

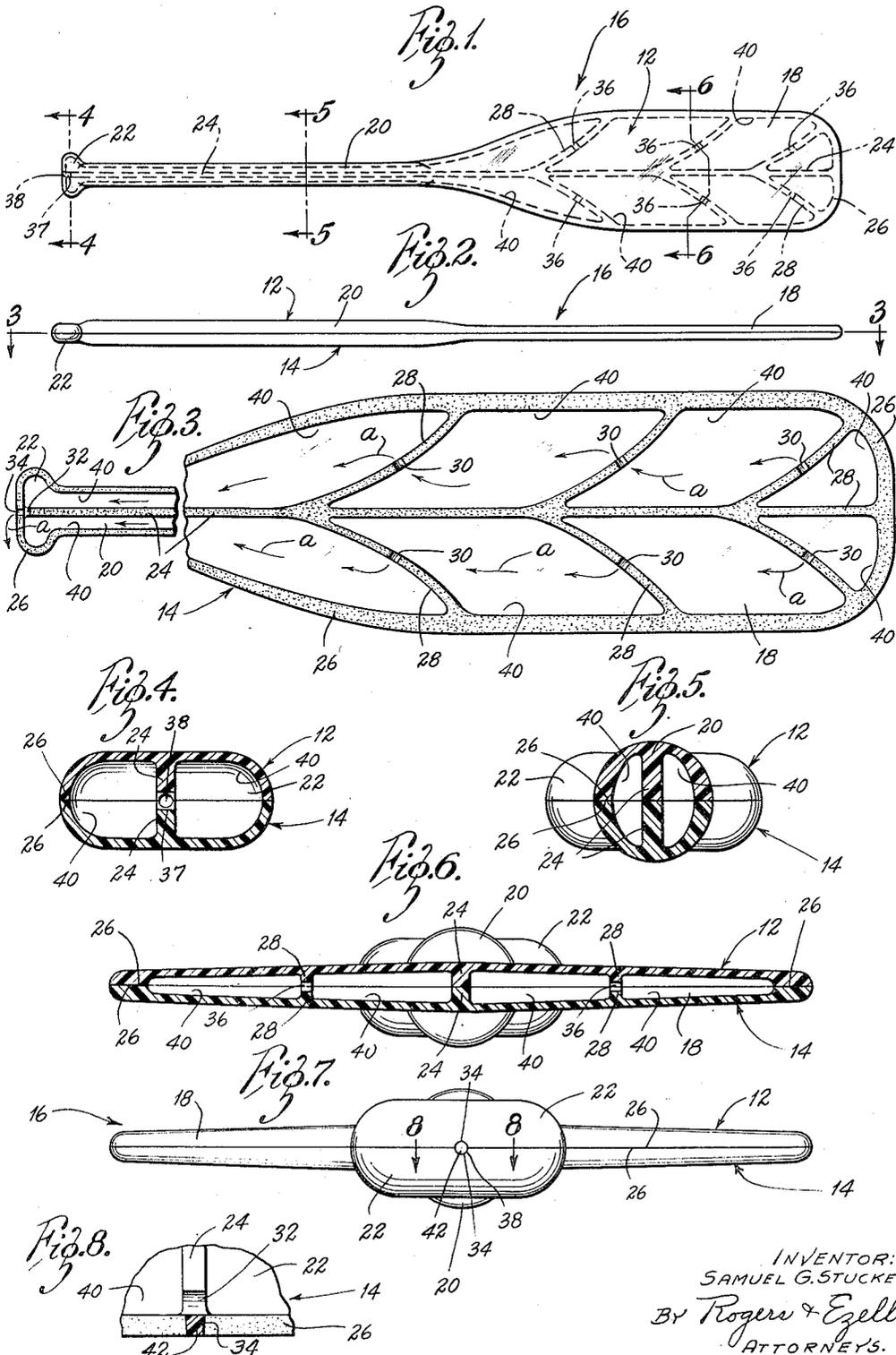
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PADDLE

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PADDLE

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The present invention relates generally to improvements in the construction of paddles of the type used in canoeing and similar sports.

More particularly, the invention relates to a novel canoe paddle constructed of plastic material, preferably, but not necessarily, transparent.

As will appear, the use of a transparent plastic material, in the manufacture of a paddle according to the teachings of the present invention, provides many features and advantages not found in paddles heretofore. The present paddle is not only lighter and more substantial than those constructed of wood or metal, but, in addition, it may be provided with means whereby it is visible in darkness. This safety feature is very important, since it is dangerous to lose a paddle while canoeing at night. Should the present paddle slip out of the hands of the user, or accidentally fall out of the canoe, it will float and simultaneously indicate its location in the darkness.

The primary object of the invention, therefore, is to produce a plastic paddle which is light in weight, which is reinforced in a novel manner to give it greater strength, which will float, and which includes phosphorescent features.

A further object is to provide a method for producing the paddle of the present invention.

Other objects and advantages will be noted in the description hereinafter, reference being had also to the accompanying drawing. The drawing illustrates the invention in the form of a canoe paddle, and the description to follow will be limited thereto. However, it is understood that, for example, the invention is likewise pertinent to the construction of an oar.

