Nov. 1, 1966 C. R. SHOLL 3,281,874

REMOVABLE WHEELS AND TRAILING TONGUE FOR BOATS

Filed Oct. 8, 1964

2 Sheets-Sheet 1

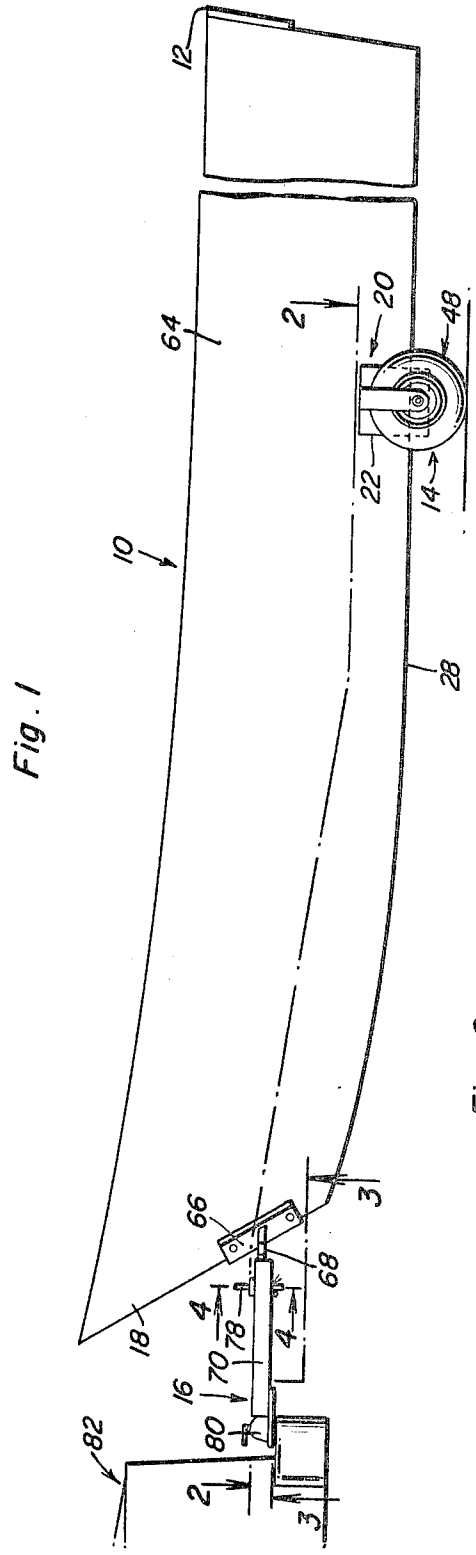


Fig. 1

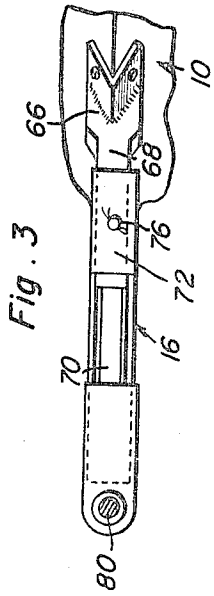
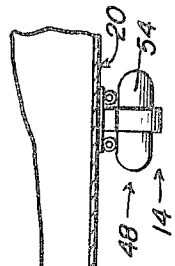


