Sept. 5, 1961 J. W. LOVE 2,998,798

MANUALLY PROPELLED WATERCRAFT

Filed July 18, 1960 2 Sheets-Sheet 1

FIG. 2.

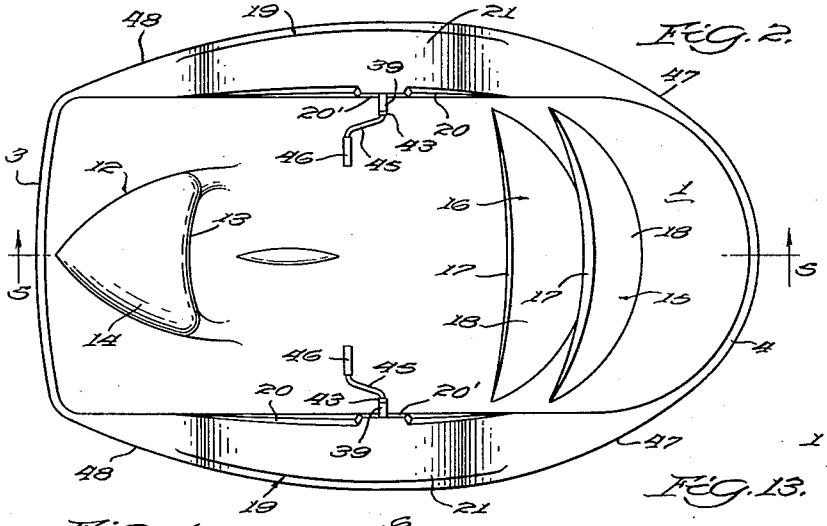


FIG. 13.

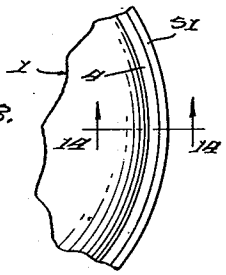


FIG. 1.

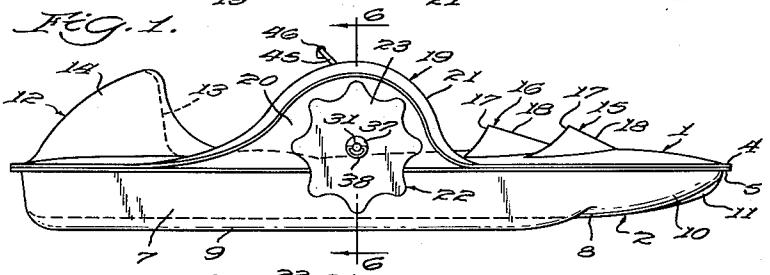


FIG. 3.

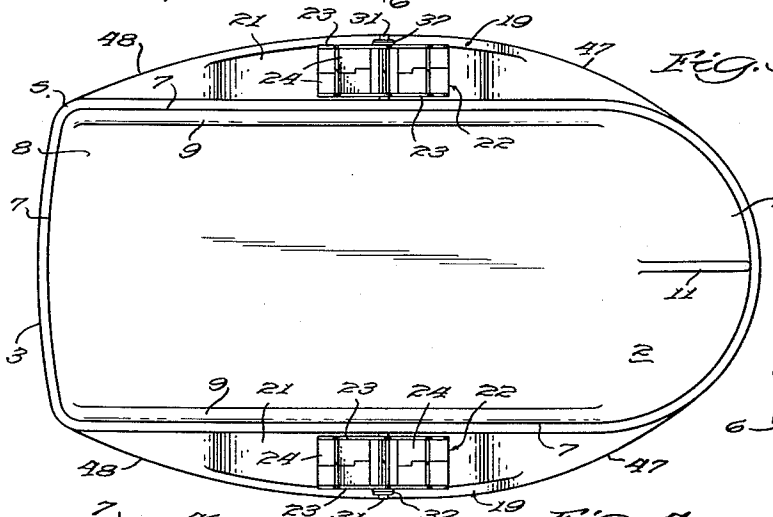


FIG. 14.

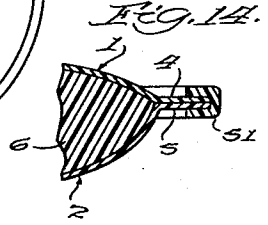
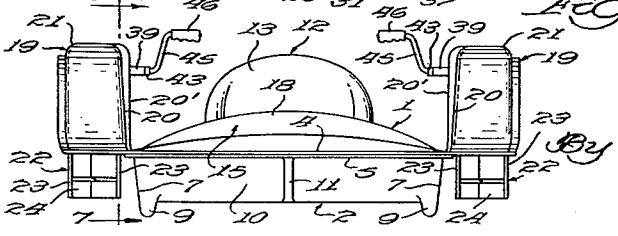


FIG. 4.



