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2,747,536

HULL HAVING PIVOTAL HULL UNITS

Filed May 21, 1952

2 Sheets-Sheet: 1

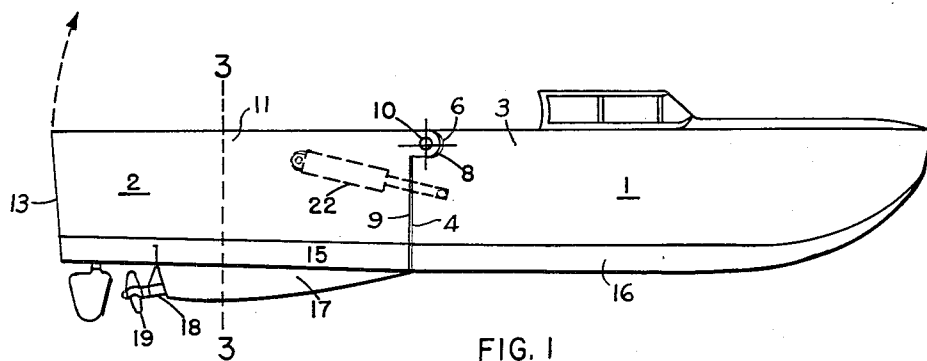


FIG. 1

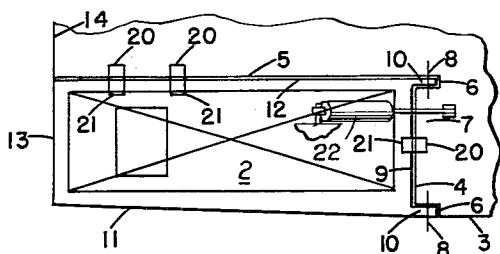


FIG. 2

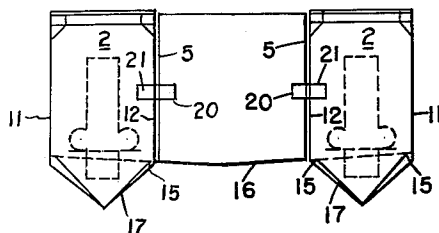


FIG. 3

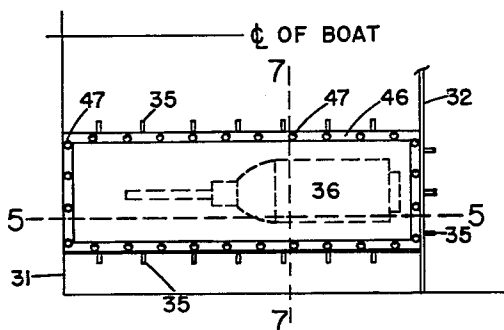


FIG. 4

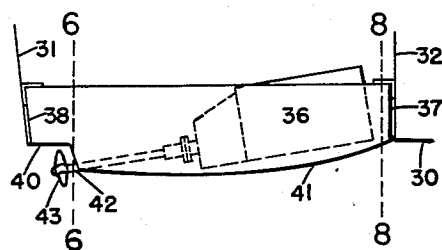


FIG. 5

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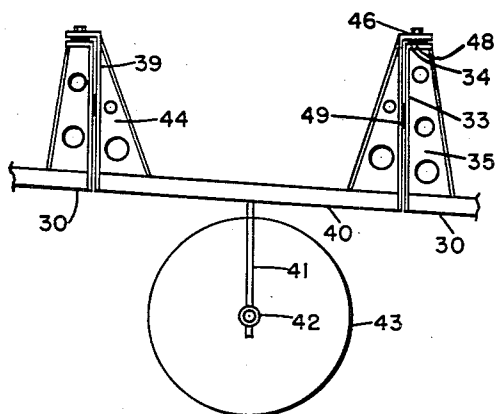


FIG. 6

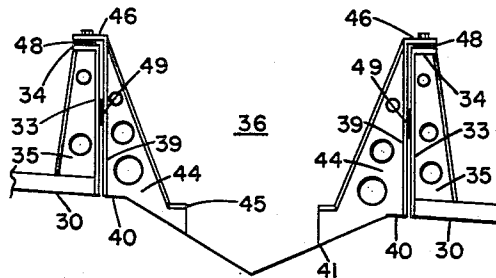


FIG. 7

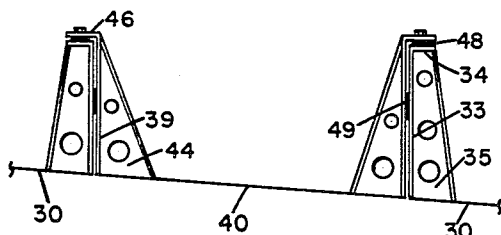


FIG. 8

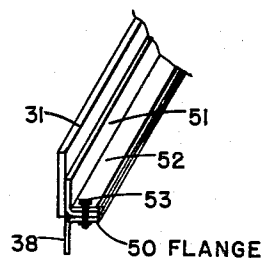


FIG. 9

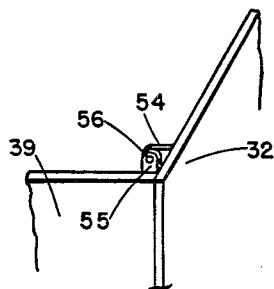


FIG. 10

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HULL HAVING PIVOTAL HULL UNITS

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1 Claim. (Cl. 114—77)

This invention relates to boat construction, and more particularly to the adaptation, use and method of removably installing in a boat a power package unit including the engine, drive mechanism, drive shaft and propeller all mounted as a unit in a container or housing, which when placed in proper position in the boat hull becomes a part thereof.

