United States Patent

[11] 3,594,834

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[54] **FOLDING BOAT**
6 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **9/2**, 190/1
[51] **Int. Cl.** **B63b 7/04**
[50] **Field of Search** ..... 9/2, 2 F; 190/1, 19, 51; 224/29, 42.03, 42.01, 42.1, 42.1 E

[56] **References Cited**

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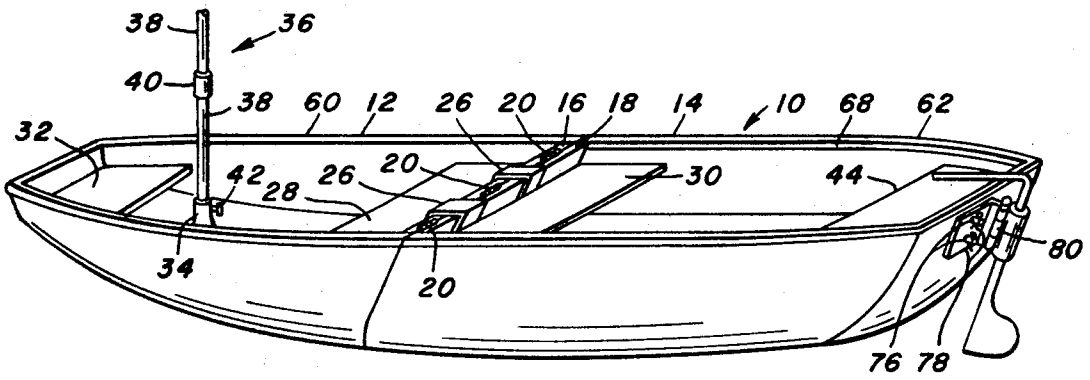
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ABSTRACT: Disclosed is a folding boat useful as a sailboat, motorboat or a rowboat. The boat comprises a boat hull comprising forward and rear shells each having similar flat transverse partitions at their adjacent ends in substantially the midportion of the hull. The partitions are pivotally connected together whereby one of the shells may be pivoted upwardly from a fully extended position to a position overlying the other of the shells. When so folded, the two shells define a closed chamber therebetween and means are secured between the shells when the boat is in the folded position to divide the chamber into upper and lower sections whereby cargo to be stored in the chamber may be segregated between the upper and lower sections. In the unfolded position of the boat, spring-clip means are provided on the partitions to lock the shells together and maintain them in the open position.



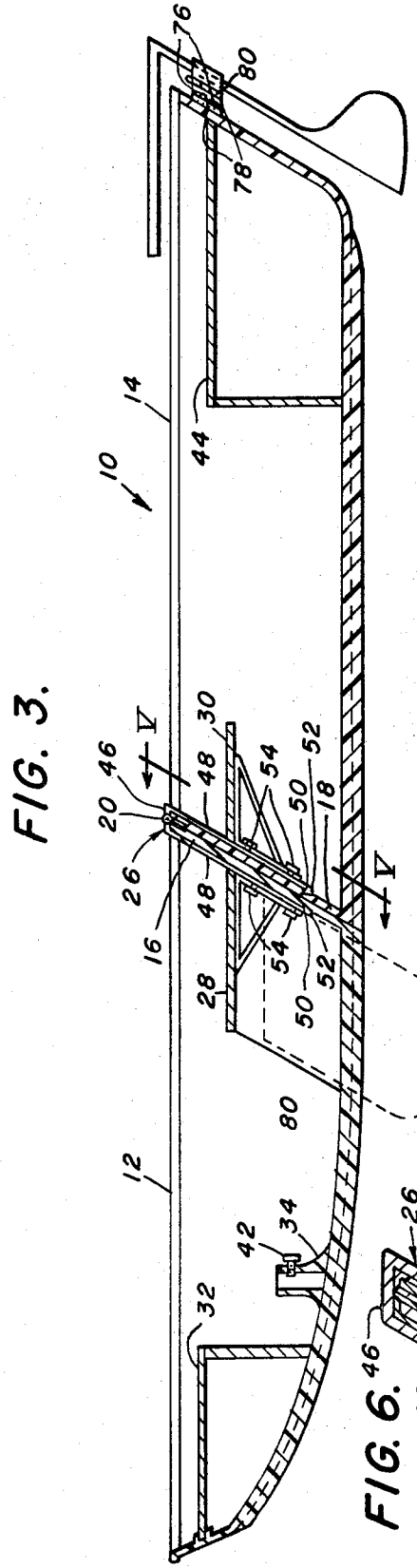


FIG. 3.

