Jan. 24, 1950 A. GOUGE 2,495,412

COLLAPSIBLE PONTOON

Filed Nov. 26, 1946 5 Sheets-Sheet 1

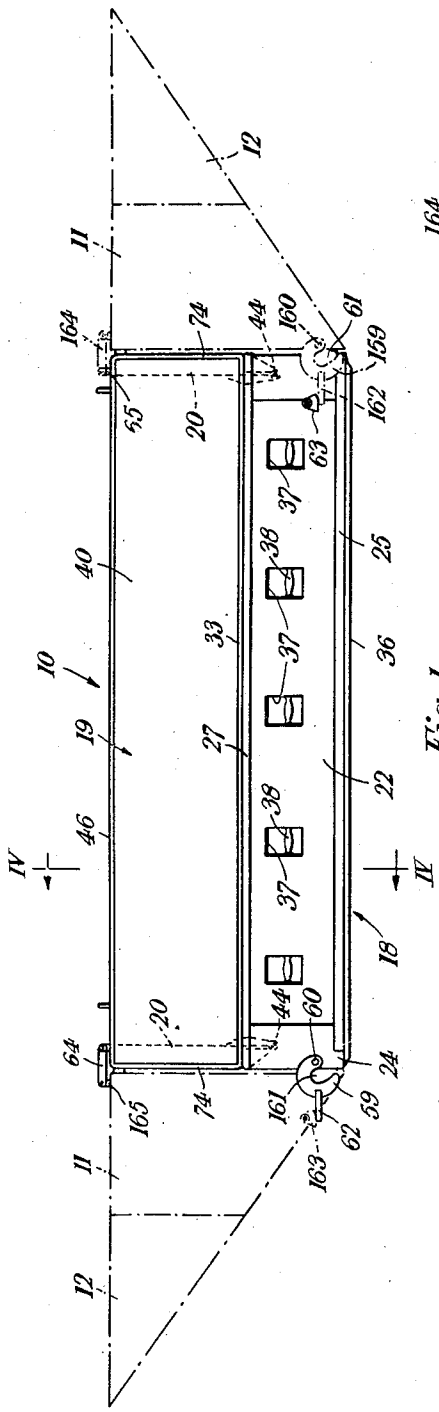


Fig. 1.

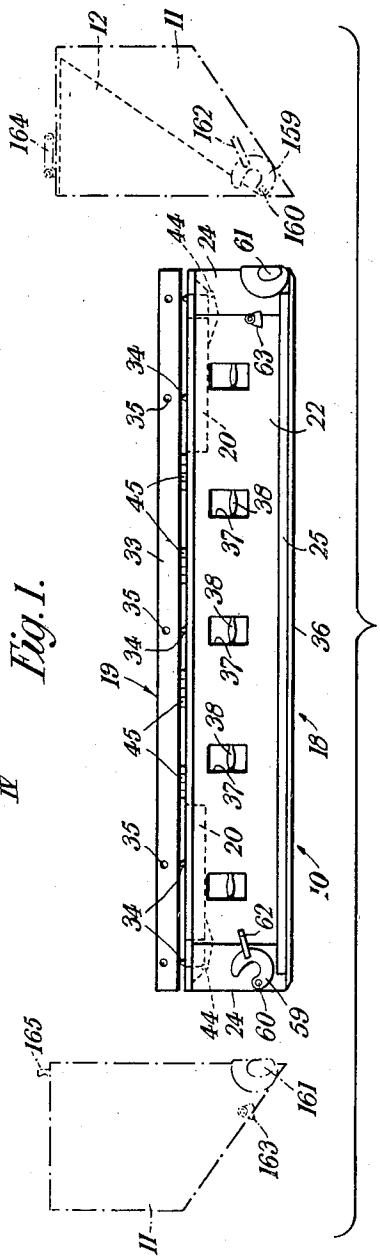


Fig. 2.

