March 22, 1960 R. TOTTEN 2,929,079

RETRACTILE LANDING GEAR FOR A BOAT

Filed April 4, 1955 2 Sheets-Sheet 1

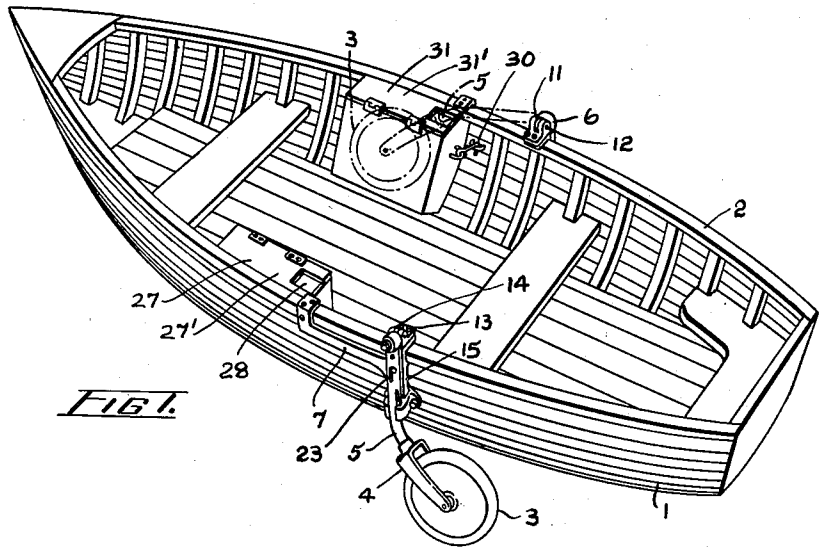


FIG 1.

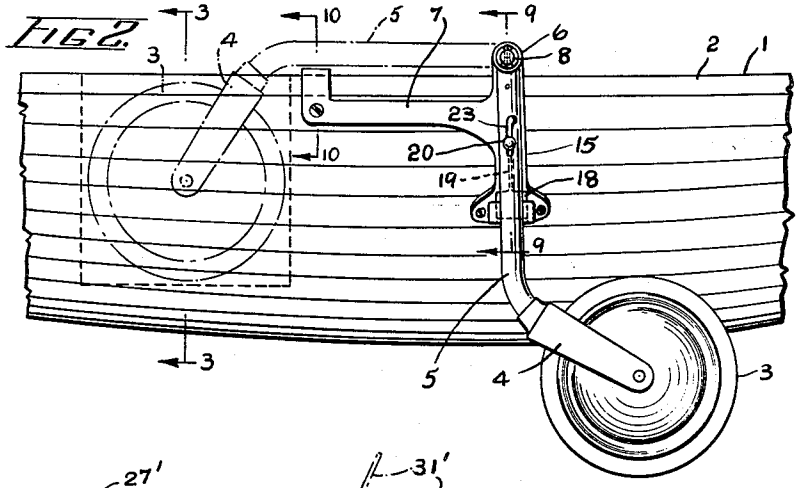


FIG 2.

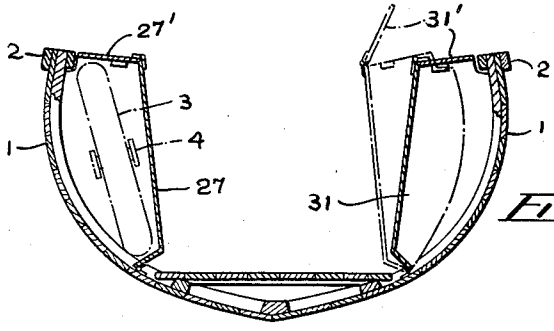


FIG 3.

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RETRACTILE LANDING GEAR FOR A BOAT

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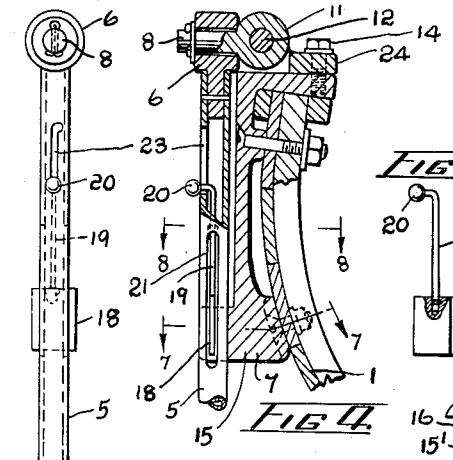


FIG 4.

FIG 9.

