

Dec. 23, 1969

W. R. MATTHEWS

3,485,198

BOAT WITH FLOTATION SPONSONS

Filed June 7, 1968

6 Sheets-Sheet 1

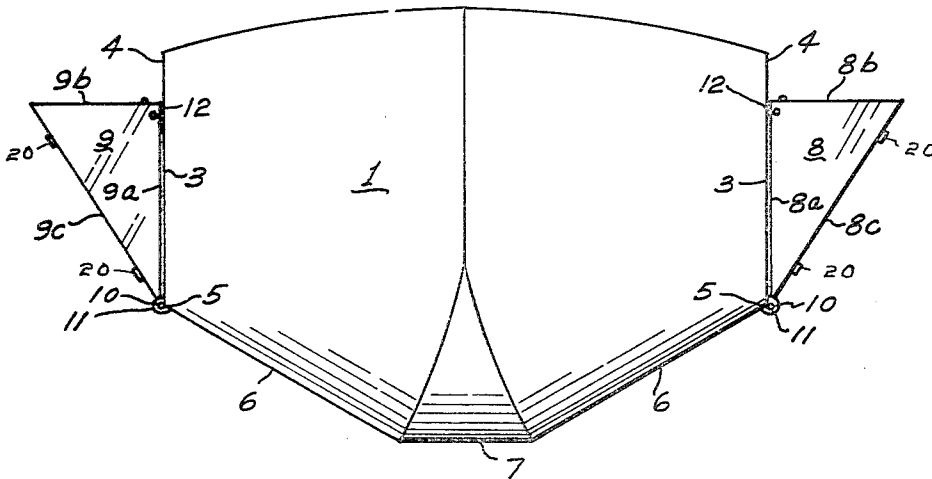


Fig. 1

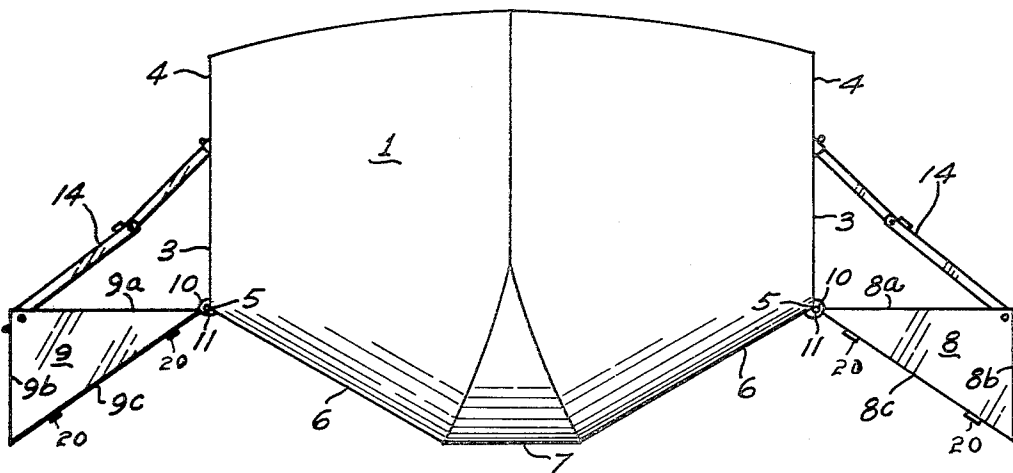


Fig. 2

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Fig. 3

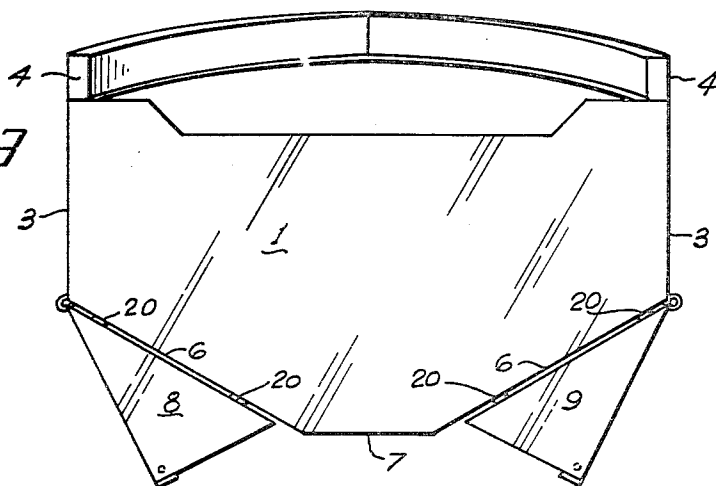
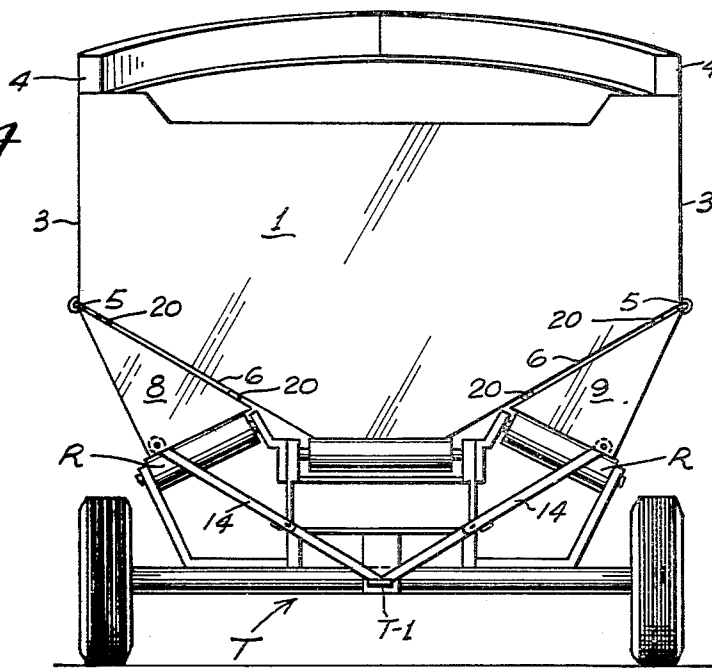


