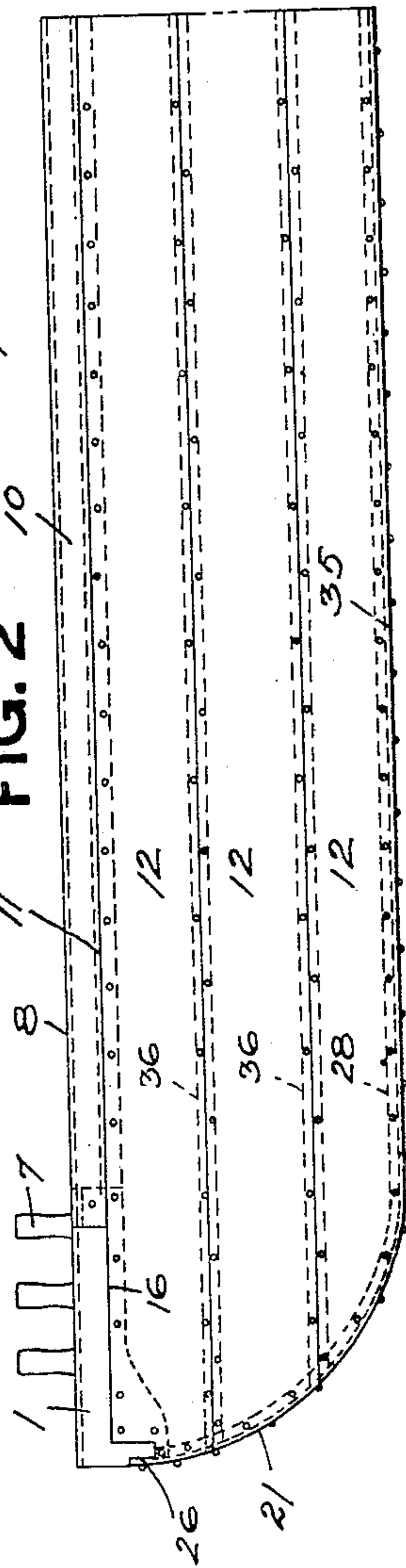


FIG. 2



WITNESSES.

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No. 805,468.

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W. C. JUTTE.  
STEEL BARGE.

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2 SHEETS—SHEET 2.