Fig. 3



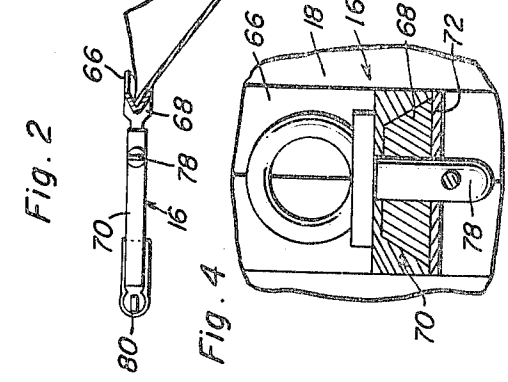


Fig. 2

Fig. 4

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Fig. 7

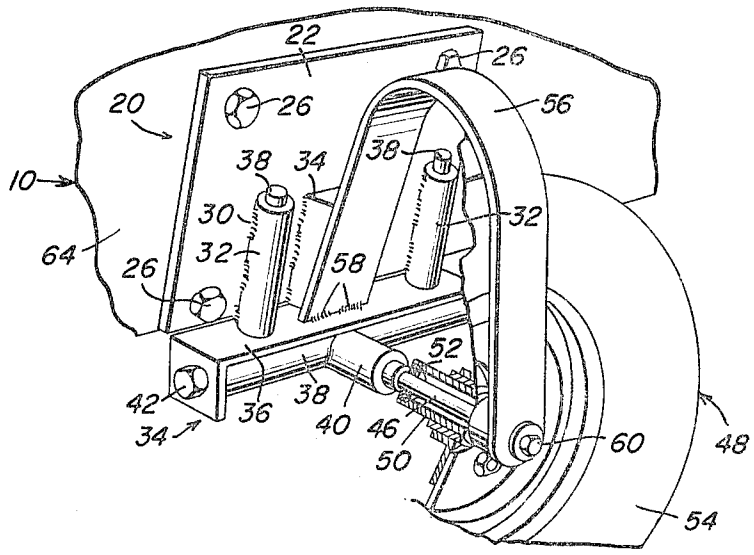


Fig. 5

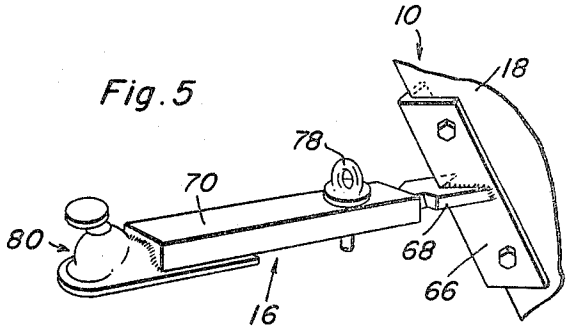


Fig. 6

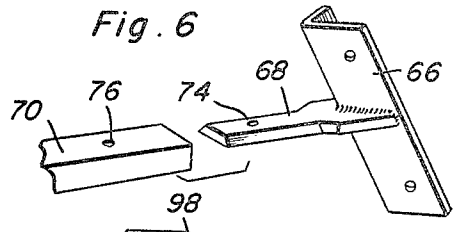


Fig. 8

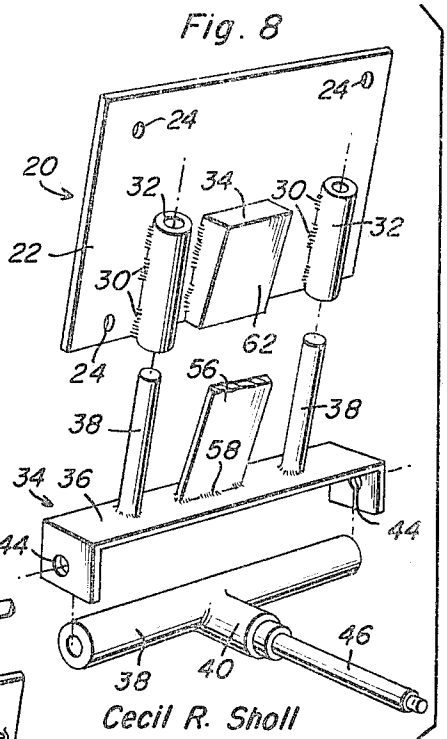


Fig. 10

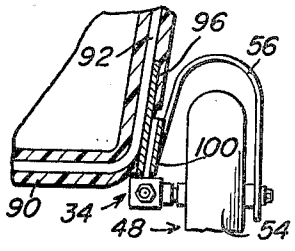
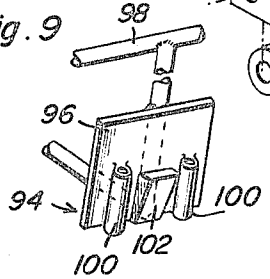


Fig. 9



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REMOVABLE WHEELS AND TRAILING TONGUE FOR BOATS

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Filed Oct. 8, 1964, Ser. No. 402,560
8 Claims. (Cl. 9—1)

This invention relates to new and useful improvements in removable wheels and trailing tongues for boats and has for an important object to provide, in a manner as hereinafter set forth, novel means whereby a boat may, with a minimum of labor, be transported to the water, launched, pulled out and returned without the usual trailer.

Another highly important object of the present invention is to provide boat transporting wheels of the character described which may be expeditiously removed from the hull and remounted thereon while said hull is in the water.

Still another important object of the invention is to provide an attachment of the aforementioned character comprising a unique spring suspension for yieldingly supporting the boat.

Another object is to provide a boat transporting means of the character set forth wherein the attaching means which is carried by the hull may be incorporated therein at the time of manufacturing.

