May 26, 1964 W. L. BOYINGTON ETAL 3,134,113

PONTOON BOAT

Filed June 9, 1961

Fig. 1

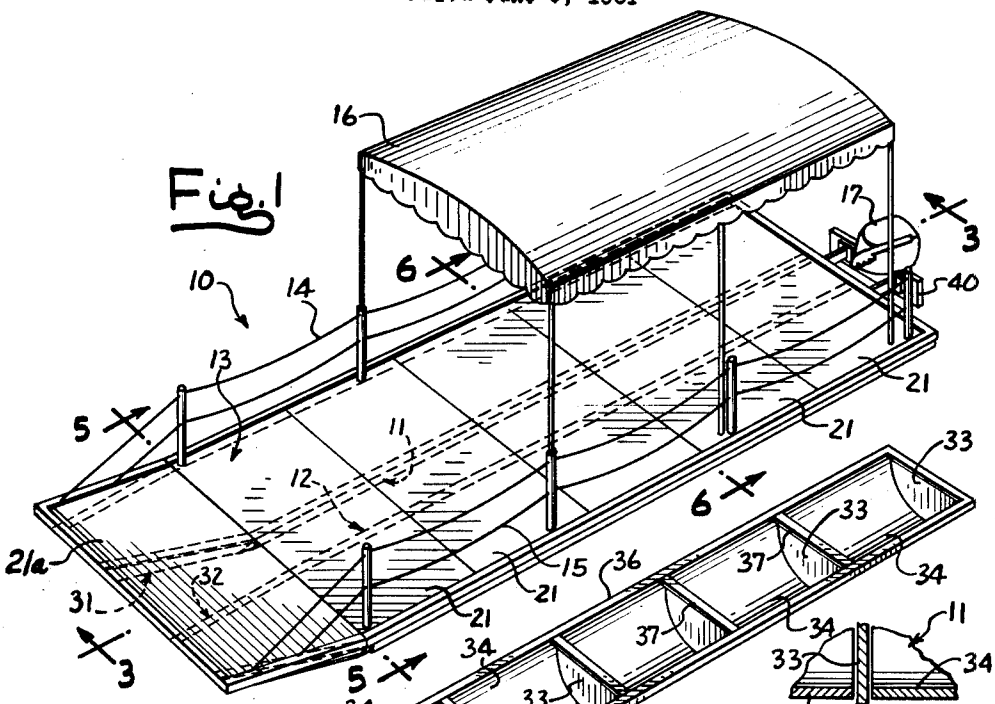


Fig. 2

Fig. 4a

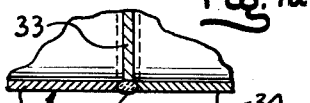


Fig. 4b

Fig. 3

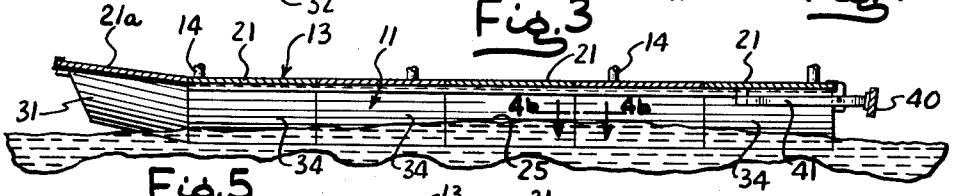


Fig. 5

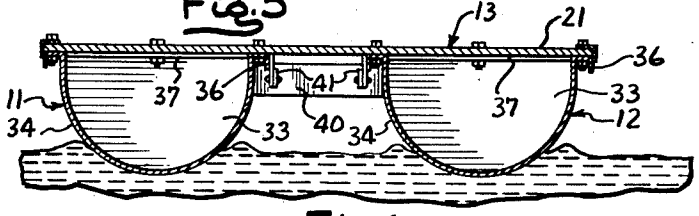
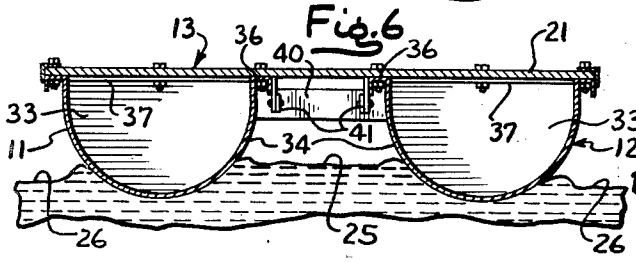


