

[54] MANUALLY PROPELLED WATER CRAFT

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[22] Filed: **Aug. 10, 1971**

[21] Appl. No.: **170,481**

[52] U.S. Cl. **115/22.3**

[51] Int. Cl. **B63h 16/00**

[58] Field of Search 115/22.3, 19, 23, 115/26.3, 22.2; 114/145 R, 66.5 P, 235 WS; 9/310 E, 310 A; 16/180, 150; 280/259; 301/124 R; 29/116 R

[56] **References Cited**

UNITED STATES PATENTS

1,640,390	8/1927	Bacon	115/23
3,064,286	11/1962	Hammond	9/310 B
3,085,356	4/1963	Wayfield	9/310 J
3,317,937	5/1967	Gallagher	9/310 E
3,491,997	1/1970	Winters	115/26.3

1,145,510	7/1915	Pszytas	115/22.3
612,539	10/1898	Bowick	114/145
1,158,111	10/1915	Ahlheim	29/116
2,451,170	10/1948	McDowell	29/116
3,256,850	6/1966	Bramson	115/19
3,585,960	6/1971	Shuler	115/23
1,268,762	6/1918	Pacheco	115/22.3

FOREIGN PATENTS OR APPLICATIONS

A17,622 12/1955 Germany 16/137

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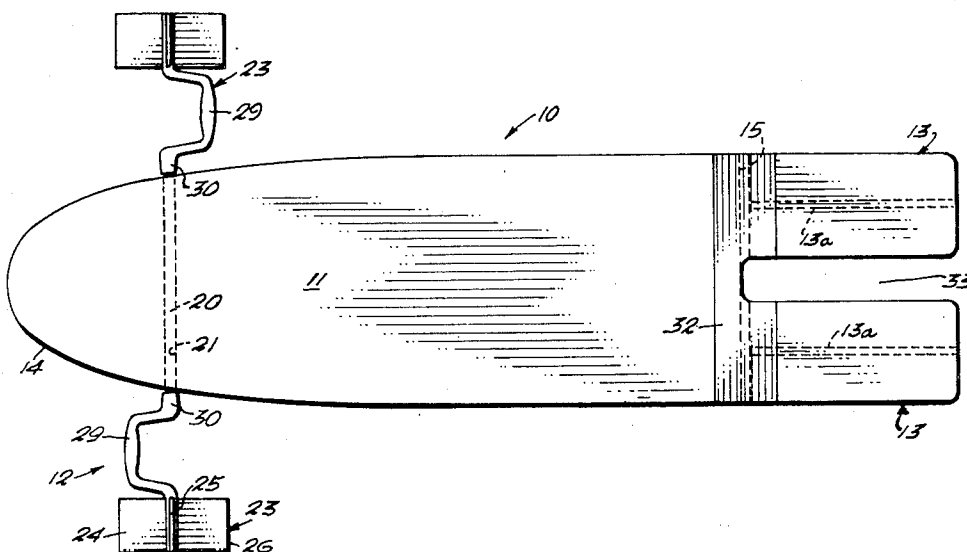
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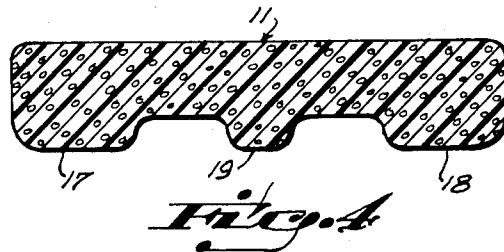
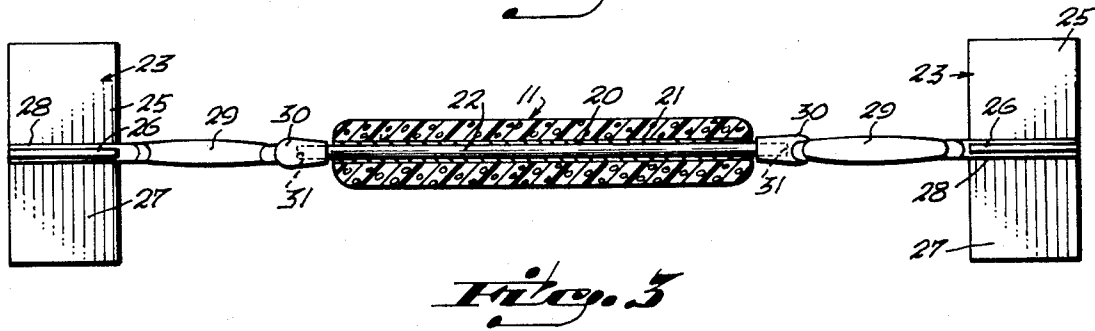
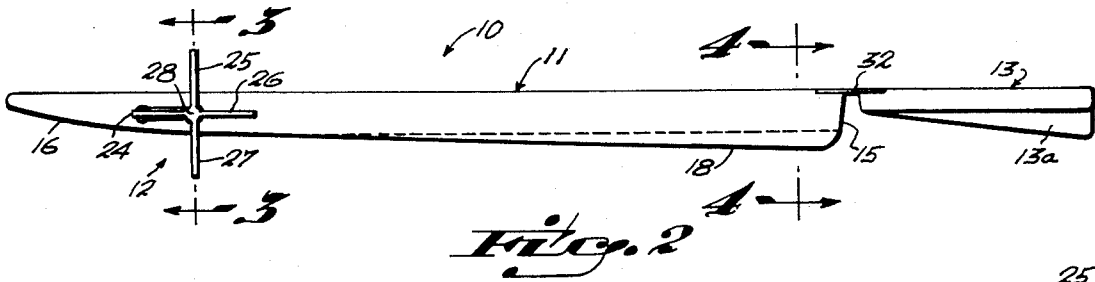
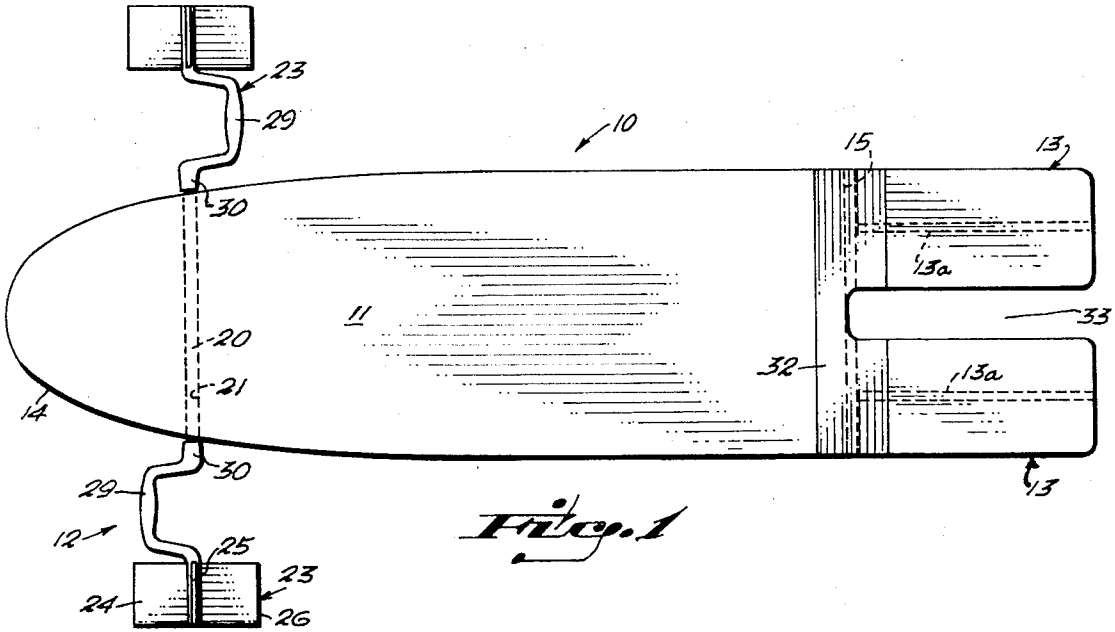
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[57] **ABSTRACT**

A surfboard-like, buoyant support member is provided at one end with a manually operable crank mechanism comprising a transverse axle rod having, at each end, a crank handle and a paddle wheel for hand actuation by an operator lying prone upon the support member, and further including vertically swingable flap members extending rearwardly of the rear end of the support member for actuation by the legs of the operator in propelling and steering the craft.

2 Claims, 4 Drawing Figures





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MANUALLY PROPELLED WATER CRAFT

This invention relates to water craft and is directed particularly to a surfboard-like, buoyant support member having crank-actuated paddle wheel propulsion mechanism at the front end and swingable flap members at the rear end operated by the arms and legs, respectively, of a person lying prone on the support member.

Various types of one-man, manually propelled water craft have heretofore been devised for different purposes, such as for pleasure, swimming instruction, and life-saving in emergency situations. Such devices as have heretofore been proposed however, have enjoyed only limited commercial success for one reason or another, principally because they were too complicated and expensive, too bulky and therefore difficult to transport from place to place, limited in their usefulness to a single purpose, or inefficient in operation, i.e., unable to produce significant forward thrust or propulsion even with great physical effort on the part of the operator.