Inventor:
John W. Love.

By Harold J. LaVesconte
Atty.

Sept. 5, 1961 J. W. LOVE 2,998,798

MANUALLY PROPELLED WATERCRAFT

Filed July 18, 1960 2 Sheets-Sheet 2

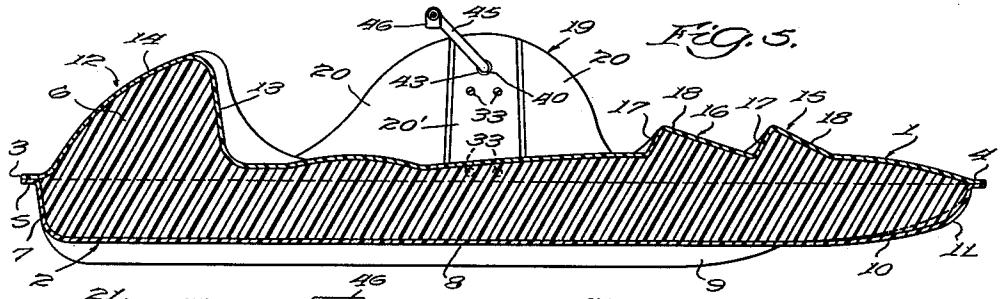


Fig. 5.

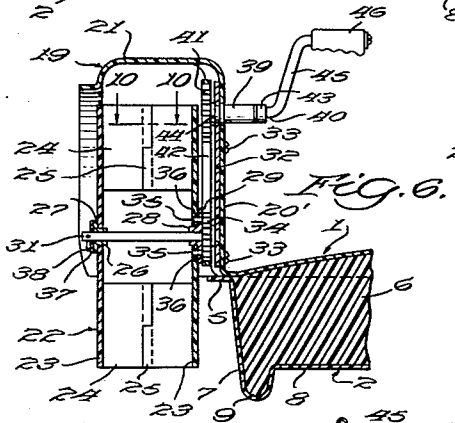


Fig. 6.

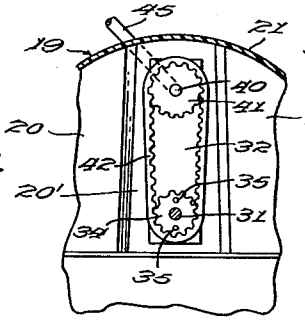


Fig. 7.

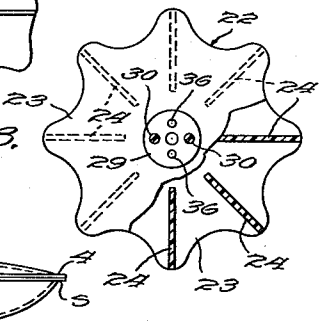


Fig. 8.

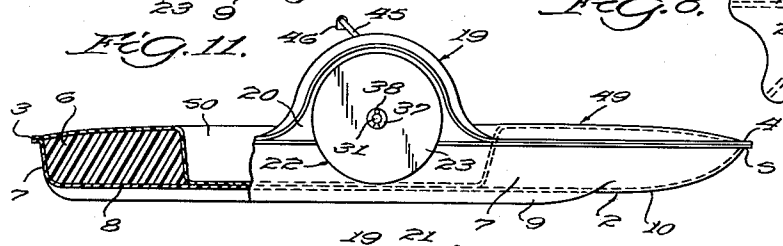


Fig. 11.

Fig. 9.