Fig. 6



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United States Patent Office 3,134,113 Patented May 26, 1964

3,134,113

PONTOON BOAT

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Filed June 9, 1961, Ser. No. 116,117
2 Claims. (Cl. 9—6)

The present invention relates generally to water craft and concerns, more particularly, a pontoon type boat.

It is an object of the invention to provide an improved pontoon boat having superior performance and handling characteristics. More specifically, it is an object to provide a boat of this type which exhibits excellent steering stability at all speeds, and which develops a greater speed with a motor of given horsepower than standard boats of this type. Steering stability refers to the ability to stay on a straight course as well as make smooth, flat turns at full throttle within a short turning radius. Moreover, full maneuverability is retained at slow docking or landing speeds.

A related object is to provide a boat of the above type which is effected by wind drift to only a slight degree and, further, which is well suited for simple and convenient bow landings and loading.

A further object is to provide a boat as characterized above which is safe, as well as easy, to handle since a minimum rolling motion is encountered and since there is no tendency of the bow to nose under the water, even under relatively rough water conditions. An additional safety factor is the provision of sealed, compartmentalized pontoon hulls.

It is also an object of the invention to provide a boat of the above character which is readily adaptable for most pleasure boat usages, there being a flat deck expanse with no below-deck bilge problems. Moreover, any common type of motor including outboard, inboard, and inboard-outboard types can be readily utilized.

It is another object to provide a boat as described above which is economical to construct and maintain.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

FIGURE 1 is a perspective of a boat constructed in accordance with the present invention;

FIG. 2 is a perspective of a single one of the pontoon hulls utilized in the boat of FIG. 1;

FIG. 3 is a longitudinal section taken approximately along the line 3—3 of FIG. 1 and showing an outline of the waterline when the boat is underway;

FIGS. 4*a* and 4*b* are fragmentary sections showing the method of joining the pontoon components before and after assembly as seen through line 4—4 of FIG. 3; and

FIGS. 5 and 6 are slightly enlarged sections taken approximately along the line 5—5 and 6—6, respectively, of FIG. 1.

While the invention will be described in connection with a preferred embodiment, it will be understood that we do not intend to limit the invention to that embodiment. On the contrary, we intend to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning now to the drawings, there is shown a pontoon boat **10** constructed in accordance with the present invention and including a pair of parallel, left and right pontoons **11** and **12** which are spanned by a deck **13**. In the illustrated construction, the boat includes opposite side rails **14** and **15** and a canopy **16** mounted on the deck **13**. The exemplary boat **10** is powered by a single outboard motor **17**.

In keeping with the invention, each of the pontoons or hulls **11**, **12** is formed with a semicircular, open-topped, transverse cross section (see FIGS. 5 and 6), and the deck **13** is formed of adjacent panels **21** which sealingly close the open tops of the pontoons and hold them in rigid, spaced relation. The spacing between the opposed sides of the parallel pontoons **11**, **12** is intermediate the pontoon diameter and radius and preferably somewhat less than the diameter of the pontoon cross section. The pontoons are several times longer than their diameter, and a satisfactory length of the pontoons has been found to be approximately four to five times the center-to-center spacing of the pontoons. Stated another way, the cross sectional centers of the substantially semicircular pontoons are preferably spaced apart a distance equal to somewhat less than twice the pontoon diameter.