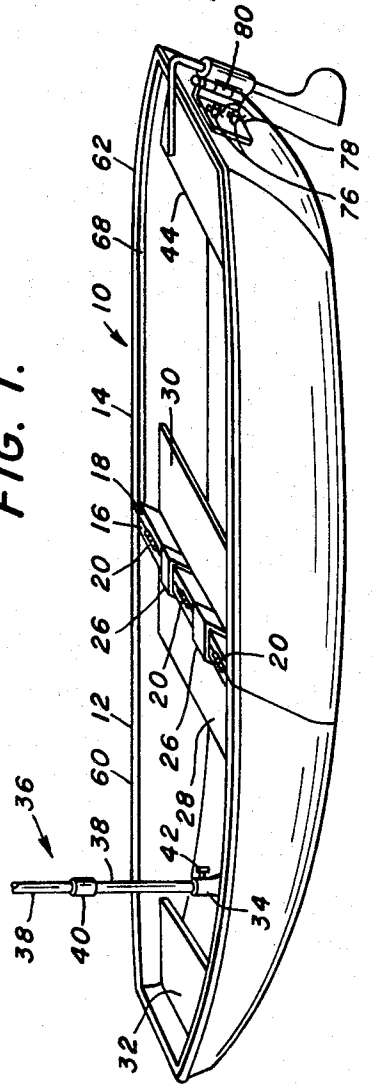


FIG. 1.

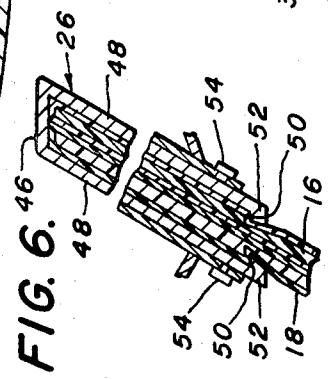


FIG. 6.

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FIG. 2.

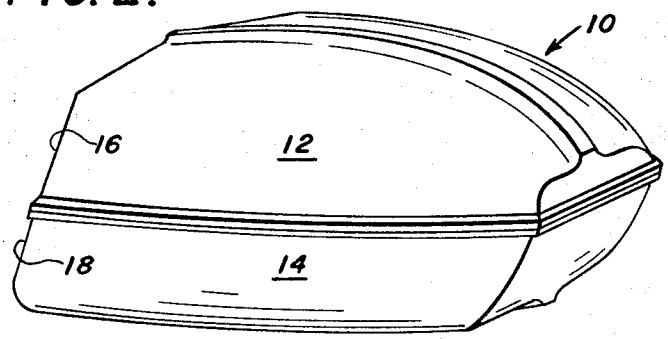


FIG. 4.