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COLLAPSIBLE PONTOON

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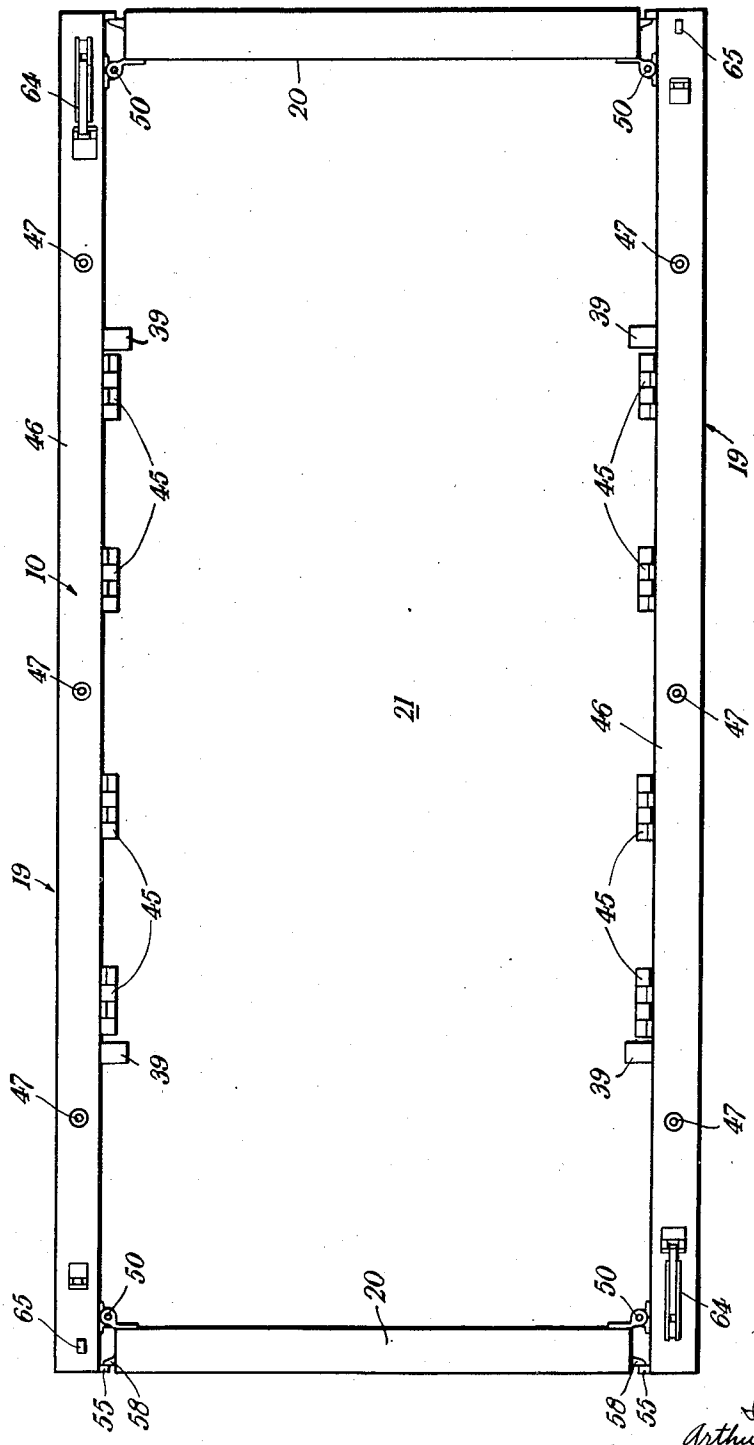


Fig. 3.