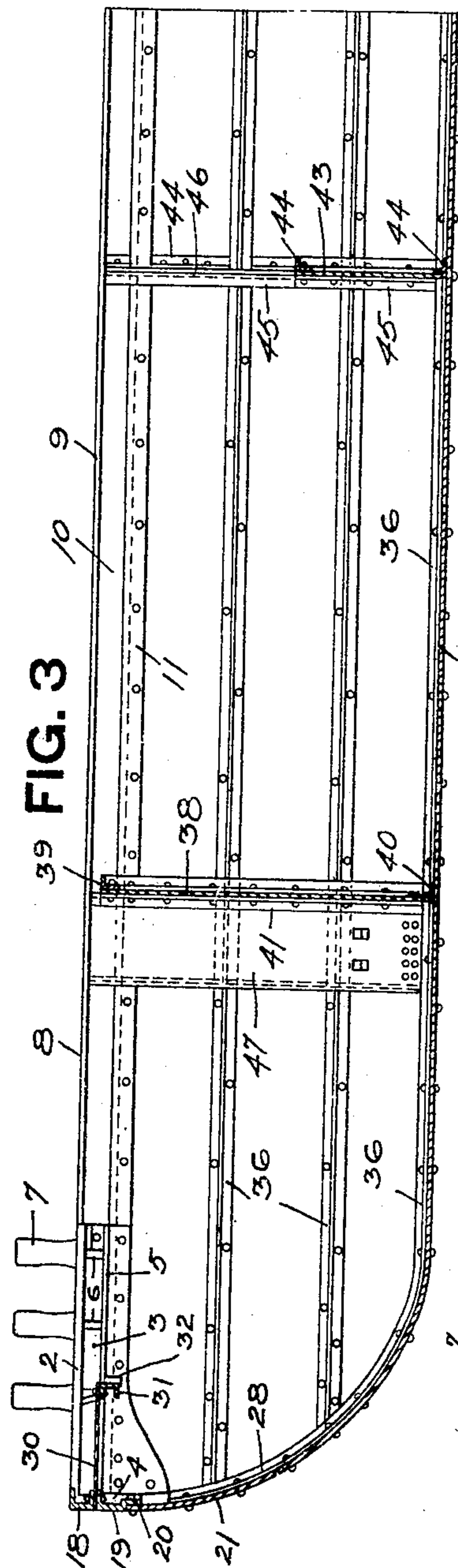


FIG. 3

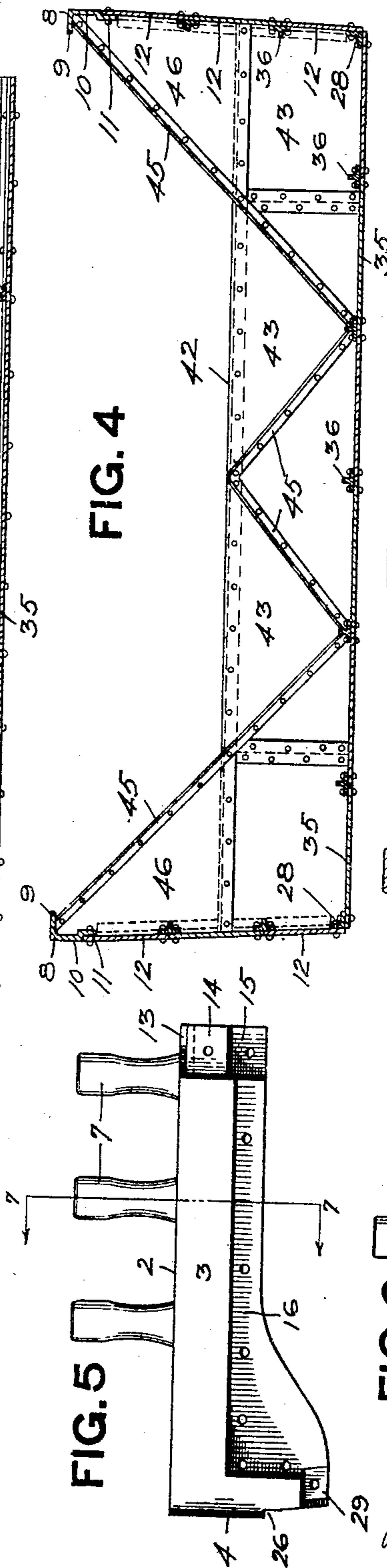


FIG. 4

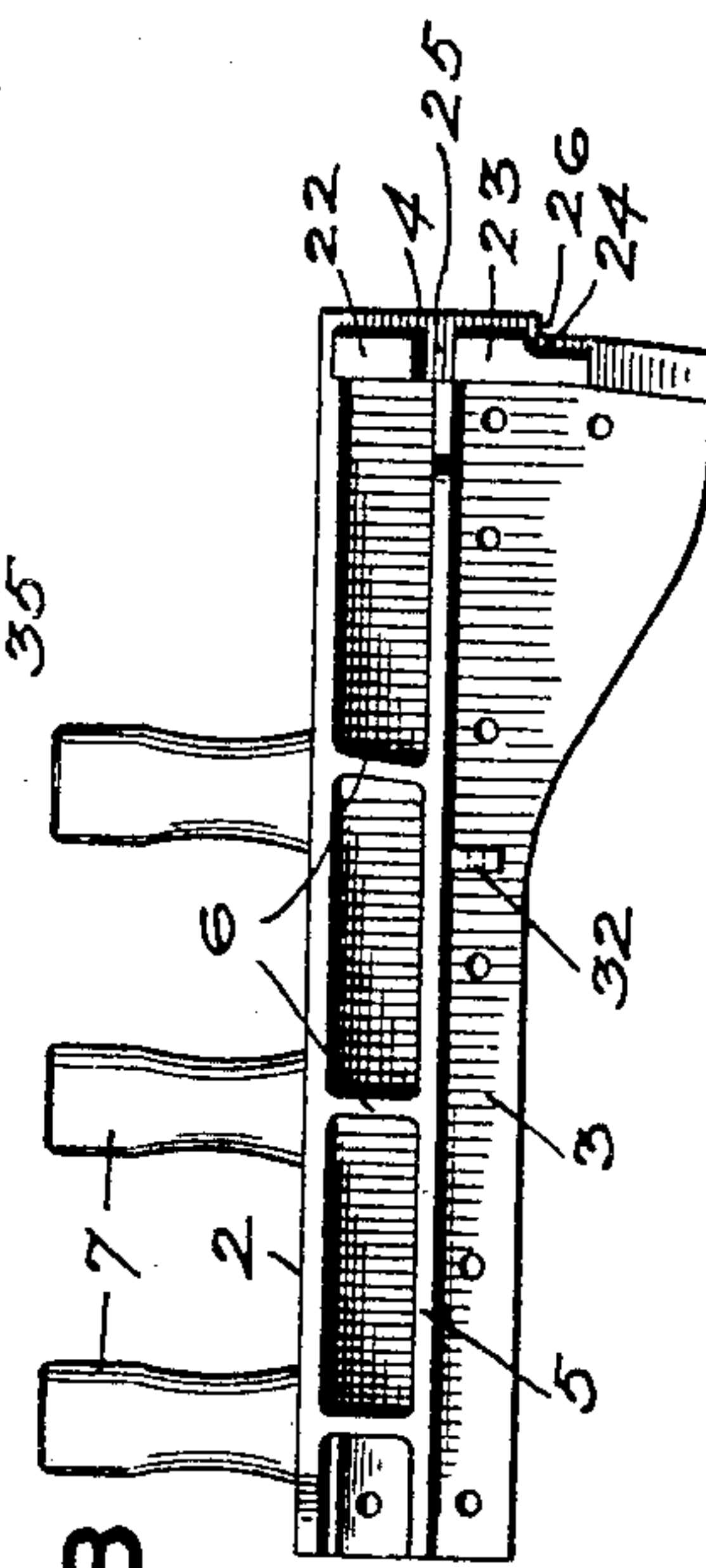


FIG. 5

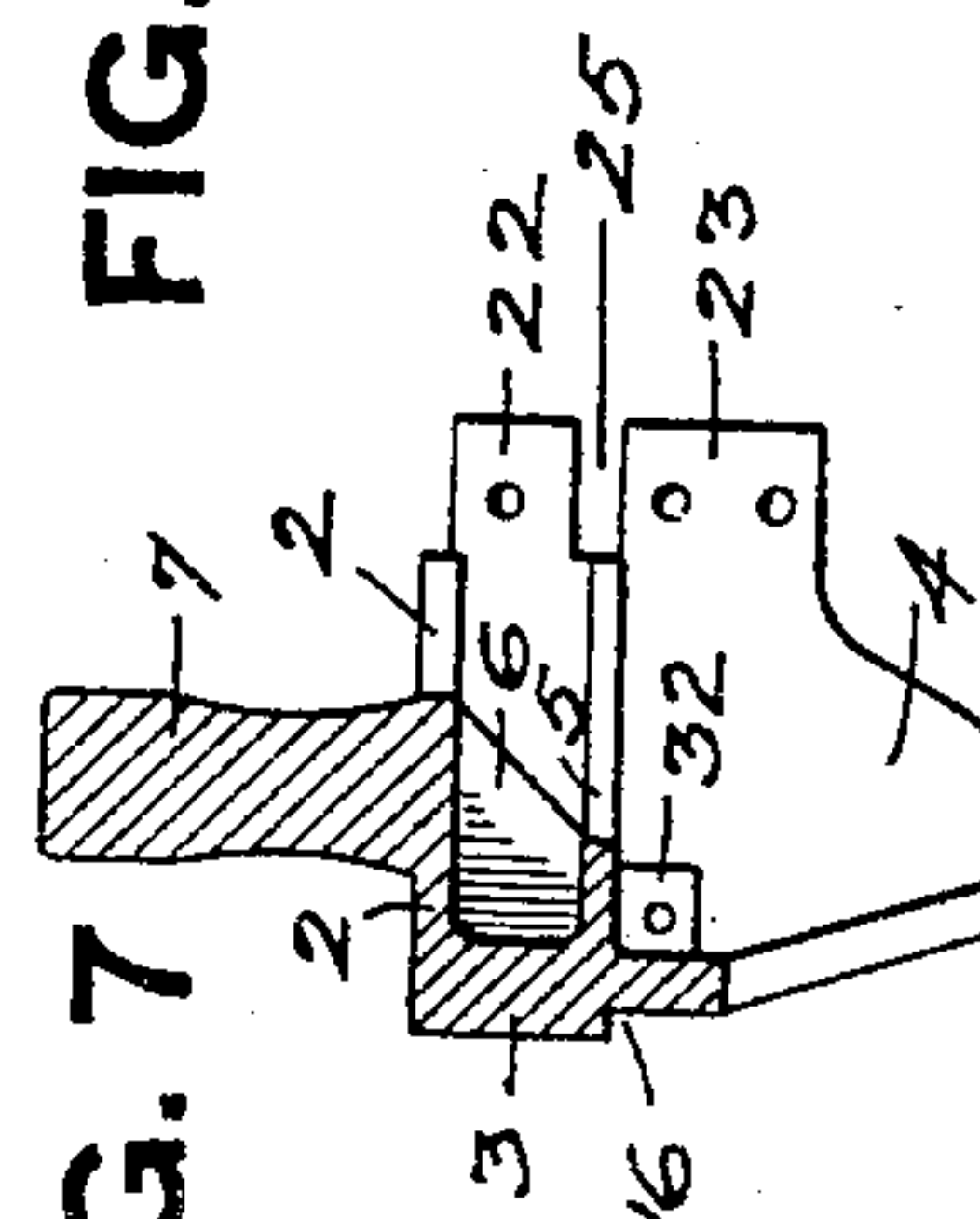


FIG. 6

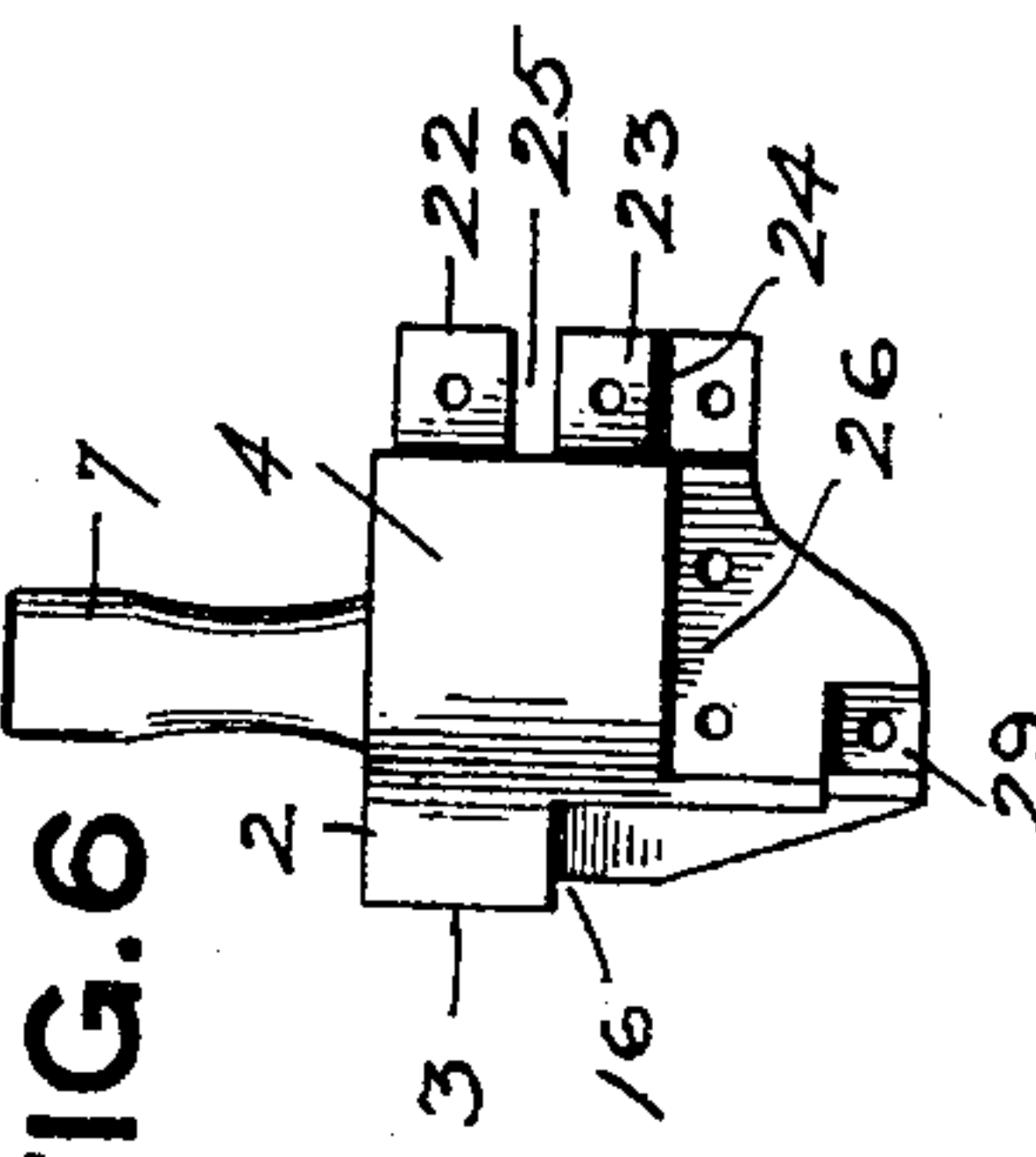


FIG. 7

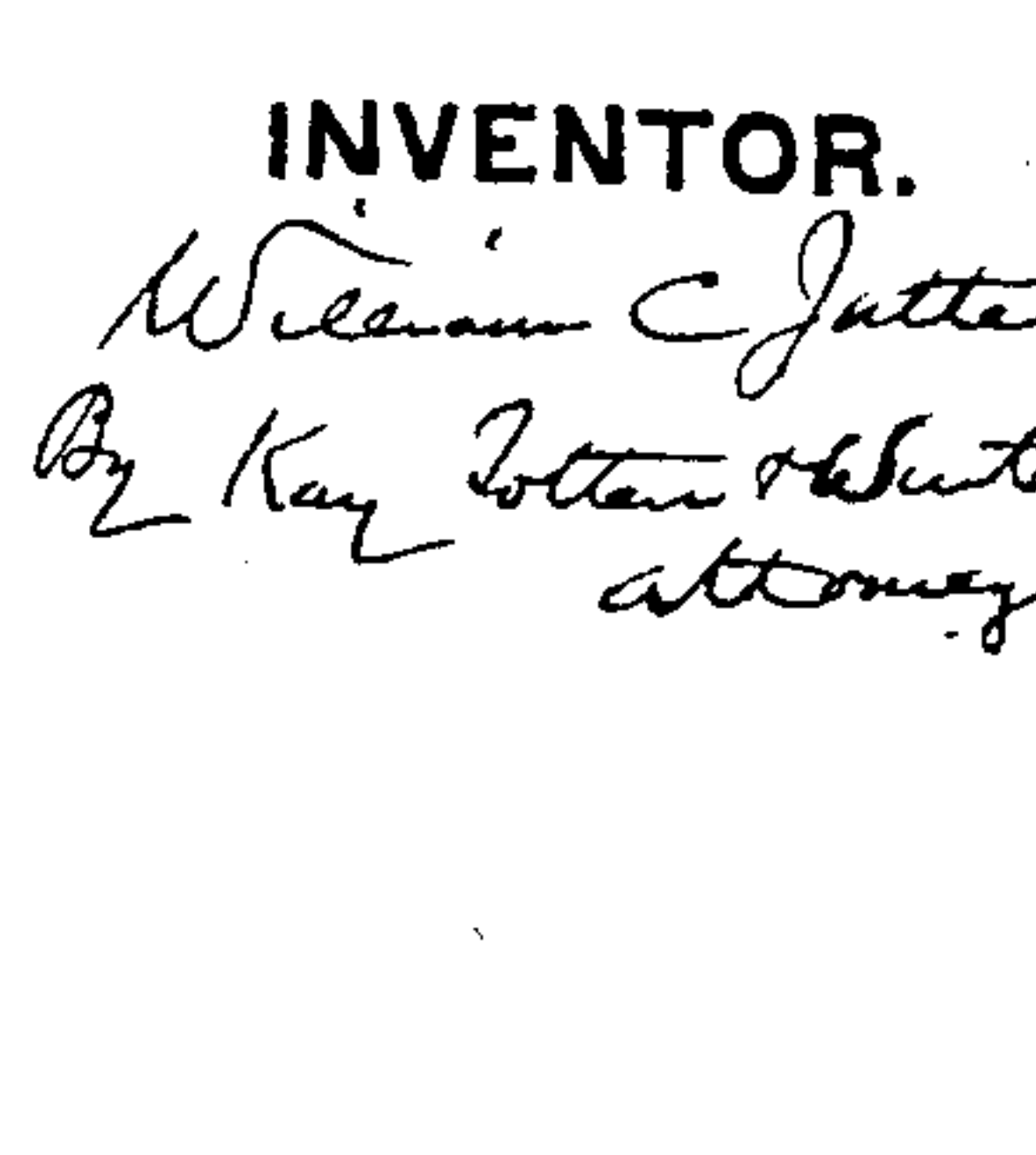


FIG. 8

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# UNITED STATES PATENT OFFICE.

WILLIAM C. JUTTE, OF PITTSBURG, PENNSYLVANIA.

## STEEL BARGE.

No. 805,468.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed November 9, 1904. Serial No. 232,032.

*To all whom it may concern:*