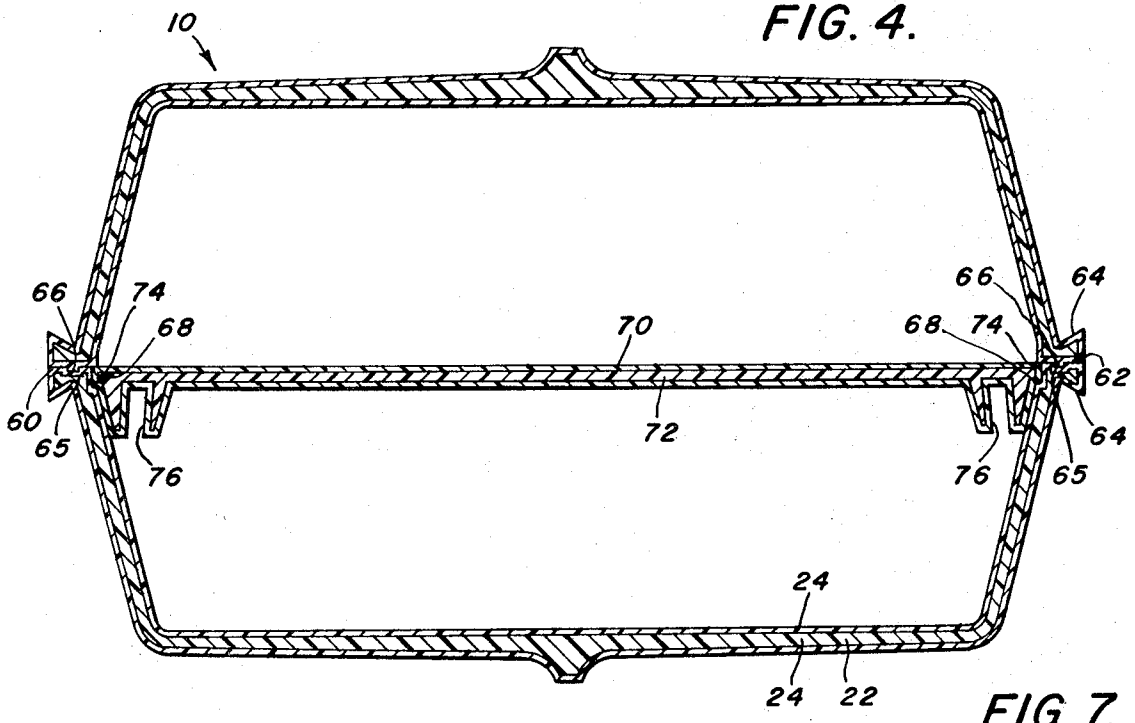


FIG. 5.

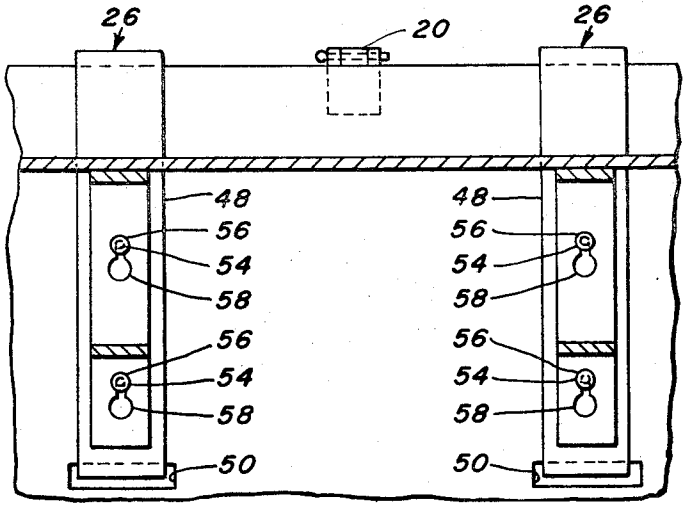
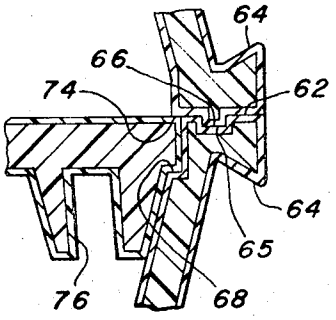


FIG. 7.



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FOLDING BOAT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to folding boats.

2. Description of the Prior Art

It is known, from U.S. Pat. No. 3,090,973, to make a boat that comprises a forward section and a rear section joined pivotally by a suitable piano hinge. The structure shown in that patent, however, comprises a craft differing from that of the present invention in a number of important respects. It is not so light in weight, so versatile, so easily transported, capable of being stored or shipped in so compact a space.