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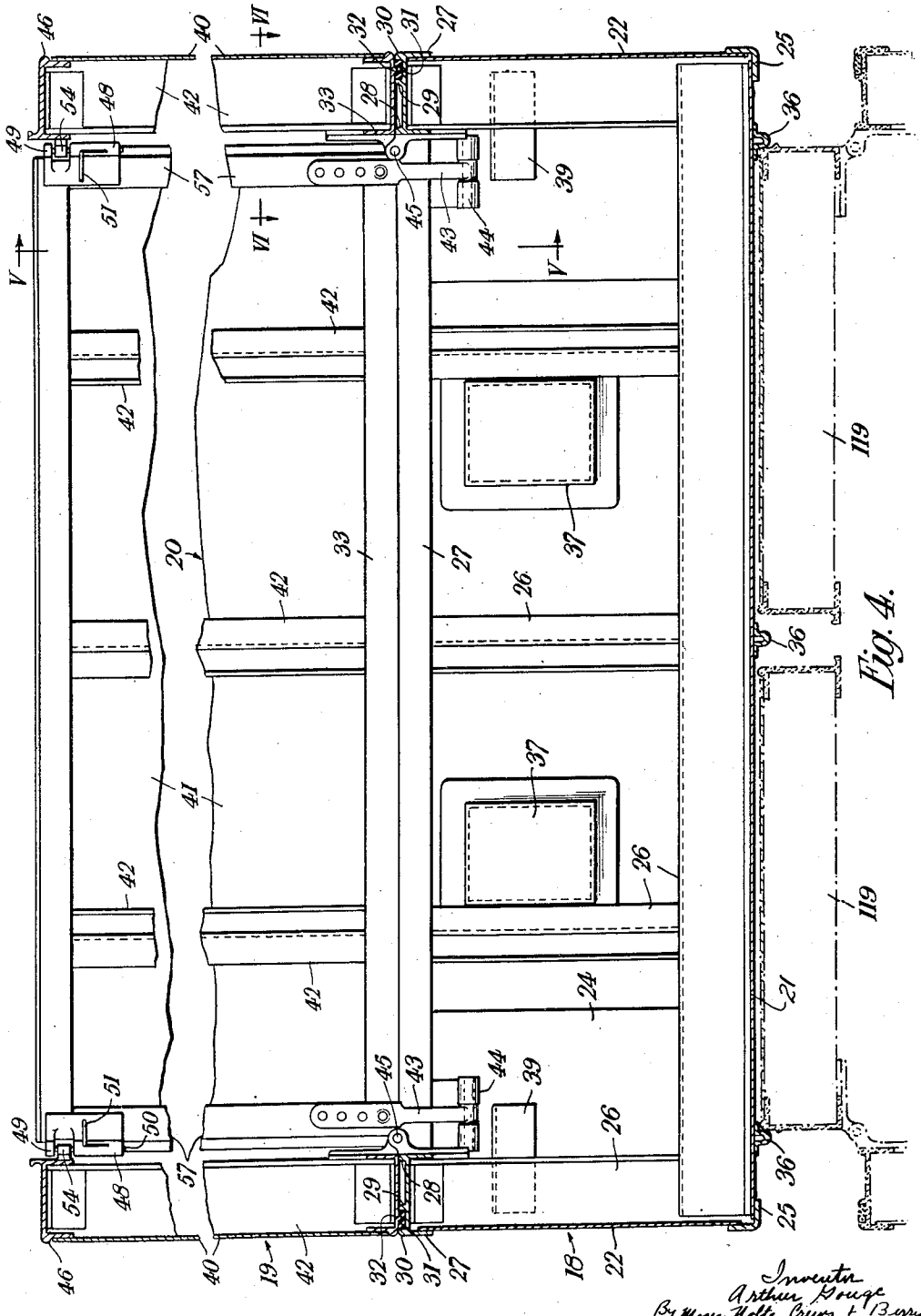


Fig. 4.