Other objects are to provide a boat transporting means which is comparatively simple in construction, strong, durable, compact, of light weight, and which may be manufactured at low cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in side elevation of a boat equipped with wheels and a trailing tongue or towbar embodying the present invention;

FIGURE 2 is a fragmentary view in horizontal section, taken substantially on the line 2—2 of FIGURE 1;

FIGURE 3 is a view in horizontal section, taken substantially on the line 3—3 of FIGURE 1;

FIGURE 4 is a view in transverse section on an enlarged scale through the towbar, taken substantially on the line 4—4 of FIGURE 1;

FIGURE 5 is a perspective view of the towbar.

FIGURE 6 is a fragmentary view in perspective of the rear portion of the towbar, showing the parts separated.

FIGURE 7 is a perspective view of the wheel assembly with a portion broken away;

FIGURE 8 is a perspective view of the wheel assembly, showing the parts separated and with portions omitted.

FIGURE 9 is a perspective view of a modification; and

FIGURE 10 is a fragmentary view in transverse section of a side portion of a plastic boat, showing the modification of FIGURE 9 installed.

Referring now to the drawings in detail it will be seen that the reference numeral 10 designates generally a conventional boat. Mounted on the sides of the boat 10, adjacent to but spaced forwardly from the stern or transom 12 thereof, is a pair of wheel assemblies 14. A towbar 16 is mounted on the stem or bow 18 of the boat 10.

As illustrated to advantage in FIGURES 7 and 8 of the drawing, each wheel assembly 14 comprises a bracket 20 which includes a rectangular metallic plate 22 having holes 24 in its corner portions for the reception of bolts or screws 26 for firmly securing said plate in position on the side of the boat 10 at a point immediately adjacent to or flush with the bottom 28 thereof. Secured vertically as by welding at 30 on the outer side of the plate 22

are spaced, parallel tubular sockets or sleeves 32 of suitable metal. Secured as by welding on the plate 22, between the sleeves 32, is a spacing block or brace 34 the purpose of which will be presently set forth.

The bracket 20 carries a vertically removable wheel mount 34. The mount 34 includes a generally inverted U-shaped bar or yoke 36 having affixed thereto, as by welding, at longitudinally spaced points generally upstanding pins 38 which are insertable upwardly in the sleeves 32 for removably mounting the yoke 36 on the plate 22. It will be noted that when so mounted the pins 38 project above the sleeves 32 and said sleeves rest on the yoke 36.

Mounted for oscillation in a vertical plane in the yoke 36 is a generally T-shaped, tubular movable shaft or member 38 comprising a relatively short stem portion or branch 40. The shaft 38 is journaled for oscillation on a pivot bolt 42 which is mounted in openings 44 provided therefor in the end portions of the yoke 36.

The member 40 provides a socket in which is fixedly mounted an end portion of an axle 46. A removable wheel 48 is mounted for rotation on the axle 46. The wheel 48 comprises a hub 50 having suitable bearings 52 therein on the axle 46. The wheel 48 further includes a pneumatic tire 54.

The free or outer end of the axle 46 is yieldingly supported on the yoke 36 through the medium of a generally inverted U-shaped spring 56 which bridges the wheel 48 and which has one end portion affixed at 58 to said yoke by welding. The outer end portion of the spring 56 is apertured to receive the outer end portion of the axle 46 therethrough. A nut and washer assembly 60 detachably secures the outer end portion of the spring 56 to the corresponding end portion of the axle 46. The block or brace 34 includes an inclined cam face 62 which is engaged by the opposed inner end portion of the spring 56. The respective side of the boat 10 is indicated at 64.

The towbar 16 comprises a generally V-shaped apertured plate 66 which is permanently mounted on the lower portion of the bow 18 of the boat 10. Secured to the plate 56 at an intermediate point and projecting forwardly therefrom is a metallic tongue 68. The tongue 68 is telescopically engaged in the rear end portion of a sleeve 70 in the form of an inverted channel bar having secured beneath its rear end portion a plate 72 (see FIGURE 4). As shown, the tongue 68 is substantially dovetailed in transverse section and the interior of the sleeve 70 is correspondingly shaped. The members 68 and 70 are provided with openings 74 and 76, respectively, which are brought into registry to receive a removable pin 78 for detachably connecting said members. A ball and socket hitch assembly 80 detachably connects the forward end of the sleeve 70 to a towing vehicle 82.