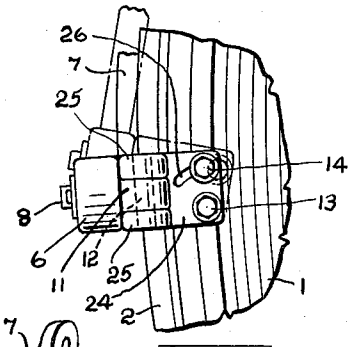


FIG 5.

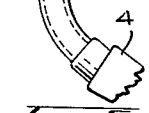


FIG 6.

FIG 7.

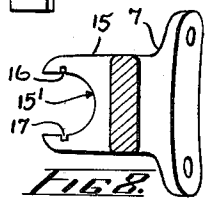


FIG 8.

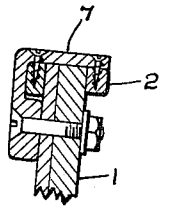


FIG 10.

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RETRACTILE LANDING GEAR FOR A BOAT

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Application April 4, 1955, Serial No. 499,190

5 Claims. (Cl. 9—1)

This invention relates to beaching arrangements for watercraft.

More particularly it relates to wheeled landing gear of a kind which can be retracted when the vessel is afloat and which can not only provide means for beaching the vessel but also for facilitating the wheeled transport thereof over land.

Whereas it is known to provide cradles, dollies and other similar devices for supporting a watercraft that requires to be land-borne, the prior art devices of this sort are conspicuously lacking in convenient provisions for stowing the landing gear when the vessel is water-borne. The principal object of the present invention is to overcome this deficiency.

The invention contemplates an arrangement wherein an appropriate landing wheel is supported by means clamped or bolted to a gunwale and wherein hingeable members and clamps cooperate to enable the wheel and its support to be suspended over-side when landing, and then above the water line when it is water-borne.

In a further aspect the hingeable members are double-jointed so that the landing gear can be swung inboard when not required for landing but without being detached from the major support means.

The invention will now be described with reference to two preferred embodiments of construction, one of interest to operators of heavy watercraft, and a modification including a double-jointed hinge feature of particular interest to operators of small light craft wherein it is desirable to compactly store the landing gear inboard. In the embodiments now to be described it is understood that normally a plurality of at least two of my landing units would be employed, and these would normally be arranged for port and starboard mounting respectively. The description hereunder will be aided by reference to the accompanying drawing wherein:

Figure 1 is a view looking down upon a light watercraft to which a pair of landing arrangements in accordance with my invention have been fitted.

Figure 2 is a fragmentary side view of a craft with my invention shown in side view, fitted thereto.

Figure 3 is a cross section along the lines 3—3 of Figure 2 and shows details of means for stowing the landing wheels inboard of the craft.

Figure 4 is a part section showing details of a hinged mounting arrangement forming part of the construction depicted in Figures 1, 2 and 3.

Figure 5 is a detail of a hinge arrangement.

Figure 6 is a detail of a wheel support and locking arrangement.

Figure 7 is a section along the lines 7—7 of Figure 4, and shows how the wheel support may be latched to a mounting clamp.

Figure 8 is a section along lines 8—8 of Figure 4, but omitting the wheel support.

Figure 9 is a perspective view of a locking device.

Figure 10, a section at lines 10—10 of Figure 2, shows

details of the manner of mounting the clamp upon the gunwale of a vessel.

Referring at first to Figures 1 through 11, 1 generally denotes a light watercraft having a gunwale 2. A landing wheel 3 is mounted rotatably in a fork 4 having shank 5 constituting a wheel support. This shank 5 is preferably of tubular form and may terminate at its lower end by a brazed connection to the fork 4 and at its upper end by a cast head 6 which is bored on an axis normal to the axis of the shank to provide bearing for a pin 8. A plate 24 rests upon the top of bracket 7 and may consist of a casting having a bored clevis 25 in the form of a bifurcated boss which is pierced and which mates with an eye 11 formed at one end of pin 8, and with a pintle 12 provides a swivel. The plate 24 is swivelly mounted upon a gunwale clamp 7 in the nature of a bracket or other frame piece, and the swivel mounting of the plate 24 is achieved by means of fixed pivot bolt 13 and limiting pin-bolt 14.