Be it known that I, WILLIAM C. JUTTE, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Steel Barges; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of steel barges and similar boats and vessels.

My object is to provide a barge or other boat or vessel constructed entirely of metal, preferably steel, and which is simple and cheap of construction and strong and durable.

My invention is designed especially for the construction of coal-barges and similar boats and is so shown in the drawings. Certain features, however, are not limited thereto, but can be applied to the construction of boats and vessels in general.

Coal and similar barges are now constructed entirely or mostly of wood. A few attempts have been made to construct such boats of metal; but the designs generally have not been entirely satisfactory. Boats of this character are subjected to very hard usage, and the corners especially are liable to severe injury.

My invention has for its object to so construct a barge of this character that it can be cheaply built and so that it will withstand the rough usage to which it is subjected.

The invention consists in the details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of one end of a barge constructed according to my invention. Fig. 2 is a side view of the same. Fig. 3 is a longitudinal vertical section, on an enlarged scale, taken on the line 3 3, Fig. 1. Fig. 4 is a transverse section on the line 4 4, Fig. 1. Fig. 5 is an outside view of a cast corner-reinforcing member; Fig. 6, an end view of the same. Fig. 7 is a section on the line 7 7, Fig. 5. Fig. 8 is an inside view of said casting. Fig. 9 is an outside view of a pressed-steel corner-reinforcing member; and Fig. 10 is a transverse section on the line 10 10, Fig. 9.

In the drawings I have shown only one end of the barge, Fig. 1 representing practically one-fourth of the entire length of the barge. Inasmuch as the remainder of the barge is only a duplication of the parts shown, the entire barge is not illustrated.

