July 30, 1963 A. S. LEWIS 3,099,024

FOLDING BOAT

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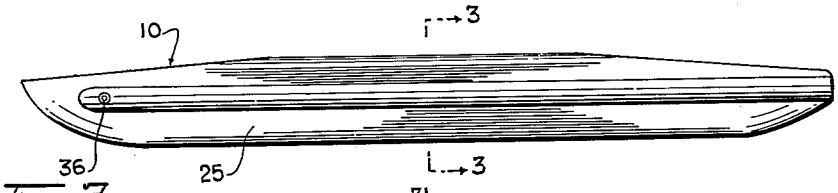


Fig. 2.

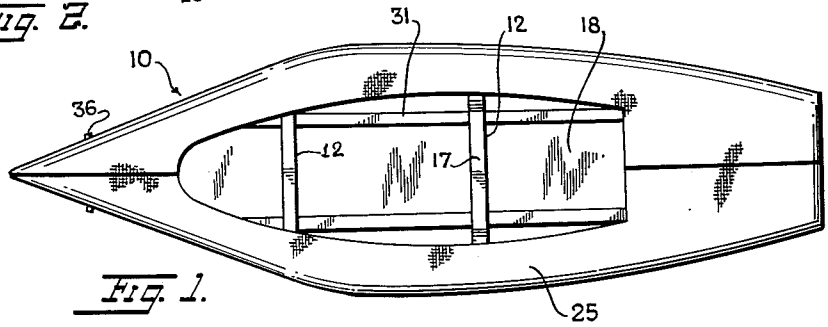


Fig. 1.

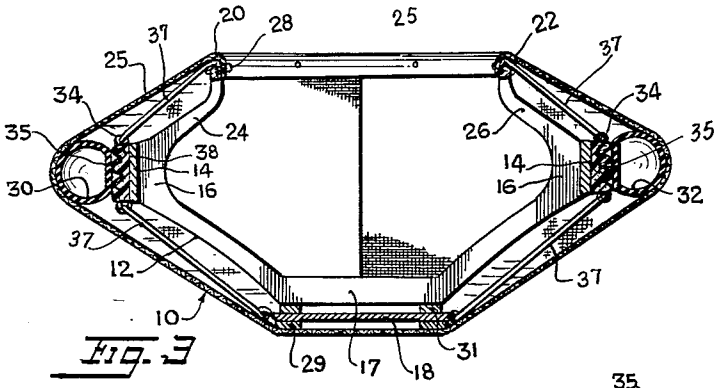


Fig. 3

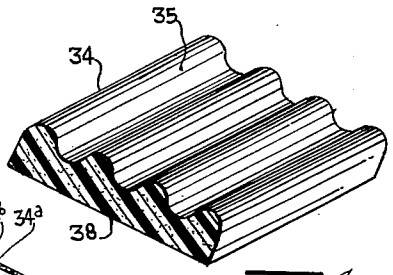


Fig. 4.

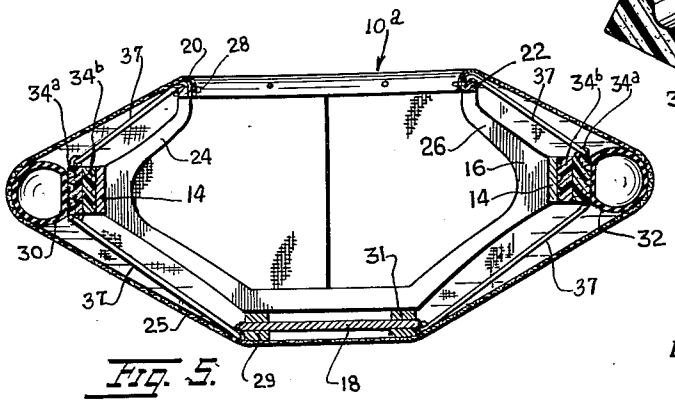


Fig. 5.