The gunwale clamp 7 which is shown screwed to the gunwale but could be clamped detachably thereto by the aid of wing-screws, also includes a downward extension 15 which is recessed at 15′ at its lower end to form a cradle for nesting the shank 5 when it is in the operative attitude. The cradled portion of the mounting clamp includes two slots 16, 17 which are dimensioned to receive a key or latch 18, having a shank 19 and operating handle 20. The latch resides slidably within the shank 5 and its lateral edge portions project from vertical guide slots 21 diametrically disposed in the shank. The handle 20 protrudes through bayonet slot 23 in the shank, and as is evident from inspection of the drawing, upward movement of the handle and then a slight turn into the bayonet slot locks the latch in open attitude, and downward movement of the handle causes the lateral edge portions or wings of latch 18 to engage the slots 16, 17 whereby the wheel shank is firmly affixed to the side of the vessel 1 for use as a landing wheel, see Figure 2.

The hinging and swivelling arrangement thus specified enables the shank 5 and wheel 3 to be turned outwardly and upwardly as soon as it is unlatched from slots 16, 17. It can then be turned inboard and by changing the angular attitude of plate 24 with the aid of slot 26, the axis of shank 5 can be moved inwardly so as to enable the shank 5 to be dropped downward and inboard to place the wheel 3 in storage box 27. An aperture 28 in the lid 27′ of box 27 allows the shank 5 to pass through: this aperture can be fitted with a rubber gasket, not shown, to reduce the formation of ice in cold weather and/or to lessen the influx of spray into the box. The wheel just discussed is exemplified as a port-side landing wheel; a starboard-side landing wheel is shown in dotted lines in Figure 1 as being nested in a starboard box 31 and provided with a hinged lid 31′. Both boxes can be detachable and may be anchored to the inside of the hull by hook-and-eye agencies such as 30, in Figure 1.

It will be seen that a feature of this construction is the three-way hinge comprising the clevis, knuckles, the pivoted pin and the sliding plate connection at the junction of 24 and 5. This arrangement permits the wheel and fork and shank to, practically speaking, "go over the side" and back inboard, transversing three distinct interlaced sets of planes, without detaching the wheel and its shank from the gunwale of the vessel. The construction also provides for the protection of the wheel against weather when not in use.

The foregoing description covers a form of the invention adapted for small craft. For larger craft whereon a much heavier landing gear may be required, a somewhat simpler although more massive modification is preferred.

It will be understood that while the description and

drawings have mainly been concerned with detailing features of a port-side assembly, those skilled in the art will realize that the starboard-side gear will require to have all the fittings made in complementary form that is "rights" and "lefts" so as to preserve symmetry of assembly in the use of a pair of the land wheels of the retractile landing gear.

What is claimed is:

1. In the combination of a boat and a landing gear, a bracket member fixed to the hull of the craft at the gunwale thereof, a plate pivotally mounted on the top of said bracket for limited swivelling movement in a horizontal plane, a pin pivotally mounted on said plate for swinging movement in a vertical plane and having limited relative swivelling movement in a horizontal plane, a shank having at one end a bearing pivotally connecting said shank to said pin and a wheel carried by the other end, whereby said shank is swingable between an operative vertical position outside the boat to support the boat and an inoperative position inside the boat, and releasable means locking said shank in its operative position.

2. In the combination of a boat and landing gear, a bracket member affixed to the hull of the craft at the gunwale thereof, a plate pivotally mounted on the top of said bracket for limited swivelling movement in a horizontal plane, a pin pivotally mounted on said plate for limited swinging movement in a vertical plane and for limited relative swivelling movement in a horizontal plane, a shank having at one end a bearing pivotally connecting said shank to said pin and a wheel carried by the other end of said shank, whereby said shank is swingable between an operative vertical position outside the boat to

support the boat and an inoperative position inside the boat, a cradle carried by said bracket below the pivot of the shank to receive said shank when in its operative position and releasable means locking said shank in said cradle.

3. A device as defined in claim 2, in which the means for releasably locking said shank in said cradle comprises a pair of transverse slots diametrically disposed in the walls of the socket, a key slidably mounted on said shank and having edges laterally projecting therefrom and arranged to be engaged in said slots, a rod connected to said key, and a handle on said rod and accessible for manipulation.

4. A device as defined in claim 2, in which the cradle has its mouth disposed outwardly of the adjacent side of the boat, and in which the pin is pivotally connected to the plate on an axis parallel with the gunwale of the boat whereby the wheel and the shank are capable of being swung outwardly from the boat to disengage said shank from the cradle to permit the wheel and the wheel support to turn on the pivotal connection of the shank.

5. A device as defined in claim 2, in which the means for releasably locking the said shank in said cradle comprises a key slidably mounted on said shank and movable into locking engagement with said cradle.

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