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COLLAPSIBLE PONTOON

Filed Nov. 26, 1946 5 Sheets-Sheet 4

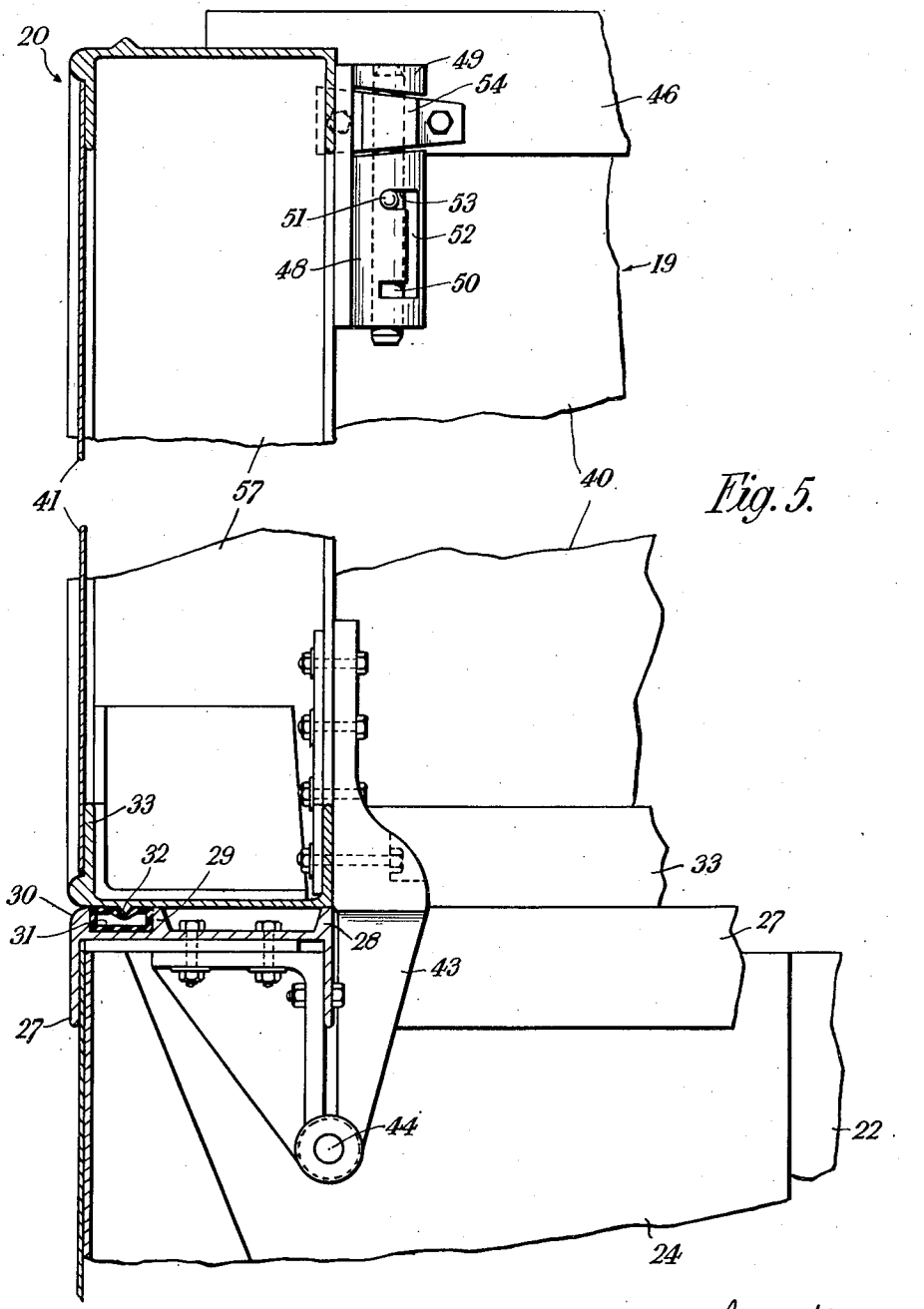


Fig. 5.

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Jan. 24, 1950 A. GOUGE 2,495,412