Fig. 4



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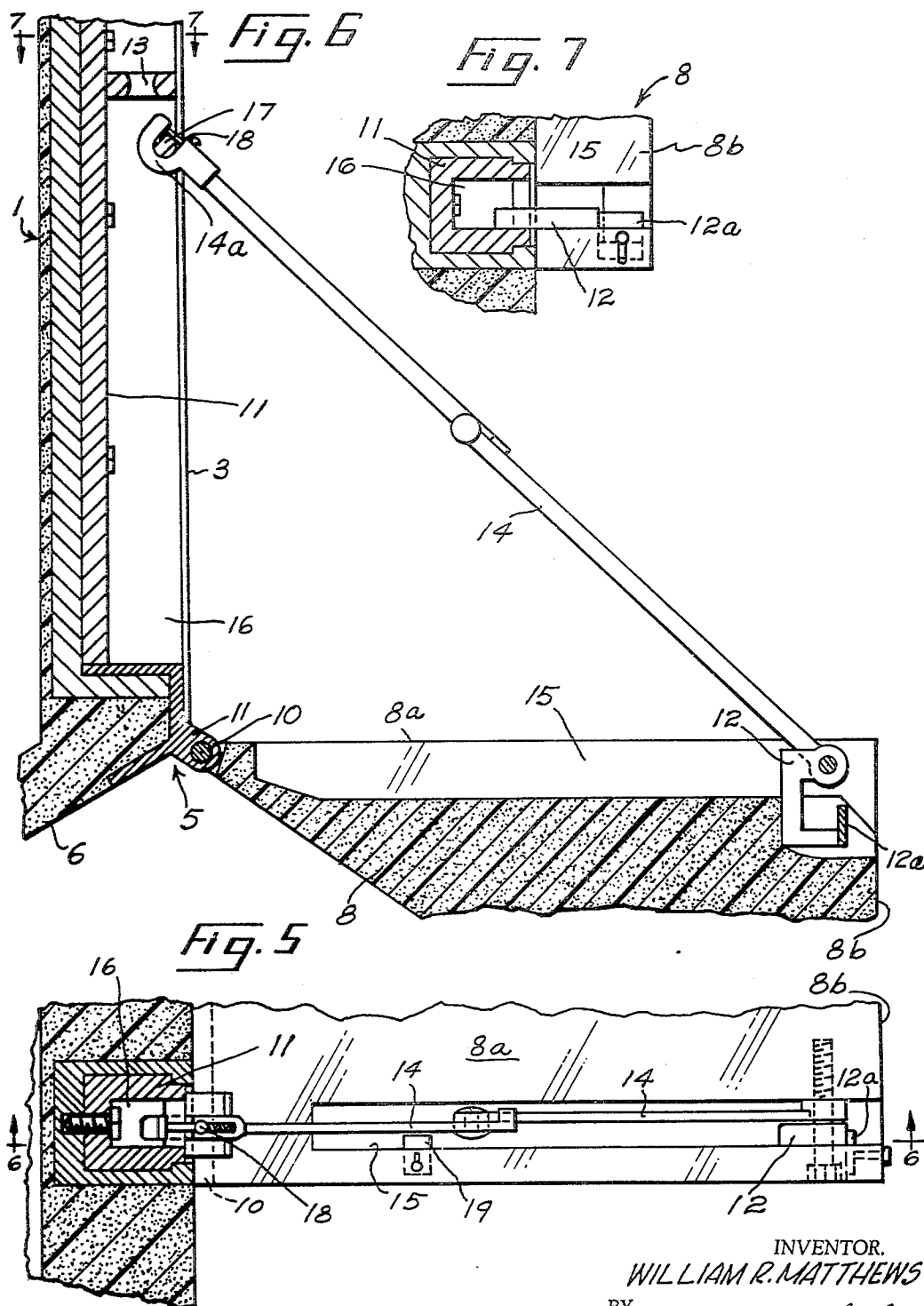