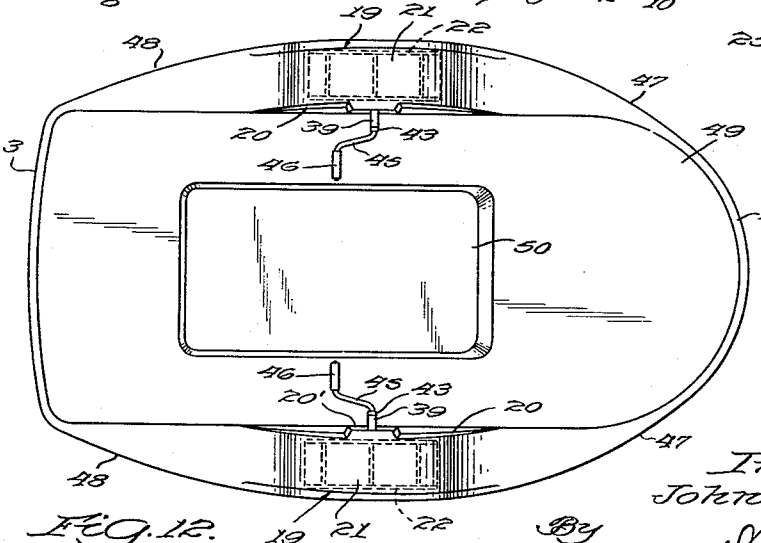


Fig. 12.

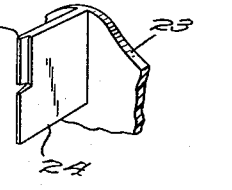


Fig. 10.

Inventor:
John W. Love.

By Harold J. DeVisconte
Atty

United States Patent Office 2,998,798 Patented Sept. 5, 1961

2,998,798

MANUALLY PROPELLED WATERCRAFT

John W. Love, 18530 S. Broadway, Gardena, Calif.

Filed July 18, 1960, Ser. No. 43,590
5 Claims. (Cl. 115—23)

This invention relates to boats and rafts and the like and particularly to an improved form thereof for use for recreation purposes and especially adapted for use in swimming pools by children.

The principal objects of the invention are to provide a small water craft which includes means by which it may be propelled by the occupant, which for the most part, at least, is self-draining, which is economical to manufacture and maintain, is small in size and light in weight, is not easily overturned, is readily boarded by a person in the water without danger of overturning the craft, which maintains its buoyancy under all conditions of use, and in which the propelling devices are such as to be incapable of inflicting injury to persons contacting them.

With the foregoing objects in view, together with such additional objects and advantages as may subsequently appear, the invention resides in the parts and in the construction, combination and arrangement of parts described, by way of example, in the following specification of certain presently preferred embodiments of the invention, reference being had to the accompanying drawings which form a part of said specification and in which drawings:

FIG. 1 is a side elevational view of a water craft consisting one presently preferred embodiment of the invention,

FIG. 2 is a top plan view of FIG. 1,

FIG. 3 is a bottom plan view of the craft shown in FIG. 1,

FIG 4 is a front elevational view of the craft shown in FIG. 1,

FIG. 5 is an enlarged, medial, sectional view taken on the lines 5—5 of FIG. 2,

FIG. 6 is a further enlarged, fragmentary, sectional view taken on the lines 6—6 of FIG. 1, and particularly showing details of one of the propelling devices,

FIG. 7 is an enlarged, side elevational view taken on the section line 7—7 of FIG. 4 and particularly showing the driving belt arrangement for the propelling devices,

FIG. 8 is a side elevation, no view, partly in section, of one of the paddle wheels of the propelling devices,

FIG. 9 is a fragmentary perspective view of a portion of one of the two halves of which each paddle wheel is formed,

FIG. 10 is a further enlarged fragmentary sectional view taken on the lines 10—10 of FIG. 6 showing the mode of joining the two halves to form a completed paddle wheel,

FIG. 11 is a side elevational view of a secondly presently preferred embodiment of the invention,

FIG. 12 is a top plan view of the embodiment shown in FIG. 11,

FIG. 13 is a partial plan view showing the use of a protective bending strip on the edge of the craft, and

FIG. 14 is an enlarged scale sectional view taken on the line 14—14 of FIG. 13.

Referring first to FIGS. 1 through 10, the first embodiment of the invention comprises a hull formed of two rigid molded plastic sheets of identical outline in plan (except for the paddle wheel housings presently to be described) and comprising a deck component 1 and a bottom component 2, the plan configuration of the perimeter of said components being generally oval with the portions thereof forming the stern being somewhat blunted as at 3 in FIGS. 2 and 3. The components 1 and 2 have laterally extending flanged portions 4 and 5, respectively, which are cemented together to form a hollow hull, said hull space thereafter being filled with a mass of foam-type plastic 6 to create a monolithic hull structure with a minimum of additional weight and which is also effective to exclude water from the interior of the hull. The plane of the juncture of the flanges 4 and 5 is disposed only slightly below the general level of the top surface of the deck component which, as will be further pointed out, slopes in all directions toward the edges thereof so that there is no cavity in which water can collect. In other words, the craft is self-draining.