It is, accordingly, the principal object of this invention to provide a personal water craft of the character described which, while being especially well suited for water sports use, at the same time lends itself well to use in swimming instruction, as an exerciser and as a life-saving device for use under emergency conditions on water.

Yet another object of the invention is to provide a manually propelled water craft of the character described which obviates the above-described deficiencies of comparable water craft heretofore devised.

A more particular object of the invention is to provide a manually propelled water craft having a buoyant, surfboard-like support member adapted to support the operator in prone position thereon and including a crank-operator paddle wheel mechanism at the front for hand operation, and swingable flap members at the rear or stern end for operation by the legs of the operator in propelling and steering the craft.

Another object of the invention is to provide a water craft of the above nature which is well suited to production in the form of a kit for economical storage and transport, while at the same time being very easy to assemble prior to use.

Yet another object of the invention is to provide a manually propelled water craft of the above nature which can readily be molded of inexpensive synthetic plastic materials for economy and ease of manufacture, while at the same time being sturdy enough to withstand the stresses and abuse which can be expected in the use of water sports devices.

Other objects, features and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawings. In the drawings, wherein like reference numerals denote corresponding parts throughout the several views:

FIG. 1 is a plan view of a manually propelled water craft embodying the invention;

FIG. 2 is a side elevational view thereof;

FIG. 3 is a transverse cross-sectional view taken along the line 3—3 of FIG. 2 in the direction of the arrows; and

FIG. 4 is a transverse cross-sectional view taken along the line 4—4 of FIG. 2 in the direction of the arrows.

Referring now in detail to the drawings, reference numeral 10 in FIGS. 1 and 2 designates a preferred form of manually propelled water craft embodying the invention, the same being comprised, generally, of a buoyant support member 11 having a crank-operated paddle wheel mechanism 12 at one end for actuation by the hands of the operator, and a pair of vertically swingable flap members 13, 13 at the other end for operation by the legs of the operator.

The support member 11 is surfboard-like in shape, having a rounded front end 14, and a substantially square rear end 15. The support member 11 can be either pressure molded of polystyrene foam pellets or vacuum formed of rigid polypropylene for strength, rigidity and buoyancy. As illustrated in FIGS. 2 and 4, while the upper surface of the support member 11 may be substantially flat, the underside will preferably be tapered at the front, as indicated at 16, and formed with rearwardly-extending side ridges 17 and 18 and central ridge 19, gradually increasing in depth from their point of beginning located at about one-third of the length of the support member from the front thereof, to the rear thereof. At the rear end of the support member 11, the side ridges 17 and 18 and the central ridge 19 have a vertical thickness which is approximately one-half the vertical thickness of the support member between said ridges.

The crank-operated paddle wheel mechanism 12 comprises a bearing sleeve 20 press-fitted within a transverse bore 21 extending through the support member 11 near the front end thereof. Rotatably journaled within the bearing sleeve 20 is an axle rod 22 of such length as to project for a short distance at each end of the bearing sleeve 20. Secured at each end of the axle rod 22 are paddle wheel members 23, 23. The paddle wheel members 23, 23, which are preferably integrally molded of a tough synthetic plastic material, comprise four right-angularly disposed, rectangular paddle blades or vanes 24, 25, 26, 27, symmetrically arranged about a common axis or hub portion 28, which hub portion extends at one end into a substantially U-shaped crank handle portion 29. The outer end of each of the handle portions 29 terminates in an outwardly extending socket portion 30 having a blind bore 31 coaxial with the longitudinal axis of their hub portions 28. The blind bores 31 of the paddle wheel mechanism 23 are of such size as to receive, press-fitted therein, outer end portions of the axle rod 22. In manufacture, the water craft will preferably be supplied with the paddle wheel members 23 disassembled with respect to their axle rod 22. The axle rod 22, moreover, will preferably be of a synthetic plastic material identical with or similar to that of the paddle wheel members 23 so as to enable effecting a strong bond therebetween by the use of a suitable cement. In assembly by the purchaser it is only necessary to apply a small amount of the cement, also supplied with the kit, to the ends of the axle rod 22, after which the paddle wheel mechanisms 23, 23 can be press-fitted in place, in opposing relation as best illustrated in FIG. 1, and allowed to set.