The barge illustrated is constructed entirely of metal, preferably steel, and is built up primarily of commercial rolled beams or

bars and plates, the only exception being the corner-reinforcing member, which is either a pressed-steel shape or a casting. Inasmuch as the corners of barges are especially liable to injury, my design has aimed to secure great strength at the corners. I accordingly place at each corner a reinforcing member 1, such as the casting shown in Figs. 5 to 8, or the pressed shape shown in Figs. 9 and 10. Each of the castings shown in Figs. 5 to 8 comprises a top horizontal flange or web 2, a side vertical flange or web 3, and an end vertical flange or web 4, these flanges forming the top, side, and end faces of the corners of the barge. This casting is strengthened by means of a horizontally-arranged inwardly-projecting flange or web 5 and transverse vertically-arranged webs 6, which extend between the web 5 and the top flange or web 2 of the casting. This casting is much longer in the longitudinal direction of the barge than in the transverse direction thereof, and the top and side webs 2 and 3 are given the contour shown in Fig. 1, so as to give a slight narrowing or tapering at the extreme forward end of the barge. The casting is made much deeper at its forward end than its rear end in order to give additional strength at the extreme corners thereof. Check-posts 7 are cast integral with the top flange 2.

The pressed corner-reinforcing member shown in Figs. 9 and 10 is practically the same as the casting shown in Figs. 5 to 8. It is of the same general shape; but the top flange 2 is slightly narrower and is notched for the passage of the wooden check-posts 7<sup>a</sup>, the latter being secured in place by bolts passing through the side web 3. The horizontal strengthening-flange is formed by an angle-bar 5<sup>a</sup>, riveted to the side web 3, and it projects into notches cut into the wooden check-posts. The transverse vertical webs 6 are omitted.

The side and ends of the barge are built up of commercial rolled beams and flat plates, and the aim is to connect these parts to each other and to the corner-reinforcing members, so as to leave a perfectly smooth or flush outer surface. The top member of the barge sides consists of an angle-shaped beam 8, having the top inwardly-projecting flange 9 and the downwardly-projecting web 10, the lower edge of the latter being offset inwardly, as at 11, to provide a rabbet or recess for receiving the upper edge of the side plates 12, the offset or rabbet 11 being of the thickness of the



side plates, so that the outer face of the side plates will be flush with the outer face of the web 10 of the top member. This top member 8 can conveniently be formed by taking  
 5 a rolled channel-beam and bending one of the flanges parallel with its web, thus securing the offset 11. The rear end of the corner casting or pressed reinforcing member has its  
 10 outer and upper faces recessed or offset inwardly to receive the end of the side beam 8, these recesses being shown at 13, 14, and 15, respectively, the recess 13 being of a depth corresponding to the top flange 9 of the side beam, the recess 14 of a depth corresponding  
 15 to the thickness of the web 10 of the side beam, and the recess 15 of a depth corresponding with the inward projection of the offset portion 11 of the side beam. The lower edge of the side flange 3 of the corner member is  
 20 also rabbeted or offset inwardly, as at 16, on a line with the upper edge of the offset 11 of the side beam. This offset portion 16 is equal to the thickness of the side plates, and the upper edges of the side plates are riveted to  
 25 said offset portion.

The end of the barge has a top member composed of a commercial channel-beam 18, arranged with its flanges projecting inwardly, and another beam 19, located just below the  
 30 channel-beam 8 and being of the construction of the side top member 8—that is, of general angle form—having a top flange projecting inwardly and having the lower edge of its web offset inwardly, as at 20, so that the up-  
 35 per edge of the end plate 21 can be secured thereto with its outer face flush with the outer face of the web of the beam 19. This beam 19 also can conveniently be formed by bending one flange of a commercial channel-beam  
 40 parallel with its web.

The corner-reinforcing member has its end portion 4 provided with a pair of projections 22 and 23, located slightly inside of the outer face of the end flange 4 of said member. The  
 45 projection 22 fits between the flanges of the channel-beam 18 and has the latter riveted thereto, while the projection 23 fits against the inner face of the web of the beam 19 and has the latter riveted thereto. The lower  
 50 portion of the projection 23 is offset inwardly slightly, as at 24, to receive the offset portion 20 of the beam 19. The inwardly-projecting lower flange of the beam 18 and top flange of the beam 19 are located in the space  
 55 25 between the projections 22 and 23.

The outer face of the end flange 4 of the corner-reinforcing member has its lower portion offset inwardly, as at 26, in line with the offset portion 20 of the beam 19 in order that  
 60 the end plate 21 may be secured to said member flush with the outer face thereof.

At the corners of the barge below the reinforcing members are angle-bars 28, which have their upper ends set into depressions 29,  
 65 formed in the lower edges of the corners of

the reinforcing members, and are riveted thereto, the side and end plates being riveted to the legs of these corner angles.

Extending across the end of the barge is a deck or foot plate 30, which can be conven- 70  
 75 tently secured in place by having its outer edge riveted between the inwardly-projecting bottom flange of the beam 18 and top flange of the beam 19 and its ends resting upon and riveted to the strengthening-webs 5 or 5<sup>a</sup> of  
 80 the corner-reinforcing members. The inner edge of this plate is stiffened by means of a bar or beam 31, shown as a channel-beam, extending transversely of the barge and having its ends riveted to inwardly-projecting  
 85 brackets formed as integral portions 32 of the corner-castings or formed as knee-pieces 32<sup>a</sup>, riveted to the pressed-steel corner members.