COLLAPSIBLE PONTOON

Filed Nov. 26, 1946 5 Sheets-Sheet 5

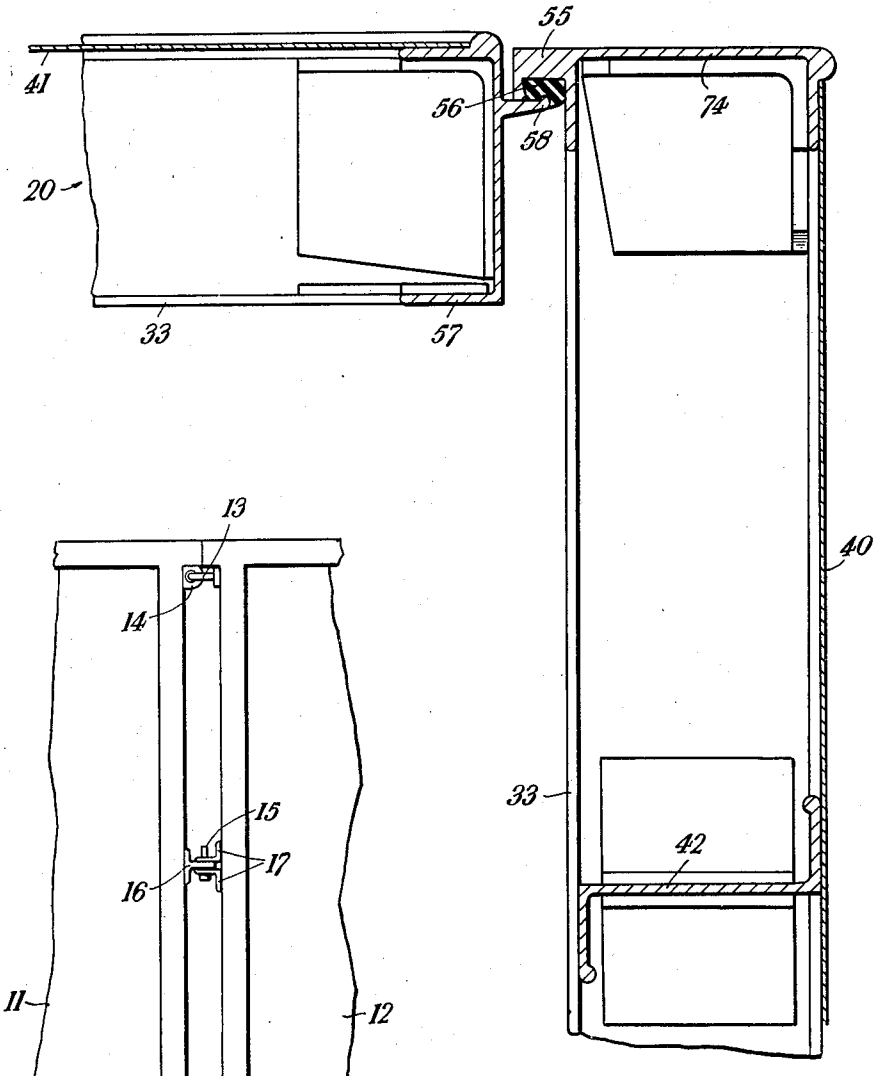


Fig. 6.

Fig. 7.

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Patented Jan. 24, 1950 2,495,412

UNITED STATES PATENT OFFICE

2,495,412

COLLAPSIBLE PONTOON

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Application November 26, 1946, Serial No. 712,386
In Great Britain December 4, 1945

5 Claims. (Cl. 114—77)

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This invention relates to pontoons for carrying bridges, e. g. bridges of the Bailey type. Such pontoons have hitherto been made of wood and they are very bulky and inconvenient, requiring large vehicles for transporting them.

The object of this invention is to provide a metal pontoon, preferably made of light alloy, which is capable of disassembly into constituent units of relatively small size, so that the pontoon can be transported in an aircraft or in a small land vehicle such as a jeep.

The metal pontoon according to the invention comprises a hollow rectangular base and folding side and end members pivoted to the upper edges of the base, said folding members being movable about their hinges between a folded position in which they lie flat on the base and a raised position in which they constitute upward extensions of the sides and ends of the base, locking means for securing the folding members in raised position, and jointing strips between the lower edges of the side and end members and the upper edges of the base, and between the adjoining vertical edges of the side and end members, which provide a water-excluding seal in the raised position of the folding members. The seal is of course necessary as when the pontoon is under load, the water level will raise substantially above the upper surface of the base.

In a preferred form of the invention, the seal is achieved as follows. The end members are hinged on downwardly extending arms to pivot about hinge axes located below the top level of the base, so that they can fold down into the base, enabling the side members afterwards to be folded down on top of them. Round the upper edges of the base runs a channel containing a rubber sealing strip, and, when the side and end members are raised to operative position, beads on these members engage this rubber strip to form the seal. The vertical joints between the side and end members are sealed by rubber strips on one pair of members (e. g. the side members) which are engaged by beads on the other pair of members (e. g. the end members). A complete seal is thus provided against entrance of water into the interior of the pontoon.

The above-mentioned box and folding members will generally constitute the centre section of a pontoon which, in known manner, comprises in addition detachable bow portions which fit on the ends of the centre section. Each bow portion according to the invention may be formed in two parts which can be nested in one another to save space when the pontoon is to be transported.

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Being relatively small the parts of the bow units need not fold, and they can be made as sheet metal watertight boxes.

One example of a pontoon according to the invention will now be described in detail, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a side elevation of the pontoon as erected for service,

Fig. 2 is a similar view, showing the bow units detached and the centre section folded for transport,

Fig. 3 is a plan view of the centre section,

Fig. 4 is an enlarged section on the line IV—IV in Fig. 1,

Figs. 5 and 6 are respectively sections, on a larger scale, on the lines V—V and VI—VI in Fig. 4, and

Fig. 7 is a detail plan view, indicating the connection between the two parts of one of the bow units.