Another prior patent in U.S. Pat. No. 3,097,371 which shows a two-piece boat made of plastic, with the pieces being joined as by a piano hinge. Certain design features of the present invention are disclosed in this patent, but other ones of the desirable features of the present invention are not taught.

Also of some pertinence is U.S. Pat. No. 3,301,449 which discloses the feature of providing a boat adapted to be carried on top of a car, with the boat serving as a luggage-platform cover. The boat provided in the structure of this patent is of one piece, and is obviously neither so satisfactory as a boat as the structure of the present invention or capable of being modified to become so without disregarding the other teachings of the patent.

U.S. Pat. No. 3,349,415 shows a clamp means, used to secure together a pair of abutting coextensive gunwales in a two-piece folding boat.

BRIEF SUMMARY OF THE INVENTION

As an overall object, the present invention seeks to provide a relatively small folding boat that readily converts to a vehicle top mounted cargo carrier wherein cargo to be stored can be segregated.

Briefly, a folding boat is provided having a hull comprising a pair of unitary shells. The shells each have similar flat transverse partitions at their adjacent ends in substantially the midportion of the hull. The partitions are pivotally connected together whereby one of the shells may be pivoted upwardly from a fully extended position to a position overlying the other of the shells. The two shells when in the folded position of the boat defined a closed chamber therebetween and means, adapted to be secured between the shells, is provided to divide the chamber into upper and lower sections whereby cargo to be stored in the chamber can be segregated between the upper and lower sections.

Another feature of the invention is the provision of spring-clip means adapted to be received on the partitions to lock the shells together in the unfolded position thereof to form an open boat in accordance with the invention.

The above and other objects and features of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings which form a part of this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating a folding boat in accordance with the invention in the open or fully extended position;

FIG. 2 is a perspective view showing the boat of FIG. 1 in the closed or folded position;

FIG. 3 is a vertical sectional view taken along the length of the boat of FIG. 1;

FIG. 4 is a vertical sectional view of the folded boat of FIG. 2 and illustrating a member disposed between the shells which form the boat hull;

FIG. 5 is a view taken along the line V–V of FIG. 3;

FIG. 6 is an enlarged detail view of the midportion of the boat shown in FIG. 3; and

FIG. 7 is an enlarged detail view of a portion of the view shown in FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings wherein like reference numerals refer to like parts throughout the several views, there is shown generally at **10** a folding boat in accordance with the invention. The boat hull is formed by two unitary shells comprising a bow section **12** and an aft section **14** each having extending transversely across their adjacent ends a flat partition **16** and **18**, respectively. The upper edges of these partitions are hingedly or pivotally connected together by suitable hinges **20**, the leaves of which are rigidly secured to the partitions. It will be understood that the hinges **20** may be of the piano type and extend the full width of the boat hull. It is preferred, however, that the hinges be of the type provided with a quick-detachable hinge pin whereby the two shells may be readily separated when desired.

As shown in FIG. **4**, each half **12**, **14** of the boat hull is preferably formed of an inner core **22** of polyurethane type plastic foam, or other material or like qualities, sealed inside a seamless outer covering **24** of durable breakproof plastic. The shells are formed in accordance with techniques well known to those skilled in the art and the method of fabrication thereof will not be dealt with in further detail as it forms no part of the invention per se.

Fitting over the partitions **16**, **18** are spring-clip means **26**, which will be described below in greater detail, that are adapted to be received on the partitions to lock the shells together in the unfolded position thereof to form the open boat. The such means **26**, which as will be described below, are preferably provided with means for supporting removable seats **28** and **30**. The bow section **12** has a seat **32**, which seat may be either fixed or removable, as desired. The bow section **12** also includes a socket **34** for the support of a sail mast **36**. As shown, the mast **36** is preferably of the break-down type, being made of a plurality of sections **38**, joined by collars or other suitable fasteners **40**, with the bottommost portion **38** being received in the socket **34** and secured therein by suitable means, such as the set screw **42**.

The aft section **14** has a seat **44**, which seat — preferably, is a separate and removable storage compartment usable as, for example, for storing food and beverages.