Thus, the object of the invention is to simplify the construction as well as the method of assembly of boats and their power drive mechanism, whereby such boats may not only be economically manufactured but will be more efficient and satisfactory in use, adaptable to a wide variety of uses, having relatively few parts and be relatively easy to overhaul.

A further object of the invention is to provide a complete power package for installation in a boat hull.

A further object of the invention is to provide a boat hull in which a complete packaged power unit may be easily installed and removed when necessary for overhaul.

A further object of the invention is to provide an installation structure which permits the package drive units to be raised or lowered relative to the boat hull.

A further object of the invention is to provide an enclosure for the drive unit which when installed in the hull becomes a part thereof without decreasing the efficiency or destroying the design of the hull.

A further object of the invention is to provide a boat possessing the advantageous features, the inherent meritorious characteristics and the particular features of advantage herein enumerated.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

Referring to the accompanying drawings, wherein is shown one, but obviously not the only embodiment of the invention,

Fig. 1 is a view of the starboard side of a boat embodying one form of the invention;

Fig. 2 is a fragmentary top plan view of the embodiment shown in Fig. 1;

Fig. 3 is a cross section view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary top plan view of a different embodiment of the invention;

Fig. 5 is a sectional view substantially on line 5—5 of Fig. 4;

Fig. 6 is a sectional view substantially on line 6—6 of Fig. 5.

Fig. 7 is a sectional view substantially on line 7—7 of Fig. 4;

Fig. 8 is a sectional view substantially on line 8—8 of Fig. 5;

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Fig. 9 is a detail fragmentary view of a portion of the structure shown in Fig. 5;

Fig. 10 is a detail fragmentary view of a modified form of the structure shown in Figs. 5 to 7, inclusive.

Like parts are indicated by similar characters of reference throughout the several views.

The present invention contemplates the provision of an integrated or "package" power unit which may be installed in or removed from a boat hull as an entity. Such power unit or package includes the engine, or power source, the necessary transmission or reduction unit, and also the drive shaft interconnecting the power source with the propeller which drives the boat. A mounting or enclosure is provided within which the engine and transmission are fixedly mounted, the propeller being mounted exteriorly thereof upon the propeller shaft which extends through the enclosure.

In order to accommodate the integrated power unit, the hull of the boat is provided with one or more recesses therein within which the power unit is suspended. The enclosure of the power unit is so designed and shaped that a portion thereof merges with the contour of the hull and forms a continuation thereof, while a further portion of the enclosure projects downwardly from the contour of the hull to provide a streamlined support for the propeller and propeller shaft which of course is mounted beneath the general contour of the hull.

While it is recognized that such downwardly projecting "blisters" or nacelles are not new per se, it is thought that the removability thereof together with the provision of an integrated power unit which may be bodily moved relative to the hull is not only new but of considerable advantage. Such construction not only simplifies the manufacture of the boat, but greatly facilitates the servicing thereof when it is necessary to service the propeller or associated power driving mechanism.

Turning to Fig. 1 of the drawings there is shown therein one adaptation of the invention. A boat, generally shown as at 1, is provided with an outboard mounted integrated power unit 2. While a single centrally mounted power unit 2 may be employed, there is shown a construction in which two power units are used, the units being mounted on opposite sides of the hull. Fig. 2 is a fragmentary view showing only one of the two power units, while Fig. 3 shows two power units.

As shown in Figs. 1 and 2, the hull proper, the outside of which is represented by the side 3, is recessed adjacent the stern of the boat and provided with upstanding walls 4 and 5. A "cut-away" portion is thereby provided within which an integrated power unit 2 is mounted. The wall 4, forming the rear wall of the hull proper adjacent the power unit 2 has re-entrant recesses 6 therein, the intermediate portion 7 thereof providing a mounting for a trunnion bar 8. The forward wall of the power unit is provided with a pair of trunnion arms 10 for pivotal engagement with the bar 8.

The integrated power unit 2 is generally rectangular in shape, the forward wall 9 thereof carrying a pair of trunnion arms 10 for pivotal engagement with the bar 8. Outer wall 11 of the power unit 2 follows the general contour of the hull 3 while inner wall 12 of the unit lies in parallel closely adjacent relation to wall 5 of the hull. The unit is closed by a rear or stern wall 13, which follows and merges with the general contour of the stern wall 14 of the hull. The bottom 15 of the power unit 2 generally follows the contour of the bottom 16 of the hull, but has extending downwardly therefrom a streamlined projection 17. This downwardly extending projection 17 permits proper mounting of the engine and associated mechanism so that the propeller shaft 18 may project

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from the extension for proper mounting and support of the propeller 19.