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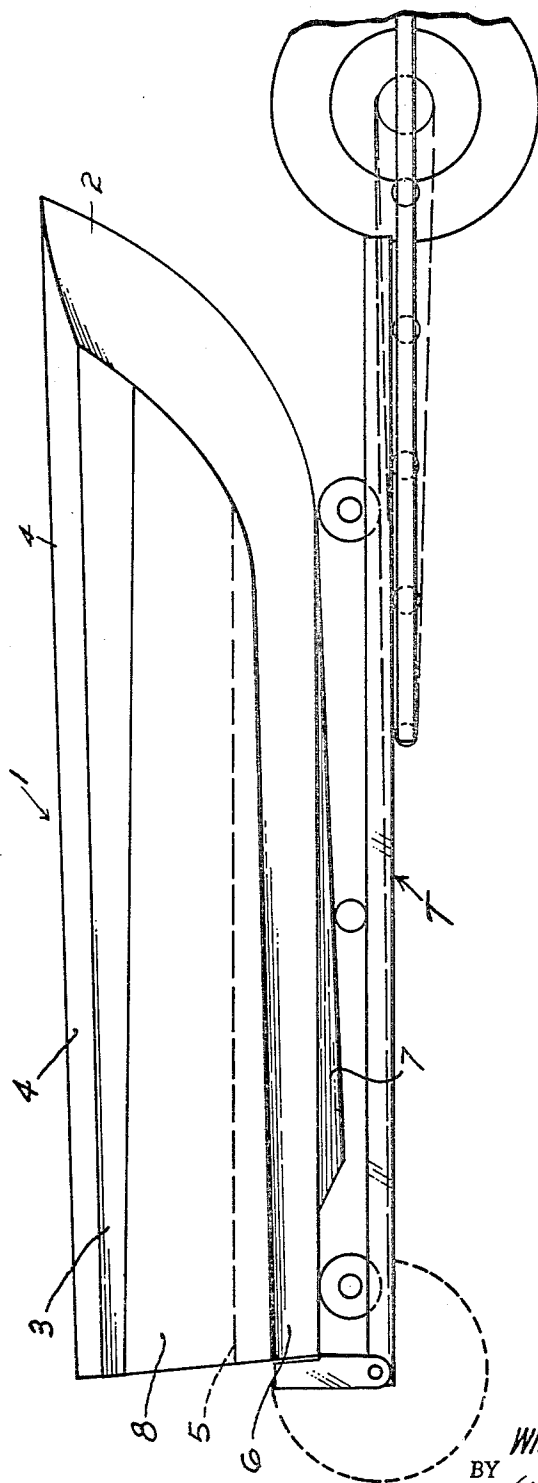