The vertically swingable flap members 13, 13 are of rectangular shape and are preferably about one-third the length of the support member 11. The flap members 13 are about one-half the vertical thickness of the support member 11, and constructed of the same or a similar buoyant material. The undersides of the flap members 13 are also integrally formed, centrally along

their length, with vertically or downwardly extending fins 13a, merging with the underside of said flap members at the forward ends thereof and divergently increasing in depth or vertical thickness to their outer ends whereat their thickness is about twice that of the vertical thickness of the support members 11. The forward ends of flap members 13 are hingedly joined with the rear end of the support member 11 as by a transversely extending band 32 of a flexible synthetic plastic material such as polyethylene. As illustrated in FIG. 2, transverse marginal portions of the support member 11 and the flap members 13, 13 will be mortised or recessed to receive the resilient band 32, cemented therein and therebetween, in substantial flush relation with respect to the top surface of the water craft. As illustrated in FIG. 1, the flap members 13, 13 are of such transverse width as to define a gap 33 therebetween when their outer edges are in alignment with the opposed outer edges of the support members 11. At the inner end of the gap 33, the resilient band 32 is cut away to the juncture zone between the support member 11 and the flap members 13, 13 to permit freely independent vertically swinging movement of said flap members in use of the device.

In use the operator will ordinarily lie prone upon the support member 11 so that he can conveniently grasp the handle portions 29 of the paddle wheel members 23, 23 for crank-turning of the paddle blades 24, 25, 26, 27 at each side of the craft in unison. For forward propulsion, the paddle wheel mechanism 12 will be turned anti-clockwisely, as seen in FIG. 2, thereby simulating the crawl stroke commonly used in swimming. At the same time the legs of the operator, while lying upon the swingable flap members 13, 13, will be actuated by kicking them downward alternately, thereby simulating kicking movement of the legs as in swimming. Because arm and leg movements in the use of the water craft are similar to their movement in swimming, the water craft device is particularly well suited to use in swimming instruction. Moreover, because substantial coordinated movement of both the arms and legs of the operator is required in the propulsion of the water craft, and since the propulsion rate can vary over a wide range from very slow movement to a speed limited only by the physical activity of the operator, the water craft is also well suited for use in exercising and body building.

The flap members 13 can readily be used for steering by applying downward pressure at one side or the other as one would steer a canoe by dipping a paddle at one side or the other. The fins 13a along the undersides of the flap members 13 not only enhance the turning action thereof, but also contribute to the stability of the craft, especially at high speeds. In this connection, while we have illustrated and described the support member 11 as being substantially flat, it could as well be made of slightly arcuate, transverse cross-sectional

shape, i.e., somewhat concave along its length as seen from above, for even greater stability in water craft especially designed for propulsion at higher speeds.

While we have illustrated and described herein only one form in which the invention can conveniently be embodied in practice, it is to be understood that this form is presented by way of example only and not in a limiting sense. The invention, in brief, comprises all the embodiments and modifications coming within the scope and spirit of the following claims.

What we claim as new and desire to secure by Letters Patent is:

1. A manually propelled water craft comprising, in combination, an elongated, buoyant support member, manually rotatable paddle wheel mechanism at the front of said support member, a pair of buoyant, laterally spaced flap members extending rearwardly of the rear end of said support member, hinge means interjoining the forward ends of said flap members with said support member and providing for swinging movement thereof with respect to said support member independently about transverse axis, said manually rotatable paddle wheel mechanism comprising a pair of paddle wheel members, one at each side of said support member, means journalling said paddle wheel members for rotation in unison about a common axis extending transversely of said support member, said paddle wheel members each comprising a plurality of paddle vanes extending radially outwardly of said common axis and a crank handle portion eccentrically offset with respect to said common axis, said paddle wheel members journalling means comprising a transverse through opening in said support member, a bearing sleeve member receivable in said through opening, an axle rod receivable in said bearing sleeve member and of such length as to project outwardly of each side of said support member, said paddle members comprising means for their attachment to the projecting ends, respectively, of said axle rod, said attachment means comprising, in each of said paddle wheel members, a cylindrical socket coaxial with said common axis and of such size as embracingly to receive said projecting ends of said axle rod, said hinge means comprising a transversely extending band of resilient synthetic plastic material interjoining marginal end portions of said flap members with said support member, said flap members being substantially rectangular in shape, and integrally formed with a centrally located, longitudinally extending, downwardly projecting fin of gradually increasing height from the forward to the rearward ends of said flap members.

2. A manually propelled water craft as defined in claim 1 wherein said support member and said flap members are fabricated of polystyrene foam material and wherein said paddle wheel members are integrally formed of a tough synthetic plastic.

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