The above stated preferred proportions for the pontoons **11**, **12** have been experimentally determined, by trial and error methods, mainly by varying the spacing between pontoons. The theoretical reasons for the high degree of handling ease and performance of the exemplary boat **10** are not completely understood. The maximum spacing limit appears to be the more critical and usefully significant one since it limits the expansion of boat size for given pontoon diameters. However, in operating a boat of the described proportions, it is noted that the water between the spaced pontoons **11**, **12** tends to "pile up" when the boat is underway. Apparently, the water displaced to the left of the pontoon **11** and to the right of the pontoon **12** finds itself trapped between the pontoons, with the result that the water level is raised a significant amount between the pontoons as compared to the outside water level. The upward slope of water level is indicated, in a typical case, by the line **25** in FIG. 3, and FIG. 6 shows the elevation of the water level line **25** with respect to the general water level, indicated by the lines **26**.

It has been observed that this piling up of water between the spaced pontoons **11**, **12** tends to lift the boat **10** so as to reduce the outside or apparent draft when the boat is in motion. This body of elevated water also seems to exert a stabilizing influence tending to hold the boat on a true straight course. When turning, the pontoon on the inside of the turning arc skids over the piled up water so as to create an added lifting force on this pontoon. This added force appears to resist the normal tendency of a boat to "bank" when turning, and, hence, the boat **10** has been found to make smooth, flat turns even at full throttle and within a turning radius approximately equal to one and one-half times the length of the boat.

Because of the cylindrical conformation of the water engaging portions of the pontoons **11**, **12** and the relative shallow displacement of the boat, it can be seen that there is a maximum adjustment of the pontoon hulls to slight rolling motion of the boat so that virtually a constant water displacement and a uniform hull relationship to the water is maintained. With a single hull vessel such a semicylindrical construction would be impractical but, the shallow-draft, spaced pontoons **11**, **12** of the boat **10** insure complete stability even though a semicylindrical pontoon hull configuration is used. The apparently obvious expedient of increasing the spacing between the pontoons relative to their diameter to provide the largest deck area for the construction cost involved has been found unsatisfactory, however, and as previously mentioned the spacing between pontoons should not exceed the pontoon diameter in order to retain the advantageous handling qualities.

In addition to the above characteristics, it has been

found that the boat **10**, having the proportions discussed, appears to develop a greater speed from a given horsepower motor than previous designs of this type, and also that a minimum wind drift effect is experienced. Moreover, the boat **10** is subjected to only a slight rolling motion even in relatively rough, choppy water.

In carrying out the invention, frusto-conical, open-topped bow portions **31** and **32** are secured to the forward ends of the pontoons **11**, **12**, respectively, so as to constitute forwardly and upwardly extending continuations of the pontoons, and a bow-deck member **21***a* is sealed across the bow portions **31**, **32** so as to close their open tops and define an upwardly and forwardly inclined surface with respect to the remainder of the deck **13**.

While the term "frusto-conical" has been adopted as a convenient term for characterizing the shape of the bow portions **31**, **32**, in the interest of geometric accuracy a more complete description of the configuration of the bow portions requires mention of the fact that the sides of the sheets from which the portions are formed tend to flatten and stay in vertical planes. These flattened sides have upper edges disposed at an angle with respect to the longitudinal axis of the "conical" bow portions so as to support the bow-deck member **21***a* in its upwardly and forwardly inclined position. The result is to give the bow portions the appearance of being portions of tilted or oblique cones.

The bow portions **31**, **32** are relatively simple and economical to form, and it has been found that they slip easily through the water with a minimum amount of turbulence. The inclined deck member **21***a* tends to exert a camming or planing action against the water surface which avoids deck washing and spray and also resists any tendency of the boat nose **10** down even under relatively rough conditions.

The simple strong configuration of the bow portions **31**, **32** together with the flat deck member **21***a* makes it possible to land the boat **10** bow forward, and to load and unload across the member **21***a*. Bow loading is, of course, a relatively simple operation and contributes to the ease of which the boat **10** may be handled.