From the foregoing, it will be understood, that with mast **36** removed and the spring-clips **26** removed from engagement with the partitions **16** and **18**, the bow shell **12** may be pivoted upwardly from a fully extended position (FIG. **1**) to a position overlying the aft shell **14**, as is shown in FIG. **2**.

Referring now more particularly to FIGS. **3**, **5** and **6**, it can be seen that each of the spring-clip means **26** are of generally U-shaped configuration having a relatively short web portion **46** and a pair of spaced-apart elongated portions **48** extending from the web portion **46**. The web portion **46** of each spring-clip lies in a substantially horizontal plane in engagement with the upper edges of the partitions **16**, **18** in the normal operative position of the spring clips **26** and the spaced-apart portions **48** are in engagement with the exposed side surfaces of the partitions. As best seen in FIG. **6**, the partitions **16**, **18** have recessed portion **50** extending inwardly from the exposed surfaces thereof and the spaced-apart portions **48** of the spring-clip **26** each have an inwardly projecting portion **52** adapted to enter and engage a recessed portion **50** in the partitions **16**, **18**. In order to remove the spring-clips **26**, the portions **52** thereof must first be removed from engagement with the recessed portions **50** of the partitions.

Each of the spring-clips **26** is provided with upper and lower studs **54** to removably secure the seats **28** and **30** to the partitions. Each of the studs **54** has enlarged head portions **56** which are adapted to pass through keyhole-like openings **58** provided in the brackets **60** to which the seats **28** and **30** are secured. As will be understood, the brackets **60** of seats **28** and **30** are moved downwardly after the head portions **56** are

received in the openings **58** to cause the studs **54** to be received in the narrower portion of the openings **58** thereby securing the seats **28, 30** in position on the partitions.

Referring now more particularly to FIGS. **1** and **4**, it can be seen that each of the shells **12, 14** has side decks **60** and **62**, respectively, extending laterally outwardly adjacent the upper edges of the sidewalls of the shells to define a continuous rubrail extending about the upper periphery of the boat in the unfolded position. As best seen in FIG. **4**, this rubrail is beveled as at **64** to provide convenient continuous carrying handles and clamp surfaces for clamping the folded boat to a rack which may be provided on an automobile top. Also, as best seen in FIG. **7**, the bow section **12** is provided with an upstanding endless flangelike portion **56** and the aft section **14** has a continuous upwardly opening channel **66**. In the folded position of the boat **10**, the flangelike portion **65** is received in the cooperates with the channel **66** to provide a weathertight junction along the mating surfaces of the shells **12, 14**. Accordingly, with the boat in the folded position, the shells **12, 14** define therebetween a closed chamber for the storage of cargo and the possibility of wind or moisture entering the cargo space so provided is prevented by the weathertight junction along the mating surfaces of the shells.

It may be explained, that the inner core **22** of foam plastic is currently added to many boats due to its flotation properties and normally renders the boats in which it is added unsinkable. Another property of this type material is that it has remarkable insulating qualities that has been taken advantage of in many applications. The present invention also takes advantage of the insulation properties of this type material. To this end, the deck **62** of the aft section **14** has a depressed ledge **68** formed on the interior edge thereof which extends about the upper periphery of the shell **14**. This lip **68** provides a holding shelf for a horizontal platform **70**. The platform **70** is formed of an inner core **72** of the same type material as core **22**, which core **72** is also sealed inside an outer covering of durable breakproof plastic. The platform **70** is dimensioned to completely divide the cargo chamber into upper and lower sections whereby cargo to be stored in the chamber may be segregated between the upper and lower sections. By reasons of this construction, the entire bottom section of the cargo chamber, for example, may be utilized for cold storage while the top secton may be used for other storage purposes.

As shown, the upper surface of the platform **70** is flush with the deck **62**, and in the folded position of the boat **10**, the inner edge **74** of the deck **60** of bow shell **12** engages the marginal portions of the upper surface of the platform **70** thereby securing the platform **70** between the two shells.