Like reference numerals indicate like parts throughout the figures.

The pontoon is made throughout of light metal alloy, and comprises a centre section 10 and two detachable bow units. Each bow unit consists of an inner part 11 and an outer part 12. These are of sheet metal box construction suitably stiffened, and are detachable from one another. When detached, the outer part 12 can be nested within the inner part 11 as shown in Fig. 2. The two parts are joined at the bottom by pins 13 on the outer part engaging with eyes 14 on the inner part (see Fig. 7), and at the top by a pin 15 passed through registering holes in a T section 16 on the inner part and angle sections 17 on the outer part. The detachable connections between the bow units and the centre section will be later described.

The centre section consists of a hollow rectangular base 18, folding side members 19 and folding end members 20. The base is built up of a sheet metal base panel 21 (Fig. 4) sheet metal side panels 22 and sheet metal end panels 23 riveted to corner castings 24 and to angle pieces 25 running along the bottom of the base. The whole is stiffened by vertical and horizontal Z-section stiffeners 26. To the upper edges of the base are fitted channels 27 having three upstanding flanges 28, 29, 30. Two of these flanges 29, 30 are close together and accommodate a rubber sealing strip 31, which is hollow so as to permit of compression of the rubber when engaged by beads 32 on the side and end members. These beads are provided on channels 33 at the bottom faces of the side and end members which cooperate with the

base channels 27 to give a three line contact for the transmission of loads through the side and end members to the base. The seal between the lower edge of the side members and the base is shown in Fig. 4, and that between the lower edges of the end members and the base is shown on a larger scale in Fig. 5. In each case the hollow rubber strip 31 is compressed by the bead 32 on the folding member which is afforded three point contact by the flanges 28, 29, 30 on the base.

As shown in Fig. 2, upstanding spigots 34 are provided at intervals on the sides of the base to engage corresponding sockets 35 in the bottom channels 33 of the side members when the latter are in the raised position.

U-section runners 36 (Fig. 4) are provided on the undersurface of the base, and facilitate stacking of a number of centre sections. When the side members are folded down, these deeper runners engage, when the centre sections are stacked and as indicated by the chain-dotted lines in Fig. 4, outside and between the folded over side members 119 of the next lower centre section in the stack.

At intervals portions are cut out of the sides and ends of the base, and inwardly convex castings 37 carrying handles 38 are riveted to the base behind these openings. The handles 38 are flush with the sheet metal surface of the base.

Inside the base are stops 39, fixed to the vertical stiffeners 26, for supporting the end members 20 when folded down, the folded down side members 19 resting on top of the end members and being secured in folded position by suitable latches (not shown).

The side and end members are constituted each by a channel section framework, the bottom member 33 of which has already been referred to, supporting a sheet metal panel, the side panels being indicated at 40 and the end panels at 41. The side and end members are stiffened by Z-section stiffeners 42. The end members 20 carry downwardly extending arms 43 which are hinged at 44 to the base below the top level thereof, so that the end members can fold down into the base and on to the stops 39. The hinges for the side members are shown at 45, and as already explained the side members fold down on top of the end members. The top channels 46 (Fig. 3) of the side members carry sockets 47 for locating the structure to be supported on the pontoon.

One of the locking devices for securing the side and end members together is shown in Fig. 5. The end member carries a pair of coaxial tubular fittings 48, 49. A locking bolt 50 is slidably mounted in the fitting 48, and has a pin 51 engaging a slot 52 in the fitting. By moving the pin 51 to the bottom of the slot 52, the bolt 50 can be retracted, so permitting an apertured piece 54, carried by the side member 19, to come into position between the fittings 48, 49. Then by raising the bolt 50, it can be moved to the position shown in Fig. 5 to latch the side and end members together, and retained in this position by rotating it until its pin 51 engages a lateral extension 53 of the slot 52 as shown. A locking device as shown in Fig. 5 is pivoted at each corner of the centre section.

The seal between adjoining vertical edges of the side and end members is shown in Fig. 6. Each side channel 74 of each side member has an extension 55 within which is accommodated a rubber sealing strip 56. Each side channel 57 of each end member has a projecting bead 58 which

engages and compresses the associated sealing strip 56, in the raised position of the members, to effect the seal.