In the said drawing:

Fig. 1 is a plan view of a paddle incorporating the present invention;

Fig. 2 is an edge view thereof;

Fig. 3 is a plan view on an enlarged scale, indicated by the line 3—3 of Fig. 2, an intermediate portion of the view being broken away;

Figs. 4, 5 and 6 are transverse sectional views on an enlarged scale, taken on lines 4—4, 5—5, and 6—6 in Fig. 1;

Fig. 7 is an enlarged end view of the paddle; and

Fig. 8 is a fragmentary view through the knob portion of the paddle, the view being indicated by line 8—8 in Fig. 7.

The paddle is composed of two identical halves or sections, permanently united, as will appear. For descriptive purposes hereinafter, one of these

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halves will be considered the upper section, and it is generally indicated by the reference numeral 12. The other half will be considered the lower section, and it is generally indicated by the reference numeral 14.

When bonded together, these two sections produce the composite paddle, generally designated in Figs. 1, 2 and 7 by the numeral 16. It includes a blade portion 18, which merges into a cylindrical stem or shank portion 20, the latter terminating in a knob or handle portion 22.

The internal construction of each section may be seen by reference to Fig. 3. There it appears that each section is provided centrally thereof with a longitudinal upstanding reinforcing rib 24, which merges at its ends into a peripheral edge or rim portion 26.

A plurality of branch ribs 28 extend from the central rib and merge into the rim portion, as shown. Each branch rib is provided more or less centrally thereof with a semi-circular groove or depression 30, for a purpose to appear.

A semi-circular depression or groove 32 is also provided in the longitudinal rib 24 at the knob end thereof. Communicating with the groove 32, is a semi-circular depression or groove 34 formed in the peripheral rim 26. This groove has a slight taper, for a reason to appear.

As particularly shown in Figs. 4 and 6, the face portions of the center rib, the branch ribs and the rim are all flush so that, when the two sections are joined, the grooves 30, 32 and 34, respectively, form circular openings 36, 37 and 38. It is also apparent that, when the two sections are bonded together, a plurality of hollow air spaces or internal pockets 40 are formed interiorly throughout the length of the paddle.

It is here noted that the reinforcing ribs, in addition to strengthening the blade, may also be variously designed from an ornamental standpoint, particularly when the plastic material employed is transparent. It should also be noted that the peripheral rim about the blade portion of the paddle is considerably wider than the width of the ribs, or the rim portion of the stem and knob. This provision is made to compensate for wear, since the peripheral edge of the blade, in continued use, has a tendency to deteriorate more quickly than the remaining portions of the paddle.

The branch ribs 28, in addition to supporting the wall of the blade, also strengthen the rim portion.

The upper and lower sections are bonded together by means of cement such as is produced

by adding benzol peroxide to the liquid plastic "Selectron 5003" sold by the Pittsburgh Plate Glass Company or by adding castolite catalyst to the castolite liquid plastic sold by the Castolite Company. The cement is indicated by stippling in Fig. 3. Should it be desired to produce a paddle having phosphorescent qualities, the cement employed is mixed with a predetermined quantity of a phosphorescent pigment such as the type sold by the Castolite Company, and the paddle is constructed of transparent plastic material such as "Selectron 5003" sold by the Pittsburgh Plate Glass Company or the plastic material sold by the Castolite Company. Obviously, the phosphorescent cement mixture may be employed throughout, or it may be limited to the blade portion of the paddle.

The method followed to produce the paddle will now be described. Assuming that the upper and lower sections have been molded so as to provide counterparts, the bonding cement is applied to the face portions of the ribs and the rim, and the upper section is then superimposed on the lower section in perfect peripheral alignment. The interior of the hollow shell thus produced is then evacuated by any suitable means through the tapered opening 38, the latter formed by the grooves 34 as explained. This operation is diagrammatically indicated by the arrows A in Fig. 3, and is performed before the cement hardens. The suction applied has the effect of more firmly and evenly drawing the parts together while the cement is hardening.

After the cement has hardened, air under pressure is introduced into the interior of the paddle through opening 38 by any suitable means, and thereafter the opening 38 is sealed by means of a suitable plug 42, as shown particularly in Fig. 8. Preferably, the plug is composed of plastic material which is identical with that of the paddle. In liquid state, it is forced into the tapered opening 38 against the pressure within the shell, and held until it hardens.

As a result of this arrangement, an additional reinforcing agent, in the form of air, is provided to brace the thin outer shell of the paddle. The tapered contour of the opening 38 prevents the hardened plug from being displaced.

From the foregoing, it should be manifest that a paddle constructed in accordance with the present invention may be modified in numerous ways without departing from the principles thereof. For example, the paddle may be constructed by using plastic materials of various colors. Again, the upper section may be of one color, the lower of another. Assuming that transparent plastic is employed, the branch ribs 28 may be so formed as to present any selected pattern. Similarly, ornamentation or decoration may be applied to the inner surface of the shell between the ribs.

Since these and other modifications may be had within the purview of the invention, its scope is to be limited only by the appended claims.