Fig. 8

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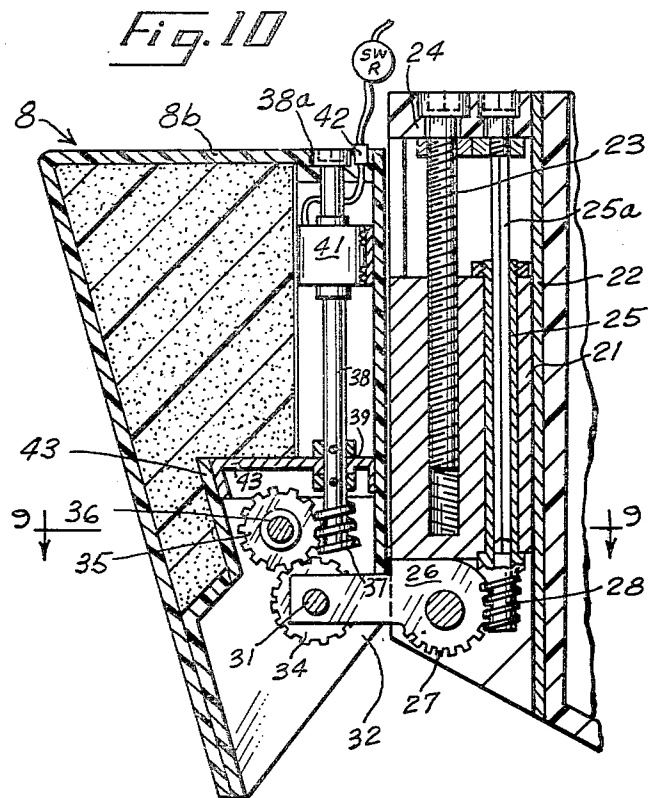
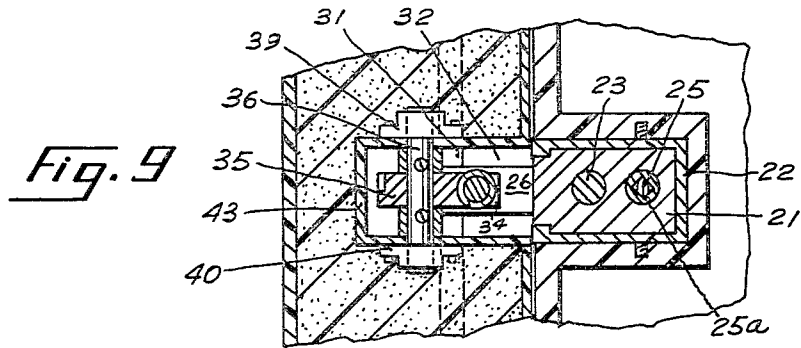
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BOAT WITH FLOTATION SPONSONS