The side plates 12, end plates 21, and bot- 85  
 90 tom plates 35 of the barge are so secured together that their outer faces will be flush. Said plates are accordingly placed with their edges abutting and are secured together by means of  
 95 suitable connecting members, which also will form longitudinal strengthening-ribs. These connecting members will therefore preferably be some form of flange beams or bars and in the drawings are shown as T-bars 36, having  
 100 the leg projecting inwardly or upwardly, as the case may be, and a flange riveted to the edge of each of the abutting plates.

Near the ends of the barge I provide a transverse diaphragm or bulkhead 37, so that in case of injury to the barge end the water 100  
 105 will be confined to the end compartment. This diaphragm or bulkhead extends from side to side and is formed of metal plates 38, joined to the bottom and side plates. These plates are strengthened at the top and bot-  
 110 tom and side edges by suitable flanged bars 39 and 40, respectively, the bars 40 at the bottom and end portions being formed in short sections to fit in between the longitudinal ribs 36. This bulkhead will be further  
 115 strengthened by means of diagonally-arranged flanged bars 41, riveted to the web-plates thereof.

At other places along the barge the same will be strengthened transversely by means 115  
 120 of suitable diaphragms 42, which also are composed of metal plates 43, strengthened at their top, bottom, and side edges by flanged bars 44, and being further strengthened by diagonal flanged bars 45, riveted to said  
 125 plates. These diaphragms 42 are comparatively shallow and are connected to the sides by means of triangular gusset-plates 46, extending practically to the top of the barge sides. The end diagonal stiffening-bars 45  
 130 extend upwardly and strengthen the edges of these triangular gusset-plates.

Pump-boxes 47 will be provided at intervals along the sides of the barge, these boxes being constructed of metal plates and angle- 130



bars and extending down to the bottom of the barge.

The barge shown and described is constructed entirely of metal and mostly of commercial rolled beams, bars, and plates. The outer surfaces of the sides, bottom, and ends are entirely smooth and flush, so that the water friction is reduced to a minimum. The barge as a whole is very rigid and strong, and the corners especially are rendered very strong by the cast or pressed steel reinforcing members used at these points, so that liability to injury is reduced to a minimum.

While I have described my invention entirely with reference to barges, it will be understood that it can be applied also to other forms of boats and vessels.

What I claim is—

1. A corner-casting for barges and other boats having check-posts integral therewith.

2. A corner-reinforcing member for barges and other boats having side, end and top flanges, and inwardly-projecting strengthening or bracing webs.

3. A corner-casting for barges and other boats having side, end and top flanges, and inwardly-projecting bracing flanges or webs, and check-posts integral with the top flange of said casting.

4. A corner-casting for barges and other boats having side, end and top flanges, and having an inwardly-projecting horizontally-arranged strengthening-web, and vertically-arranged strengthening-webs joining said horizontal web and the top flange of the casting.

5. A corner-reinforcing member for barges and other boats having top, side and end flanges, and having said flanges rabbeted or offset inwardly at the end portions and lower edges in order to receive the side and end plates and leave a smooth or flush outer surface.

6. A corner-reinforcing member for barges and other boats having top, side and end flanges, and having the side and end flanges recessed or offset inwardly at the corner in order to receive a corner-fastening angle.

7. A corner-reinforcing member for barges and other boats having top, side and end flanges, and being provided at the ends and lower edges of the side and end flanges with rabbets or inwardly-offset portions for receiving the end and side plates, and being provided at the corners with a depression or inward offset of still greater depth for receiving a corner-connecting angle-bar.

8. A member for the sides and ends of barges and other boats comprising an angular-shaped beam having its flange disposed horizontally and the lower portion of its web offset toward the side on which the flange projects, whereby side and end plates can be secured thereto flush with the outer face of said beam.

9. A member for the sides and ends of barges and other boats composed of a rolled channel-

beam having one flange bent parallel to its web and offset with reference to the outer face of said web, whereby side and end plates can be secured to said flange with their outer faces flush with the outer face of the web of said beam.

10. In a barge, the combination of a side top member comprising an angle-shaped beam having an inwardly-projecting flange at its upper edge and having the lower portion of its web offset inwardly, a corner member having the end portions, its top and side faces offset inwardly or formed with depressions for receiving the end of said side top member, and side plates riveted to the offset lower edge of said side member.

11. In a barge or other boat, the combination of a side top member comprising an angle-shaped beam having an inwardly-projecting flange at its top edge and having the lower portion of its web offset inwardly, a corner member having the end portions of its top and outer faces offset inwardly to receive the end of said side top member and having the lower edge of its outer face offset inwardly on a line with the inwardly-offset portions of the side top member, and plates riveted to the offset portions of the side top member and at the lower edge of the corner member.

12. In a barge or other boat, the combination of an end beam of angle shape having an inwardly-projecting flange at its upper edge and having the lower portion of its web offset inwardly, a corner member having the end portion of its outer face offset inwardly to receive the ends of said beam, and a plate riveted to the inwardly-offset portion at the lower edge of said beam.