At diametrically opposite corners of the base are provided hooks 59, pivoted at 60, while at the other corners are provided catches 61. The inner parts 11 of the bow section are provided with hooks 159, pivoted at 160, to cooperate with the catches 61 on the centre section, and with catches 161 to cooperate with the hooks 59 on the centre section. The hooks 59, 159 are provided with handles 62, 162 respectively. To secure the bottom ends of the inner parts of the bow units to the centre section, the hooks 59, 159 are swung by their handles 62, 162 from the position of Fig. 2 to that of Fig. 1, engaging over the cooperating catches 161, 61 respectively. To engage the hooks 59 with their catches 161, pivoted latches 163 on the bow units must be moved aside, and similar latches 63 are provided on the centre section in association with the catches 61. The latches 63, 163 fall, as shown, by gravity above the handles 162, 62 respectively, so preventing accidental disengagement of the hooks from their respective catches.

At deck level, i. e. at the level of the top of the raised end members, the bow units are coupled to the centre section by pivoted latches 64, at diametrically opposite corners of the section engaging catches 165 on the bow units, and by engagement of catches 65 at the other corners of the centre section by pivoted latches 164 on the bow units.

What I claim as my invention and desire to secure by Letters Patent is:

1. A metal pontoon, comprising a hollow rectangular base having a bottom and upstanding sides and ends, each side and end of the base having at its upper edge a channel, a rubber sealing strip disposed in each channel, folding side and end members, hinges connecting the side members to the upstanding sides of the base, hinges connecting the end members to the upstanding ends of the base, said folding members being movable about their hinges between a folded position and a raised position in which they constitute upward extensions of the sides and ends of the base, a projecting bead on each of said folding members arranged to engage and bed into the associated rubber strip to provide a water-excluding seal when the folding member is in raised position, locking means for securing the folding members in raised position, and further rubber sealing strips for providing water-excluding seals at the vertical joints between the raised folding members, said strips being carried by one opposite pair of folding members and being engaged, in the raised position of said folding members, by cooperating beads on the other pair of folding members.

2. A metal pontoon, comprising a rectangular base constituted by upstanding corner sections, side and end channels joining the upper ends of said corner sections, sheet metal side and end panels secured to said corner sections and to said side and end channels, and a sheet metal bottom, each of said side and end channels having therein a rubber sealing strip, folding side and end members hinged to the base and movable from a folded to a raised position in which they constitute upward continuations of the sides and ends of the base, each of said folding members being constituted by a channel section frame faced with sheet metal each channel section frame comprising a top channel, a bottom chan-

nel and a pair of side channels, the bottom channel of each folding member having a bead for engaging, when said member is in raised position, the adjoining rubber jointing strip on the base to provide a water-excluding seal between said folding member and the base, further rubber sealing strips in the side channels on one opposite pair of folding members, the side channels of said other pair of folding members having projecting beads for engaging said further rubber sealing strips, when said folding members are raised, to provide water-excluding seals at the vertical joints between said folding members, and locking means for securing said folding members in raised position.

3. A metal pontoon as claimed in claim 2, wherein each of said rubber sealing strips is hollow.

4. A metal pontoon as claimed in claim 2, comprising U-section runners fitted to the undersurface of the base, said runners serving, when a number of the pontoons are stacked, to engage the folding members of the next lower pontoon in the stack to stabilize said stack of pontoons.

5. A metal pontoon, comprising a hollow rectangular base member having a bottom and upstanding sides and ends, folding side and end members, hinges connecting the side members to the upstanding sides of the base member, hinges connecting the end members to the upstanding ends of the base member, said folding members being movable about their hinges between a folded position and a raised position in which they constitute upward extensions of the sides and ends of the base member, locking means for securing the folding members in raised position, a plurality of sealing means for providing, in the raised position of said folding members, water-excluding joints between the lower edge of each folding member and the adjoining upper edge of the base member, each of said sealing means comprising a strip of compressible sealing material mounted in a channel on one of the two last-mentioned members and a projecting bead on the other of said latter members arranged to engage and bed into said strip when the folded member is in raised position, and further strips of compressible sealing material for providing water-excluding seals at the vertical joints between the raised folding members, said strips being carried by one opposite pair of folding members and being engaged, in the raised position of said folding members, by cooperating beads on the other pair of folding members.

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