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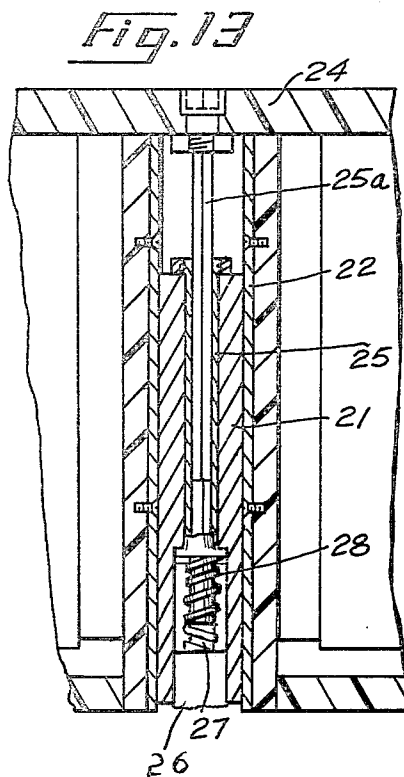
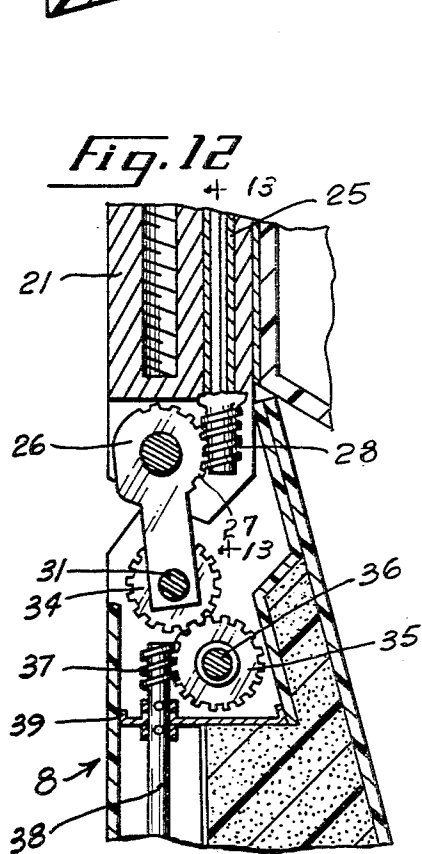
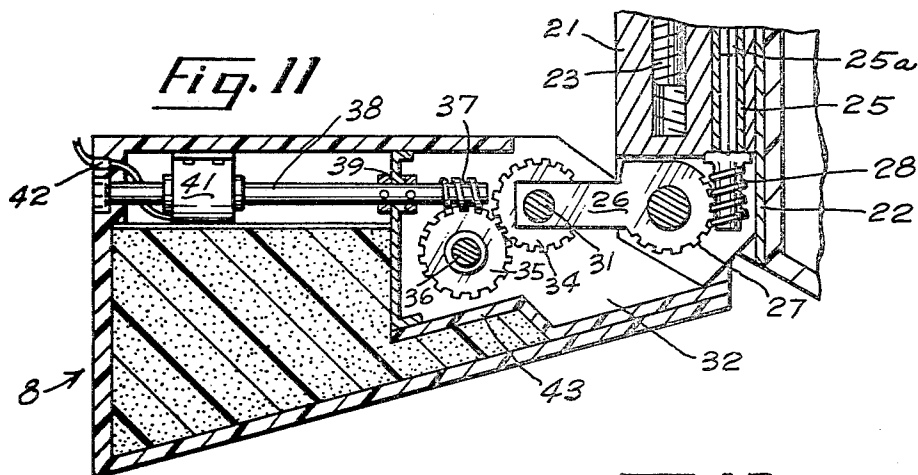
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BOAT WITH FLOTATION SPONSONS

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BOAT WITH FLOTATION SPONSONS

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U.S. Cl. 114—123

7 Claims

ABSTRACT OF THE DISCLOSURE

The boat body has substantially flat sides from the chine upward. Sponsons of generally triangular shape in cross sections are hinged to the boat substantially at the chine level. The sponsons are made considerably lighter than water and their body surface material is impervious to water so they act as floats to sustain part of the boat load when they are in the water. Each sponson has one side surface made to lie substantially flat against the side of the boat. A hinge connection to the boat is provided at the lower edge of this side surface of the sponson. A second side surface extends outward from the top edge of the first named side surface and is substantially horizontal when the first named surface is against the side of the boat. The third side surface connects the lower edge of the first named side surface to the outer edge of the second side surface. This side surface may be planar or be two or more surfaces. The attachment of sponson to boat is such that the sponson is held stationary when the first named side is against the boat and when the first named side is extended out in a generally horizontal position. The sponson can be turned down and inward farther to extend the first named side surface downward from its attachment to the boat to provide a narrowed boat-sponson assembly for highway travel. Means are provided for moving the sponsons between the three positions and for holding them against movement with respect to the boat in each position.