13. In a barge or other boat, the combination of an end top member comprising a channel-beam placed with its flanges projecting inwardly, an angle-beam located below said channel-beam with its flange secured to the lower flange of the channel-beam and having the lower portion of its web offset inwardly, and plates riveted to said inwardly-offset portion.

14. In a barge or other boat, the combination of an end top member comprising two channel-beams placed with their flanges projecting inwardly and superimposed one over the other, the lower flange of the lower beam being bent parallel to its web and offset inwardly with reference thereto, and plates riveted to said offset portion.

15. In a barge or other boat, the combination of an end top member comprising a channel-beam placed with its flanges projecting inwardly, an angle-beam located below said channel-beam with its flange secured to the lower flange of the channel-beam and having its web projecting downwardly and offset inwardly, a corner-reinforcing member having a pair of projections fitting against the inner faces of the webs of said beams, the bottom flange of the upper beam and the top flange of the lower



beam lying between said projections, and plates riveted to the offset lower edge of the lower beam.

16. In a barge or other boat, the combination of an end top member comprising a channel-beam placed with its flanges projecting inwardly, an angle-beam located below said channel-beam with its flange secured to the lower flange of the channel-beam and having its web projecting downwardly and offset inwardly at its lower edge, a corner-reinforcing member having a pair of projections offset inwardly with reference to its end face and fitting against the inner faces of said beams, the lower flange of the top beam and the upper flange of the lower beam lying in the space between said projections, and plates riveted to the offset portion at the lower edge of the lower beam and to the end-reinforcing member.

17. In a barge or similar boat, the combination of an end top member comprising a channel-beam placed with its flanges projecting inwardly, an angle-beam located below said channel-beam with its flange projecting inwardly and its web projecting downwardly and having the lower portion of its web offset inwardly, a deck-plate riveted between the contiguous flanges of said beams and projecting inwardly, and plates riveted to the lower inset portion of the lower beam.

18. In a barge or other boat, the combination of an end top member comprising a pair of flanged beams placed with their flanges projecting inwardly and one above the other, an end deck-plate riveted between the contiguous flanges of said beams, and a strengthening-bar secured to the inner edge of said deck-plate and to the sides of the barge or boat.

19. In a barge or other boat, the combination with the side and end plates, of corner-reinforcing members to which the same are riveted, said members being provided with an inwardly-projecting bracket, an end deck-plate having its outer edge secured to the ends of the barge, a transverse beam secured to the inner edge of said deck-plate and having its ends secured to the inwardly-projecting brackets of the corner members.

20. In a barge or other boat, the combination with the side and end plates, corner-reinforcing members to which the same are riveted, said members being provided with an inwardly-projecting horizontal strengthening web or flange, and an end deck-plate secured to the end plates and having its ends resting upon and secured to the strengthening-webs of said corner members.

21. In a barge or other boat, the combination with the side and end plates, of corner-

reinforcing members to which the same are secured, said members being provided with an inwardly-projecting horizontally-arranged strengthening web or flange, and an inwardly-projecting bracket, an end deck-plate secured to the end plates and having its ends resting upon and secured to the horizontal strengthening webs or flanges of the corner members, and a beam secured to the inner edge of said deck-plate and having its ends secured to the inwardly-projecting brackets of said members.

22. In a barge or other boat, the combination of corner-reinforcing members provided with an inwardly-projecting horizontally-arranged flange or web, an end member secured to said corner members and comprising two flanged bars superimposed one over the other, and an end deck-plate having its edge secured between the flanges of said end beams and having its ends resting upon and secured to the inwardly-projecting strengthening-webs of the corner members.

23. In a barge or other boat, the combination with the corner members provided with an inwardly-projecting strengthening web or flange, of an end including flanged beam having an inwardly-projecting flange, and an end deck-plate secured to the inwardly-projecting flange of the end beam and to the inwardly-projecting strengthening-flanges of the corner members.

24. In a metallic barge or other boat, the combination with side and bottom plates, of longitudinally-arranged strengthening-ribs on the inner faces of said plates, a transverse diaphragm comprising plates extending from side to side of the barge, flange-bars riveted to the top, bottom and end edges of said plates, those at the bottom and end being formed in short sections interposed between longitudinal ribs and being riveted to the bottom and side plates.

25. A metallic barge or other boat having side and bottom plates, a transverse diaphragm comprising plates and flanged bars riveted to the top and bottom edges thereof, triangular gusset-plates uniting the ends of said diaphragm with the upper portions of the side walls, and diagonal stiffening-bars riveted to the plates of the diaphragm and to the edges of said triangular gusset-plates.

In testimony whereof I, the said WILLIAM C. JUTTE, have hereunto set my hand.

WILLIAM C. JUTTE.

Witnesses:

A. S. GUFFEY,  
G. W. THOMAS.