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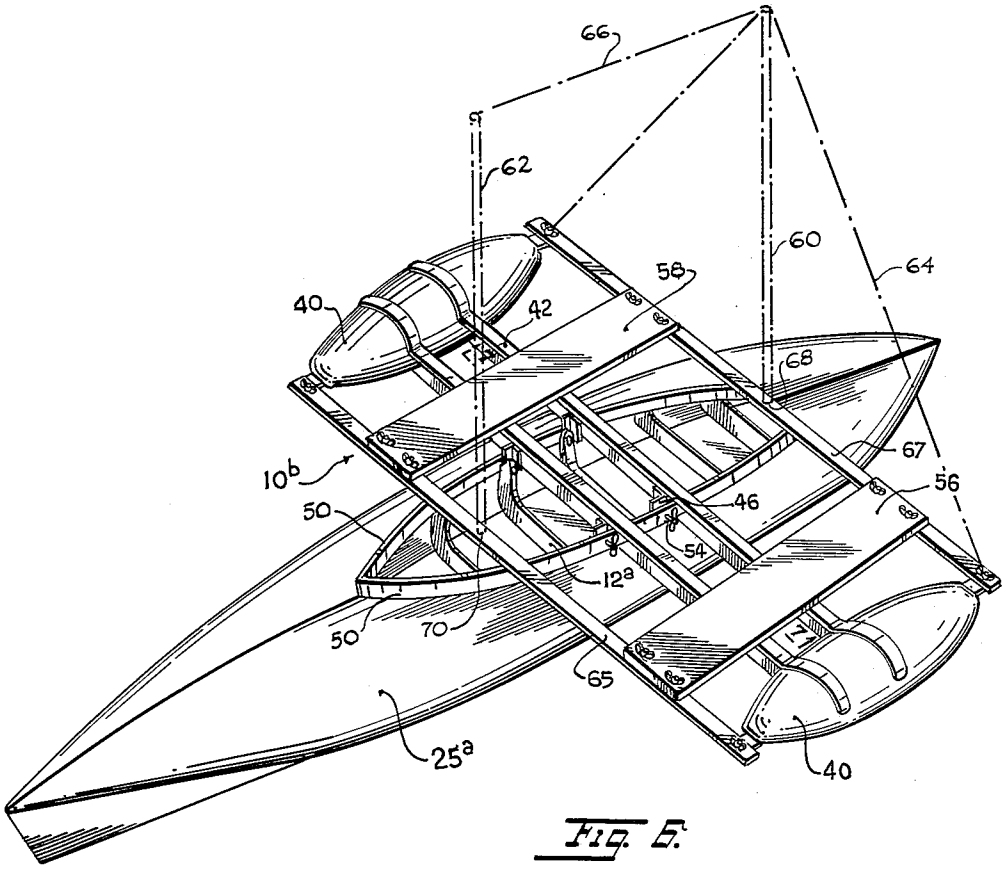


Fig. 6.

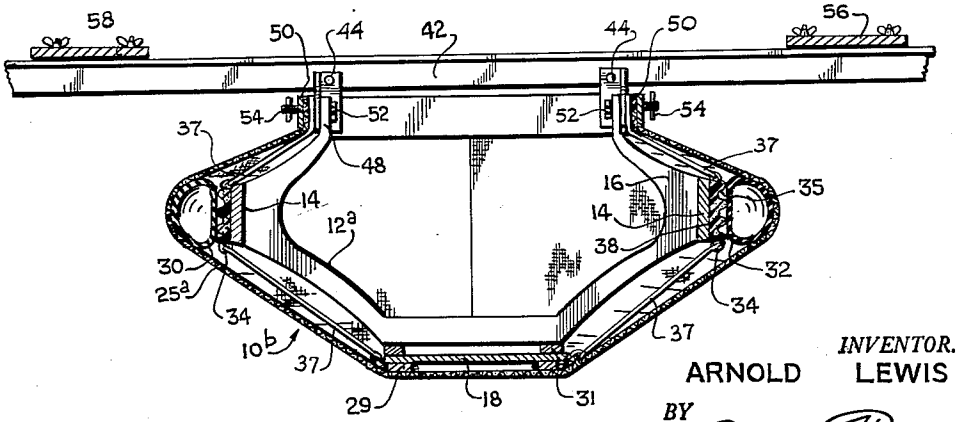


Fig. 7.