PURPOSE OF THE INVENTION

It is the purpose of this invention to provide a boat with flotation sponsons hinged to the boat at about the chine level and adjustable about the hinge line between a position where one side surface of the sponson is in juxtaposition to the boat side above the chine, a second position where said side surface of the sponson extends outward from the boat at about the chine level and a third position where the sponson lies below the boat chine level.

It is also a purpose of the invention to provide a boat with sponsons at the sides thereof having the characteristics set forth in the preceding paragraph wherein the sponsons are shortened to provide a water engaging guide portion shorter than the adjacent boat side walls and located alongside the forward portions of the boat side walls.

A further purpose of the invention is to provide a novel means for effecting change of position of the sponsons with respect to the boat.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention is shown in the accompanying drawings wherein:

FIG. 1 is a somewhat diagrammatic front view of a boat with flotation sponsons embodying the invention in normal running positions;

FIG. 2 is a view similar to FIG. 1 showing the sponsons pivoted outward to form lateral platforms at the sides of the boat;

FIG. 3 is a rear end view of the boat showing the sponsons in their third position against the bottom of the boat;

FIG. 4 is a rear end view of the boat showing how the boat and sponsons are carried on a boat trailer;

FIG. 5 is a fragmentary plan sectional view looking down on one of the sponsons in the position shown in FIG. 2, the adjacent part of the boat being shown in section;

FIG. 6 is a sectional view taken on the line 6—6 of FIG. 5;

FIG. 7 is a detail view looking down on substantially the line 7—7 of FIG. 6, but with the sponsons raised to running position as in FIG. 1;

FIG. 8 is a side view of the boat shown in FIG. 4;

FIG. 9 is a fragmentary sectional view taken substantially on the line 9—9 of FIG. 10 showing a modified sponson moving and holding mechanism for putting the sponsons in any one of their three positions;

FIG. 10 is a sectional view transversely of a sponson further showing the modified mechanism;

FIG. 11 is a view similar to FIG. 10 showing the sponson further showing the modified mechanism;

FIG. 11 is a view similar to FIG. 10 showing the sponson in position to provide a side platform on the boat at substantially water level;

FIG. 12 is a sectional view similar to FIG. 10 showing the sponson lowered to hang below the boat chine; and

FIG. 13 is a section view taken on the line 13—13 of FIG. 12.

Referring now to the drawings the invention embodies a boat hull 1 with substantial planar upright side walls portion 3 and having combings 4 at the top thereof and chines 5 at the lower edges of the side walls. Below and inward of the chines 5 the bottom walls 6 of the hull 1 converge downwardly toward the keel 7.

The side wall portions 3 preferably are planar over most of the length of the boat but the bow 2 of the hull may be gradually narrowed toward the front as customary. Two sponsons 8 and 9 are essentially right and left hand members of like size and construction. The right hand sponson 8 has a planar surface 8a which, in normal operation of the boat, is secured alongside the surface of the right hand sidewall portion 3. A similar surface 9a on the left hand sponson 9 is normally secured alongside the surface of the left hand side wall portion 3 of the hull. The sponson 8 has a second planar surface 8b which meets the surface 8a at an angle such that when the surface 8a is against the right hand boat position 3 the surface 8b is substantially horizontal. A corresponding surface 9b is provided on the sponson 9. The sponson surfaces 8c and 9c extend from the lower edges of the surfaces 8a and 9a to the outer edges of the surface 8b and 9b. Since these surfaces 8c and 9c are in engagement with the water when the boat is afloat their shapes are primarily made to provide the most useful functions in that environment. As illustrated in the drawings these surfaces 8c may be substantially planar (FIGS. 1—3), or composed of a plurality of surfaces (FIGS. 10—12). The sponsons 8 and 9 are mounted in the same fashion so a specific description of the mounting of one will suffice for both.