It is thought that the use or operation of the invention will be readily apparent from a consideration of the foregoing. Briefly, the boat 10 is towed to the launching site and backed into the water, after which said boat is detached from the towing vehicle. With the boat now waterborne, the wheels 48 and the towbar 16 may be readily removed from within said boat. When returning and upon approaching the shore or beach, the wheels 48 are remounted on the brackets 20 and the towbar 16 is again attached whereby the boat may be pulled out of the water. The inner end portions of the springs 56 cam on the slightly relatively angled faces 62 of the blocks 34 and are tensioned thereby for frictionally retaining the mounts 34 on the plates 20. As will be apparent, the springs 56 yieldingly support the outer ends of the axles 46 in a manner to permit vertical oscillation of said axles and the wheels thereon.

As shown in FIGURES 9 and 10 of the drawing, reference numeral 86 generally designates a portion of

a plastic boat. Molded in the side and bottom **88** and **90**, respectively, of the plastic boat **86** is a metallic rod **92**. A bracket **94** in the form of a metallic plate **96** is molded in the side **88** of the boat **86** and welded on the upstanding portion of the rod **92**. In the embodiment shown, a reinforcing rod **98** is molded in the gunwale of the boat **86** and affixed to the upper end of the rod **92**. Sleeves **100** are affixed as by welding to the plate **96** with a cam block **102** therebetween. Of course, the unit **34** is mounted on the bracket **94**, the pins **38** entering the sleeves **100** with the inner end portion of the spring **56** binding on the cam block **102**.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An apparatus for transporting boats comprising, in combination, a pair of supporting wheel assemblies, means removably securing said assemblies to the sides of a boat, a towbar including means for detachably securing said towbar to a towing vehicle, and means detachably securing said towbar to the stem of the boat, each of said wheel assemblies including a plate mounted on a side of the boat, at least one essentially upstanding sleeve on the plate, a mount comprising a bar, an essentially upstanding pin on the bar engaged in said sleeve, a vertically oscillatable shaft on the bar, an axle affixed laterally to the shaft, and a wheel mounted for rotation on said axle.

2. A boat transporting device comprising a bracket mounted on the boat, axle, means mounting said axle for swinging movement in a vertical plane on the bracket, a ground wheel rotatable on the axle, and means for yieldingly resisting upward swinging movement of the axle, the second-named means including a generally inverted U-shaped spring straddling the wheel and having one of its ends affixed to the bracket and its other end secured to the free end of the axle.

3. A boat transporting device comprising a bracket mounted on the boat, an axle, means mounting said axis for swinging movement in a vertical plane on the bracket, a ground wheel rotatable on the axle, and means for yieldingly resisting upward swinging movement of the axle, said bracket including essentially vertical sleeves, the first-named means including a yoke, upstanding pins on the yoke engaged in the sleeves, a shaft journaled for vertical oscillation in the yoke, and a lateral socket on the shaft receiving an end portion of the axle.

4. A device in accordance with claim **3**, said bracket further including a plate having openings therein and further having the sleeves mounted thereon, and fasteners engaged in the openings and securing the plate on the boat.

5. The combination of claim **2**, together with a spacing block mounted on the bracket and including a cam face frictionally engageable under tension by said one end portion of the spring.

6. A boat transporting device comprising a bracket including a vertical rectangular metallic plate having holes in its corner portions receiving fasteners for securing said plate on a side of a boat, laterally spaced vertical sleeves on the plate, a wheel mount removably mounted on the bracket and including an inverted yoke, upstanding pins on the yoke upwardly engaged in the sleeves, a removable pivot bolt extending between the end portions of the yoke, a tubular shaft mounted for vertical oscillation on said pivot bolt, an axle secured at one end on the shaft at right angles thereto, a ground wheel rotatable on the shaft, and a generally inverted U-shaped spring bridging the wheel and having one end portion affixed to the yoke and its other end portion secured to the free end of the axle for yieldingly resisting upward swinging movement thereof.

7. The combination of claim **6**, together with a brace block mounted on the plate between the sleeves and abutting said one end portion of said spring.

8. In combination, a plastic boat, a metallic rod embedded in the boat, a bracket comprising a metallic plate embedded in the boat and affixed to the rod, upstanding exposed sleeves on the plate, a horizontal bar, upstanding pins on the bar engaged in the sleeves, a shaft mounted for vertical oscillation on the bar, an axle affixed at one end to the shaft at right angles thereto, a wheel rotatably mounted on said axle, and a spring connected to the axle for yieldingly retaining same in an essentially horizontal position.

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