What is claimed is:

1. A paddle comprising two similar sections of plastic material permanently bonded together to form a hollow shell including blade, shank, and knob portions, reinforcing means for the shell interiorly thereof, a plurality of air pockets formed thereby, means whereby said pockets may be first evacuated and thereafter charged with air under pressure, and means for sealing said air within said shell.

2. A paddle comprising two similar sections of

plastic material permanently bonded together to form a hollow shell including blade, shank, and knob portions, reinforcing means for the shell interiorly thereof, a plurality of air pockets formed thereby, means whereby said pockets may be first evacuated and thereafter charged with air under pressure, and a plug for permanently sealing said air within said shell.

3. A paddle comprising two similar sections of plastic material permanently bonded together to form a hollow shell including blade, shank, and knob portions, reinforcing ribs for the shell interiorly thereof, a plurality of air pockets formed by said ribs, means whereby said pockets may be first evacuated and thereafter charged with air under pressure, and means for sealing said air within said shell.

4. A paddle comprising two similar sections of plastic material permanently bonded together by cement to form a hollow shell including blade, shank, and knob portions, a central longitudinal and a plurality of branch reinforcing ribs for the shell interiorly thereof, a plurality of air pockets formed by said ribs, an aperture in each rib and an aperture in said knob portion for evacuating said pockets and thereafter introducing a charge of compressed air thereinto, and means for closing said last named aperture to seal said charge within the shell.

5. In a paddle construction comprising a pair of counterpart sections of plastic material bonded together to form a hollow shell including blade, shank, and knob portions, a charge of compressed air in the shell, and means sealing said charge within said shell comprising a tapered aperture formed in said knob portion, and a plastic plug member insertable into said aperture.

6. The paddle construction of claim 4 in which the plastic material is transparent, and the cement is mixed with a predetermined quantity of phosphorescent pigment.

7. The paddle construction of claim 4 in which the plastic material is transparent, and the cement in the region of the blade portion is mixed with a predetermined quantity of phosphorescent pigment.

8. A paddle comprising two identical sections each including a blade portion merging into a shank portion with the latter terminating in a handle portion, a rim extending around the entire periphery of the section, said rim being wider in the blade portion than in the shank and handle portions, a central upstanding rib extending longitudinally of the section and merging at its ends into said peripheral rim, a semi-circular aperture in said rib adjacent one end thereof, a plurality of branch ribs each extending from the central rib and merging into said peripheral rim to reinforce the blade portion, and a semi-circular aperture in each branch rib, so that when the sections are permanently bonded to form a unitary structure, said ribs define a plurality of pockets within the structure and said semi-circular apertures form circular passages to provide fluid communication between adjacent pockets.

9. A paddle comprising two identical sections each of which includes a blade portion merging into a shank portion with the latter terminating in a handle portion, a rim extending around the entire periphery of the section, said rim being wider in the blade portion than in the shank and handle portions, a central upstanding rib extending longitudinally of the section and merging at its ends into said peripheral rim, a semi-

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circular aperture in said rib adjacent one end thereof, a semi-circular tapered opening in said rim in communication with said aperture, a plurality of branch ribs each extending from the central rib and merging into said peripheral rim to reinforce the blade portion, and a semi-circular aperture in each branch rib, so that when the sections are permanently bonded to form a unitary structure, said ribs define a plurality of pockets within the structure and said semi-circular apertures form circular passages to provide fluid communication between adjacent pockets, and said tapered openings form a circular passage whereby said pockets may be first evacuated and thereafter charged with air under pressure.

10. The method of producing a paddle of the character described which comprises applying cement to the face portions of the peripheral rim and reinforcing ribs of a pair of similar plastic sections, superimposing one section upon the other with said cement coated face portions in contact and the sections in perfect peripheral alignment, evacuating the thus formed hollow shell by applying suction from an external source through an aperture provided in said shell, maintaining the suction effective until the cement hardens, thereafter introducing a charge of compressed air into the shell through said aperture, and thereupon plugging said aperture to permanently seal the charge within the shell.

11. The method according to claim 10 wherein said cement has been mixed with a predetermined quantity of phosphorescent pigment.

12. A paddle comprising two concave sections each including a blade portion merging into a shank portion with the latter terminating in a handle portion; a rim extending around the periphery of each section; a central upstanding rib extending longitudinally of each section and merging at its ends into said peripheral rim; and a plurality of branch ribs in the blade portion of each section extending from the central rib and merging into the peripheral rim; said sections when joined together at the rims forming

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a hollow paddle containing a plurality of chambers, said chambers containing openings for the egress and ingress of air.

13. The method of making a paddle of the type described which comprises applying cement to the face portions of the peripheral rims of a pair of concave members; superimposing one member upon the other with the cement-coated face portions in contact; evacuating some of the air from the thus formed chamber; and maintaining the vacuum until the cement hardens.

14. The method of making a paddle of the type described which comprises applying cement to the face portions of the peripheral rims of a pair of concave members; superimposing one member upon the other with the cement-coated face portions in contact; evacuating some of the air from the thus formed chamber; maintaining the vacuum until the cement hardens; introducing air into the chamber at a pressure greater than atmospheric pressure; and sealing said air within the chamber.

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