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3,099,024
Patented July 30, 1963

3,099,024

FOLDING BOAT

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Filed Jan. 23, 1961, Ser. No. 84,350
2 Claims. (Cl. 9—2)

This invention concerns an improvement in foldable boats.

It has been known heretofore to provide air tubes at the sides of collapsible boats to increase stability and buoyancy. The expanded tubes keep the cover of the boat in a taut condition and act as shock absorbers. They also serve to stiffen the body structure. A difficulty and disadvantage which has been experienced with such tubes is that they rub against the rigid sides of the boat. Due to the constant chafing of the tubes, leaks develop in the walls of the tubes. The present invention is directed at overcoming this difficulty and at providing an improvement in the body structure of a folding boat.

According to the invention, corrugated, resilient spacer pads or strips are interposed between the air tubes and the rigid sides of the boat. These pads or strips take up the stresses and strains in use and prevent shifting and chafing of the tubes.

It is therefore one object of the invention to provide a collapsible boat including air tubes securely disposed within a fabric boat covering with resilient spacers interposed between the tubes and sides of the boat.

Another object is to provide resilient pads or strips which exert continuous pressure upon expanded air tubes holding a flexible covering taut in a boat, so that the pads or strips take up any slack developing in the covering due to seepage of air from the tubes.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a top plan view of a collapsible boat embodying the invention.

FIG. 2 is a side elevational view of the boat of FIG. 1.

FIG. 3 is a sectional view on an enlarged scale taken on line 3—3 of FIG. 2.

FIG. 4 is a perspective view of a portion of a pad or strip employed in the boat according to the invention.

FIG. 5 is a cross-sectional view similar to FIG. 3 showing another embodiment of the invention.

FIG. 6 is a perspective view of another collapsible boat embodying the invention.

FIG. 7 is a cross-sectional view taken on line 7—7 of FIG. 6.

Referring to FIGS. 1–3, there is shown a collapsible boat **10** having a plurality of cross ribs **12**. Side walls **14** extending the length of the boat are secured at the lateral bights **16** of the curved arms **24, 26** of the ribs. A floor **18** is disposed at the bottom of the boat under bights **17** of the ribs. Coaming strips **20, 22** extend partly the length of the boat at the tops of arms **24, 26** of the ribs. A waterproof fabric covering **25** is secured by rivets or screws **28** to the strips. The covering extends around the sides of the boat and underneath longitudinal rails **29** at the bottom of the boat. Bars **31** space the ribs **12** from the floor **18**.

A pair of collapsible, inflatable rubber or plastic tubes **30, 32** are positioned outwardly of the side walls **14**. In accordance with the invention, interposed between the rigid side walls and the tubes **30, 32** are resilient spacer pads or strips **34**. Each pad or strip has a corrugated face **35** as clearly shown in FIG. 4. The rear side **38** of the pad or strip is flat and placed loosely

against the adjacent wall **14**. The pads or strips may be made of fibrous material, sponge rubber or foam plastic material or other suitable material. At spaced intervals along the pads or strips **34**, rods or strings **37** are fastened to the pads or strips **34** and have their ends anchored in any suitable manner to the coaming strips **20** and **22** and to the rails **29** whereby the pads or strips **34** are held against the side walls **14**.

When tubes **30, 32** are inflated with air through valves **36**, FIG. 1, the tubes expand and compress the resilient pads or strips. The tubes hold the fabric covering under tension in a taut condition and by reason of the pads are spaced from the side walls. The boat is subjected to considerable stresses and strains when in use. Heretofore the tubes would shift in position and become chafed due to contacting and constant rubbing on the rigid side walls **14**. In the present invention, the pads or strips **34** prevent the tubes from contacting the walls and consequent chafing and thus increase their useful life. Furthermore, the pads grip the tubes frictionally preventing them from shifting out of their longitudinal positions at the sides of the boat. If any air leakage should occur, the resilient pads or strips will expand to take up the slack in the covering and hold it taut until more air can be pumped into the tubes.