The sponson 8 carries a hinge pin 10 along the lower end of the surface 8a. This hinge pin is mounted to guide blocks 11 carried by the boat. In its most simple concept the hinge pin 10 serves merely as a hinge. The sponsons 8 and 9 are held with their fiat surfaces 8a and 9a against the boat by hooks 12 on the sponson and sockets 13 in the guide blocks 11. These hooks are shown in detail in FIGS. 6 and 7. The sole function of the hook 12 is to lock the sponson against swinging outward. A

latch 12a keeps the hook 12 in either of its two positions.

When a sponson is swung out to the position indicated in FIG. 2, conventional braces 14 secured in slots 15 in the sponson are hooked into recesses 16 in the guide block 11 and serve to keep the sponson from swinging up or down about its pivot at the hinge pin 10. The hook 14a on each brace is reasonably attached to a cross pin 17 in each recess 16 by a manually releasable latch 18. The braces 14 can be folded into the slots 15 and secured therein by slide latches 19 of a conventional nature.

When the sponsons are allowed to swing downwardly as they will tend to do if the braces 14 are left in the slots 15, they can be swung further in as shown in FIGS. 3 and 4 and supported on a trailer in the manner illustrated in FIG. 4. The braces 14 can be used here to secure the boat against rocking on trailer T by providing rollers R on the trailer T to engage the surfaces 8b and swinging the braces 14 to the position shown in FIG. 4 where the hooks 14a are secured to eye members T-1 provided on the trailer T.

The foregoing description of the most simple form of my invention shows that sponsons on a boat attached in the manner described can serve three functions very well. In the position of FIG. 1 they function to broaden the boat and to provide flotation force at the sides which is the primary function of sponsons. The flotation is enhanced by utilizing very light materials in the sponsons such as magnesium metal in the structural parts and aluminum for the hinge pin 10. The sponsons may be hollow and surfaced with the surfacing described in my Patent No. 3,439,366, dated Apr. 22, 1969 for Boat Construction. Any light weight material of adequate strength can be used for the sponsons. The hinge and lock arrangement makes it possible to use the sponsons as in FIG. 2 a lower side walks when the boat is tied up or anchored, as a place substantially at water level for ease in getting into and out of the water. In the lowermost position the sponsons do not increase the boat width and they do provide stabilizing supports at the sides of the boat. Cushion strips indicated at 20 in FIGS. 3 and 4 protect the hull surface. These strips are on the sponson and should be made of resilient material such as rubber or a plastic resin composition so they will not mar the surface finish of the hull.

In the modified construction shown in FIGS. 8-13 an additional feature is added to the invention whereby the sponsons are mounted for movement up and down with respect to the boat. Also in this modification the guide-block sponson assembly is such that it adds a further safety means to keep the sponsons in any position to which they are adjusted.

In these figures the guide blocks 21 are mounted for vertical movement in tubular members 22 recessed in the hull surface. Vertical movement of each block 21 is accomplished by a screw member 23 which is journaled near its upper end in a bearing block 24 and which has its upper end accessible above the bearing for turning. The block 24 is fixed in member 22. Any suitable wrench or tool can be used to turn the screw member. The block 21 is threaded to receive the screw member 23.

Each guide block 21 has a sponson supporting bar 26 pivotally secured in the lower end thereof for angular movement between the horizontal position extending substantially horizontally outward from the guide block 21 and a depending position extending downward from the lower end of the guide block 21. To move the bar 26 between its two positions, I form worm gear teeth 27 thereon and provide a worm 28 on the lower end of an extensible shaft 25 that is journaled for rotation in the block 21 and that has an upper portion 25a that is slidable but non-rotatable in 25 and extends up through the block 24 so it can be turned by the tool. Since the angular movement of the bar 26 only needs to be slightly more

than 90 degrees the gear teeth 27 can be formed on the rounded end of the bar 26.