An additional feature provided by the platform **70** is that it may also be used as the surface of a table. To this end, sockets **76** are provided in the four corners thereof which are adapted to receive the sections **38** of the mast, for example, with the sections **38** serving as the legs of the table.

A key operated lock (not shown) may be molded into one of the shells with cooperating elements molded into the other of the shells with cooperating elements molded into the position and to prevent access to the cargo chamber by unauthorized persons. Also, oar lock holes or fittings (not shown) may be molded into one of the shells in order that the boat **10** may serve as a rowboat.

Preferably, the bow and aft sections of the hull are of such dimension that with the hinge pins of the hinges **20** removed, one shell may be nested within the other, requiring a minimum of storage space when the boat is to be stored as, for example, in a garage or cellar. Also, a keel well **80** may be provided in bow secton **12** to accommodate a keel shown outline form at **82**. Preferably, the keel **82** is free floating in the well **80** and is slanted backward at an angle of approximately **30** degrees which allows it to slide upward within the well **80** without damage to the boat when grounded.

As shown, the aft shell **14** has a pair of studs **76** projecting therefrom The studs **76** are utilized to detachably secure a bracket **78** to the shell by means of pins **79**. The bracket **78** has a tiller pivotally amounted thereon by means of a hinge **80**. Alternately, the studs may be utilized to detachably secure a suitable bracket to which would be secured a lightweight outboard motor, thereby converting the boat **10** to a power driven boat.

From the foregoing, it will be understood that I have thus provided a versatile, lightweight, inexpensive, compact folding boat substantially surpassing, when its advantages are considered as a whole, similar type folding boats known to those skilled in the art.

I claim as my invention:

1. In a folding boat construction, the combination comprising a boat hull comprising a pair of unitary shells, said shells each having similar flat transverse partitions at their adjacent ends in substantially the midportion of said hull, means pivotally connecting said partitions together whereby one of said shells may be pivoted upwardly from a fully extended position to a position overlying the other of said shells, said shells in the folded position of the boat defining a closed chamber therebetween, and removable spring-clip means fitting over said partitions to lock said shells together in the unfolded position thereof to form an open boat, said spring-clip means being of generally U-shaped configuration and having a relatively short web portion and a pair of spaced-apart elongated portions extending from said web portion, said web portion lying in engagement with the upper edges of said partitions in the normal operative position of said spring-clip means and said spaced-apart portions of said spring-clip means extending downwardly from said web in engagement with the exposed side surfaces of said partitions.

2. In a folding boat construction as defined in claim **1**, wherein said partitions have recessed portion extending inwardly from the exposed surfaces thereof and said spaced-apart portions of said spring-clip means each have an inwardly projecting portion adapted to enter and engage a recessed portion in said partitions.

3. In a folding boat construction as defined in claim **1**, wherein said spring-clip means include means for removably securing a seat thereto.

4. In a folding boat construction as defined in claim **1**, wherein each of said shells has side decks extending laterally outwardly adjacent the upper edges of the side walls thereof to define a continuous rubrail extending about the upper periphery of the boat in the unfolded position thereof, one of said side decks on one of said shells having an upstanding endless flangelike portion and the other of said decks on the other of said shells having a continuous upwardly opening channel, said flangelike portion being received in and cooperating with said channel when said boat is in the folded position to provide a weather tight junction along the mating surfaces of said shells.

5. In a folding boat construction as defined in claim **4**, wherein at least one of said decks of one of said shells has a depressed ledge formed on the interior edge thereof which extends about the upper periphery of said one shell, and a horizontal platform is adapted to be mounted on said shoulder with its upper surface being flush with said one deck whereby in the folded position of said boat the other of said decks engages the marginal portions of the upper surface of said platform to secure said platform between said shells.

6. In a folding boat construction as defined in claim **4**, wherein the exposed upper and lower surfaces of said rubrail in the folded position of said boat converge toward said shells to provide clamping surfaces for clamping the boat to a vehicle, whereby the boat may be hauled on a highway.