The bottom component below the flange 5 thereof comprises a depending substantially vertical side wall 7 along both sides and the rear end and a bottom portion 8. Preferably, the bottom portion is formed with a pair of longitudinal, downwardly extending ribs 9—9 disposed adjacent the sides of the bottom component and extending from the rear end wall portion to the front at which they are terminated by the rounded front end 10 of the bottom component. The ribs 9—9 serve to save the bottom area from damage when the craft is out of the water. The forward end of the bottom component is provided with a slight central forward rib 11 serving as a keel.

The deck component is generally slightly upwardly bulged from the plane of the meeting line of the flanges for the said self-draining purposes and at the rear end thereof in the longitudinal center line of the hull includes a back rest portion 12 extending above the general level of the deck to support a person seated on the deck and facing the front of the hull, the front wall 13 of said back rest being concavely rounded and the back and side surfaces 14 of the back rest sloping convexly rearwardly and laterally to join the surface of the deck. Approximately midway between the front end of the hull and the transverse center line thereof, the deck component is provided with foot rests 15 and 16, each of which extends across the hull. The foot rest 15 is located further from the back rest to accommodate adults and larger children while the foot rest 16 is located closer to the back rest to accommodate smaller children. Each foot rest is of modified crescent configuration as viewed in plan with the concave sides thereof disposed toward the rear of the hull and the back rest and said concave side 17 is disposed substantially vertically being highest at the center line of the hull and tapering gradually to the level of the deck surface at the ends of the foot rest. The top surface 18 of each foot rest slopes downwardly and forwardly to merge with the deck surface.

The propelling means comprises a pair of paddle wheels mounted on opposite sides of the craft. Since the paddle wheels and the mounting, guarding and driving means associated therewith are either identical or mirror images, a description of one wheel and the parts associated therewith will serve for both and all corresponding parts will be given the same identifying numbers regardless of the side of the craft on which they are positioned. About midway of its length and at each side thereof, the deck component is provided with an integrally formed wheel housing 19 extending laterally beyond the side edge of the bottom component and comprising an inner vertical wall 20 which extends upwardly and slightly diagonally outward from about the vertical plane of the side wall of the bottom component except for the center portion 20' thereof which extends directly vertically. The wheel housing thence extends laterally outwardly to form the protective housing 21 for the paddle wheel 22.

The paddle wheel 22 is preferably formed of plastic moldings comprising two identical halves each including a side wall portion 23 having a plurality of laterally ex-

tending paddle forming halves at one side thereof forming the paddles **24** said laterally extending paddle forming portions being provided with mating tongue and groove portions **25** by which the two halves may be adhesively or otherwise secured together (see FIGS. 9 and 10) to form the completed paddle wheel.

The thus formed paddle wheel **22** is provided at its outer end with a metal bearing bushing **26** having a flange **27** engaging the outer face of the paddle wheel and at its inner face with a metal bearing bushing **28** having a flange **29** of larger diameter than the flange **27** engaging the inner face of the paddle wheel and secured to said inner face by screws **30**. The bores of said bushings are axially aligned and serve to mount the paddle wheel for rotation on a stationary shaft **31** which is carried by and projects laterally from the outer face of a supporting plate **32** secured to the outer side of the wheel housing wall portion **20'** by pairs of screws **33** extending through said wall and threadedly engaging the plate **32** at the top and bottom thereof. Freely rotatably mounted on the shaft **31** inboard of the paddle wheel **22** is a sprocket wheel **34** having outwardly laterally extending dowel pins **35** engaging holes **36** in the bushing flange **29**. A washer **37** and cotter pin **38** at the outer end of the shaft serves to hold the paddle wheel and sprocket in assembly on the shaft **31** without excessive end play.

The upper end of the plate **32** carries a laterally inwardly extending sleeve **39** which projects through the wall **20'** and affords bearing support for a shaft **40** journaled therein, said shaft extending through the plate **32** and having fixed thereto a sprocket **41** preferably of larger diameter than the sprocket **34**. A toothed rubber belt **42** extends between and interconnects the two sprockets, the close adjacency of the opposing faces of the plate **32** and the side **23** of the paddle wheel serving to prevent lateral displacement of the belt. Inboard of the sleeve **39**, the shaft **40** carries a thrust collar **43** which cooperates with the hub **44** of the sprocket **41** to prevent endwise movement of the shaft **40**. The inboard end of the shaft **40** is given an offset bend to form a crank **45** and freely rotatable hand grip **46** is fitted to the crank. Preferably, the lateral wall **21** of the wheel housing at the top surface thereof is "faired" into the top surface of the deck and the outer edge thereof is also preferably "faired" into the side edge of the deck component in tapering front and rear end portions **47** and **48**.