In the modified form of the invention shown in FIG. 5, the boat 10^a is similar to boat **10**; corresponding parts are identically numbered. In this form of the invention, two resilient pads or strips 34^a and 34^b are loosely placed back-to-back at each side of the boat between the tubes **30, 32** and the side walls **14**. In this construction, the corrugated faces of the pads or strips face both the tubes and the rigid side walls, and the flat faces of the pads or strips 34^a and 34^b slidably contact each other. The rods or strings **37** the ends of which are anchored to the pads, coaming strips **20, 22** and rails **29** hold the entire assembly in a stable condition.

In FIGS. 6 and 7, there is shown another modified form of the invention in which a trimaran boat 10^b has collapsible pneumatic pontoon outriggers **40** supported on the ends of braces **42**. The braces are preferably aluminum angle bars to which are secured intermediate their ends by rivets or bolts 44 short angle brackets **46**. The upper free ends 48 of the ribs 12^a are abutted to inner sides of the brackets. At the outer sides of the brackets there are disposed coaming strips **50** to which the upper edges of covering 25^a in any suitable manner is secured. Bolts **52** and wing nuts **54** detachably secure the brackets to the ribs. Tubes **30, 32** are disposed inside the covering 25^a in the same manner as shown in FIG. 3 and resilient spacer pads or strips **34** are similarly mounted between the tubes and rigid side walls **14** of the boat frame.

The spacer pads or strips **34** may each be composed of a number of aligned sections or lengths if desired.

Detachable deck boards **56** and **58** extend across the braces **42** at the sides of the boat masts **60, 62** supporting shrouds **64, 66** may be mounted in holes **68, 70** on the braces **67, 65** respectively.

The double corrugated spacer arrangement 34^a, 34^b shown in FIG. 5 may also be used for the boat 10^b in place of the single pads **34** shown in FIG. 7.

The invention insures a longer, trouble-free life for the collapsible boats by prolonging the useful lives of the inflated tubes. The presence of the pads increases the shock absorbing capacity of the stiffly expanded tubes, improves stability of the boat by preventing shifting of the tubes, and provides reserve expansible tensioning means for the flexible outer covering in the event the tubes deflate.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that

I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In a foldable boat, a frame having a plurality of substantially U-shaped cross ribs and substantially vertical parallel side walls carried by bights of the ribs, collapsible, inflatable and detachable air tubes extending outside of and along said side walls, spacer means interposed between the tubes and side walls to prevent shifting and chafing of the tubes on said side walls, and a flexible covering enclosing the boat frame and tightly stretched around the tubes when the tubes are inflated with air, said spacer means being resilient pads having corrugated faces juxtaposed to the tubes, a plurality of spaced cross braces detachably secured to upper ends of the ribs, deck boards extending transversely over the braces, and inflatable pontoons detachably carried at outer ends of the cross braces, and rods holding the pads in place.

2. In a foldable boat, a frame having a plurality of substantially U-shaped cross ribs and substantially vertical parallel side walls carried by lateral bights of the ribs, collapsible, inflatable and detachable air tubes extending outside of and along said side walls, spacer means interposed between the tubes and side walls to prevent shifting and chafing of the tubes on said side walls, a flexible covering enclosing the boat frame and tightly stretched around the tubes when the tubes are inflated with air, said spacer means being resilient pads, with corrugated faces, a plurality of spaced cross braces detachably secured to upper ends of the ribs, inflatable pontoons detachably carried at outer ends of the cross braces, with detachable deck boards extending transversely of the braces and laterally spaced from said covering, said covering having coaming strips secured at said upper ends of the ribs to detachable brackets carried by said braces, and rods holding the pads in place.

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