Pursuant to the invention, the pontoons **11**, **12** are formed by a plurality of semicircular steel bulkheads **33** alinged in parallel, spaced relation which sandwich a plurality of semicylindrical steel hull plates **34** that are disposed between the bulkheads **33** with the curved edges of the hull plates abutting the bulkheads adjacent their curved sides. In the preferred construction, the sides of the bulkheads **33** and the edges of the hull plates **34** are fused together by welding about the outside of the assembly so as to produce a single fused joint **35** (see FIGS. 4*a* and 4*b*). The relatively short length of the hull plates **34** makes them economical to form and the outside welding process contributes to the economy of construction and produces a solid secure joint.

To support the deck panels **21**, the straight edges of the hull plates **34** and the straight edges of the bulkheads **33** are bent to define flanges **36** and **37**, respectively, which lie in substantially the same plane. The deck panels **21**, preferably formed of marine plywood, are disposed flatly on the flanges **36**, **37** and are bolted directly thereto. Preferably, calking is applied between the deck panels **21** and the flanges **36**, **37** so as to form a plurality of watertight compartments through the length of the pontoons **11**, **12**. This economical construction produces not only a particularly efficient pontoon configuration but also a very safe construction because of the compartmentalized, watertight compartments within the pontoons. The completely sealed pontoons **11**, **12** eliminate the problems accompanying the provision of a bilge. The

boat readily accommodates all-weather deck houses or the like as well as the light canopy shown in FIG. 1.

In practical embodiments of the invention, hull plates **34** made of 14 gauge steel have been rolled in four-foot lengths on an 18 inch radius. Plywood deck panels **21** of either eight or ten foot lengths have defined the boat width, and the pontoons have been located sufficiently inboard of the panel ends to bring the spacing between pontoons within the desired range. Overall boat lengths of 24 to 28 feet have proven satisfactory.

For supporting the motor **17**, a bracket **40** is secured to a pair of rearwardly extending support members **41** which are mounted on the opposed flanges **36** on the respective pontoons **11**, **12**. The motor **17** is clamped on the bracket **40** in the usual manner. Alternatively, two outboard motors can be mounted at the rear of the boat **10** on an extended bracket with one motor behind either pontoon, or the compartments defined by the rearwardmost hull plates **34** and their sandwiching bulkheads **33** in each of the pontoons **11**, **12** can be used to enclose an inboard or inboard-outboard type motors to supply power for the boat **10**.

A further feature illustrating the complete adaptability of the boat **10** is the fact that the substantially flat deck **13** is well suited for virtually any type of superstructure.

We claim as our invention:

1. In a pontoon boat, a pair of laterally spaced elongated pontoons each comprising, in combination, a plurality of semicircular bulkheads alined in parallel spaced relation, and a plurality of semicylindrical hull plates disposed between said bulkheads with their curved edges abutting the bulkheads adjacent the curved sides of the bulkheads so that each hull plate is sandwiched between a pair of bulkheads, said curved sides and curved edges being fused together, the straight edges of said bulkheads and said hull plates being bent to define flanges lying substantially in the same plane, and a plurality of deck plates spanning said pair of pontoons and disposed flatly on said flanges of each pontoon and being secured thereto for completing a series of watertight compartments and to define a deck.

2. In a pontoon boat, a pair of laterally spaced pontoons each comprising, in combination, a plurality of semicircular bulkheads alined in parallel spaced relation, and a plurality of semicylindrical hull plates disposed between said bulkheads with their curved edges abutting the bulkheads adjacent the curved sides of the bulkheads so that each hull plate is sandwiched between a pair of bulkheads, and a plurality of deck plates spanning said pair of pontoons and disposed flatly over the straight edges of said bulkheads and hull plates and being secured thereto for completing a series of watertight compartments and to define a deck.

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