The operation of the craft is believed to be completely obvious. A person seated on the deck component by turning the cranks may propel the craft in either direction and through differential or opposite rotation of the cranks can cause the craft to turn in either direction. All top surfaces of the deck slope to the outer edge wherefore there is no problem of bailing water taken aboard. The monolithic construction resulting from the union of the foam plastic filling with the deck and bottom components of the hull results in extreme rigidity without appreciable loss of buoyancy. The width of the craft makes it extremely difficult to overturn and even if overturned there is no loss of buoyancy. The craft is readily and inexpensively formed from the two main components which are readily produced by molding reinforced plastic sheet material, the cementing them together and thereafter filling the void so formed with plastic foam. Following that there remains only the installation of the two simple paddle wheel devices.

Referring to FIGS. 11 and 12, there is shown another embodiment of the invention which is exactly like the first described embodiment except that the deck component **49** is changed by the elimination of the back rest and foot rest portions and the substitution therefor of a rectangular well portion **50** in which the occupant may kneel while operating the propelling cranks **45, 45**. Since except for this change in the deck component all other parts are the same, the same numbers have been applied thereto and a repetition of the description is believed to be unnecessary. Another modification shown in this second embodiment of the invention is in the use of circular side walls for the paddle wheel instead of the scalloped form of such side walls as shown in FIG. 1. It will be apreciated that either form may be used on either embodiment of the invention.

If desired, the edges of the flanges **4** and **5** may be covered by a resilient binding **51** adhesively secured thereto.

This second embodiment of the invention gives a lower center of gravity to the occupied craft at the expense of providing a space in which a small amount of water may be taken and held but this space is not enough to materially affect the buoyancy of the craft.

While in the foregoing specification there have been described certain presently preferred embodiments of the invention, it is not to be inferred therefrom that the invention is limited to the specific embodiments thus described by way of example and it will be understood that the invention includes as well, all such changes and modifications in the parts and in the construction, combination and arrangement of parts as shall come within the purview of the appended claims.

I claim:

1. In a manually propelled watercraft, a monolithic hull formed from a molded plastic sheet bottom component having a bottom portion and a peripheral side wall portion terminating in a peripheral horizontal outwardly extending flange, a deck component also formed of molded plastic sheet secured to said flange portion of said bottom component, and a filling of hardened foam plastic completely filling said hull, a pair of paddle wheel housings formed integrally with said deck component and disposed one each at each side of said deck component outwardly of said bottom component and propelling means comprising a pair of paddle wheels and separate driving means therefor mounted one each on each of said housings.

2. A watercraft as claimed in claim 1 in which said deck component is provided with an integrally formed back-rest disposed rearwardly of said housings and adapted to position a person seated on said deck component within operating reach of said paddle wheel driving means; said deck component additionally having integrally formed foot-rest means disposed forwardly of said housings.

3. A watercraft as claimed in claim 1 in which said deck component is provided with a well portion disposed between and slightly rearwardly of said housings and of sufficient size to allow a person to kneel therein while operating said paddle wheel driving means.

4. A watercraft as claimed in claim 1 in which each of said housings includes a vertical wall portion extending upwardly from the plane of said deck component and a laterally outwardly extending portion projecting from the upper edge thereof and in which each of said propelling comprises a supporting plate mounted on the outer face of said vertical wall, an outwardly projecting shaft extending therefrom, a paddle wheel freely rotatably mounted on said shaft, a hand crank operated shaft journaled on said plate and extending inwardly from said housing, and power transmitting means interconnecting said shaft and said paddle wheel.

5. A watercraft as claimed in claim 4 in which said power transmitting means comprises a first sprocket on said hand crank operated shaft, a second sprocket on said paddle wheel, and a toothed endless belt trained around and interconnecting said sprockets.

References Cited in the file of this patent

UNITED STATES PATENTS

2,417,508	Leyde	Mar. 18, 1947
2,505,721	Peter et al.	Apr. 25, 1950