It will be understood that at least two guide blocks 21 are used for each sponson 8 or 9. The bars 26 in these guide blocks extend into the sponson which is slotted at 32 to receive the bars. A hinge pin 31 is fixed to the bars 26 and the sponson turns on the pin 31. For moving the sponson about the hinge pin 31 a gear 34 is fixed to the hinge pin and engages a second gear 35 which is pivoted on a shaft 36 and driven by a worm 37 on a shaft 38. The shafts 36 and 38 are rotatably mounted in bearing blocks 39 and 40 that are fixed to the sponson. Rotation of the worm 37 drives the gear 35 which causes the entire sponson to turn about the center of the gear 34 which is the axis of the hinge pin 31. Thus it is possible to turn either sponson 8 or 9 from a position against the boat surface 3 outward and downward to a position where the sponson is suspended downward from the bars 26. Because of the worm and gear drive connections used the sponsons cannot force turning of the worms 37 which thus act as locks to prevent accidental angular movement of the sponsons. The worms 37 are shown in their shafts 38 extended to the surface 8b or 9b and provided with heads 38a by which they may be rotated with a tool. Alternatively electric power can be connected to a reversible motor 41 on the shaft 38 to turn the shaft. Whenever current is available in the boat it can be connected by conventional electric cord to a connector 42 that is wired within the sponson to the motor 41. A conventional reversing switch for the motor 41 is, of course, provided in the electric cord.

The utilization of the vertically movable guide blocks 21 and their angularly adjustable bars 26 makes it possible to shift the sponsons and utilize them to the best advantage when they are against the sides 3 of the boat, when they are horizontally extended from the boat, and, when they are directed downwardly from their connection to the bars 26. In the running position the sponsons can be lowered to take more of the boat weight outwardly of the chines and give greater stabilization against tipping. Raising and lowering the blocks 21 when the sponsons are horizontally extended provides for vertical positioning of the surfaces 8a and 9a to suit the depth to which the boat hull extends in the water. Thus, when the boat is more heavily laden the sponsons could be raised to keep their "deck" surfaces out of the water. Similarly the up and down adjustment of the guide blocks 21 is used for proper distribution of the boat weight between the keel and the sponsons on the trailer.

All of the foregoing advantages are obtainable without disturbing the normal usage of the hooks 12 and the braces 14 since they connect to the guide blocks 21 in the same fashion as they connect to the fixed guide blocks 11.

The sponsons are shown in FIGS. 1-7 as being of a light weight "float" material, such as that described in my prior patent hereinbefore referred to. In FIGS. 9-13 the sponson is partially filled with such "float" material. Partitions such as 43 with suitable seals around the shafts are used to keep water out of the interior of the sponson.

Having described by invention, I claim:

1. A boat with flotation sponsons comprising:

a boat hull having substantially planar upright side wall portions;

a sponson of generally triangular shape alongside each side wall portion and having a pivotal connection thereto enabling the sponson to swing from a first position where it is against the side wall portion outwardly and downwardly until it is below said side wall portion;

manually operable means on the sponson and the corresponding side wall portion for securing the sponson against pivotal movement away from the first named position;

means carried by each sponson operable to hold the sponson in a second position where the sponson

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surface that fits against the adjacent side wall portion in the first position is extended outward substantially horizontally from said adjacent side wall portion; and

each of said sponsons being further movable downward from the aforesaid second position to a third position where the sponson hangs downwardly from its pivotal connection to the side wall portion.

2. The structure defined in claim 1 wherein the boat hull has guide blocks mounted therein at points spaced apart longitudinally along said side wall portions to which the said sponsons are connected.

3. The structure defined in claim 2 wherein the guide blocks are vertically adjustable in the hull.

4. The structure defined in claim 1 wherein the second named means comprises a worm and a gear drive connection in the sponson operable to swing the sponson from the aforesaid first position to the aforesaid second position.

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5. The structure defined in claim 4 wherein said worm and gear drive connection is also operable to swing the sponson into a depending position beneath the side wall portion.

6. The structure defined in claim 1 wherein the sponsons have their rear ends terminating forwardly of the rear end of the boat hull.

7. The structure defined in claim 1 combined with means to shift the said pivotal connection up and down with respect to the boat hull.

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