Arranged along the parallel adjacent walls 5—12 and 4—9 of the hull and power unit are a plurality of inter-engaging members 20 and 21, carried by the hull and power unit respectively. Such members when engaged locate the power unit in proper position relative to the hull and prevent relative shifting thereof. The members 20—21 may, however, be released thereby permitting movement of the power unit 2 relative to a hull. As shown in Fig. 1, a hydraulic cylinder and piston unit 22 is mounted in cooperative relation with the hull and power unit, whereby upon application of hydraulic pressure thereto the power unit is caused to swing upwardly about trunnion bar 8.

The structure shown in Figs. 1 to 3, inclusive, is particularly well adapted for use in the construction of landing craft and similar vessels which are likely to be used in shallow waters or run upon beaches. As the vessel approaches the beach or shallow water, the members 20—21 are released and the hydraulic cylinder 22 energized to lift the power unit 2 up or out of the water. Damage to the propeller and drive mechanism is thereby obviated.

While the walls 4—5 of the hull which surround the power unit 2 are water tight to prevent the entrance of water into the hull, additional seals or gaskets similar to those shown in Fig. 6 may be employed intermediate the walls 5—12 and 4—9 to prevent entrance of water therebetween.

Figs. 4 to 8 disclose a modification of the integrated power unit and its support which provides for an "inboard" location of the power unit. Referring to Fig. 5, the bottom 30 of the hull is provided with a substantially rectangular recess immediately adjacent the stern or transom 38 of the hull. Again, there are preferably two such recesses located in oppositely spaced relation with the keel, thereby providing mountings for two power units. A transverse bulkhead 32 is located in the hull bounding the forward margin of the recess, while longitudinal walls 33 with transversely extending flanges 34 are provided in the hull along the side margins of the recess. The walls 33, and if desired, the bulkhead 32, are braced with reinforcing members 35, so as to provide a rigid framework upon which the power unit is mounted.

The upstanding walls 33, bulkhead 32 and transom 31 provide a completely walled opening or "trunk" in which the power unit is suspended in operative position. The power unit, generally designated as 36, is substantially the same as the power unit 2 of Fig. 1 in that it is generally rectangular in shape, having forward and rear walls 37 and 38, respectively, side walls 39, and a bottom wall comprising the portions 40 which merge with and form a continuation of the hull bottom 30 and a downwardly extending streamlined projection 41. As in the Fig. 1 structure, the projection 41 encloses the inclined drive shaft, transmission and power source, and provides the support for the propeller shaft 42 which extends there-through to mount the propeller 43.

The power unit 36 is made rigid by the use of interior braces 44 which engage the side walls 39, and longitudinal rails 45 upon which the power mechanism is mounted. The side walls 39 are provided with transversely extending flanges 46 in vertical alignment with flanges 34 of the trunk. When mounted, the power unit 36 is suspended by engagement of the flanges 34—46 and is secured in mounted position by a plurality of bolts 47.

To seal the trunk against the entrance of water intermediate the trunk and power unit, a strip of rubber 48 is interposed between the flanges 34—46 and similar strips of rubber are interposed between the side walls 33—39 intermediate the trunk and the power unit.

Fig. 9 shows in detail the manner of sealing the end

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walls 37—38 of the power unit. Only one end is shown, namely the rear wall 38, since the seal between forward wall 37 and bulkhead 32 is identical in construction. The rear wall 38 of the power unit, which in effect becomes the continuation of the transom or stern 31 of the hull, has an intumed flange 50 thereon. Resting on the top of the flange 50 is an L-shaped molded rubber gasket 51, the vertical leg of which rests against the stern or transom 31 of the hull. Resting on the horizontal leg of the gasket is a bar 52 which when pulled into squeezing contact with the gasket under influence of the bolts 53 passing through flange 50 forces the gasket 51 outwardly into tight sealing engagement with the transom 31. The assembly on the forward wall 37 is the same except that it is reversed with respect to the disclosure of Fig. 7, with the bulkhead 32 taking the place of the transom 31, and the front wall 37 taking the place of rear wall 38.

A further modification is shown in Fig. 10, wherein means are shown which permit the pivotal mounting of the power unit 36 of Figs. 4 to 8 much the same as is shown in Fig. 1. In this construction the bulkhead 32 is provided with ears 54 located adjacent ears 55 carried by side walls 39 of the power unit. A pintle pin 56 passes through the ears 55—56 providing a pivotal mounting for the power unit as does the bar 8 in Fig. 1.

The structure of Figs. 4 to 8, inclusive, is designed primarily to permit the unit installation and withdrawal of the power drive mechanism. With the type of installation shown in Fig. 4, after removal of bolts 47, the entire power units is lifted from the trunk by an overhead hoist for example. With the pivotal connection shown in Fig. 10, the power unit is swung about the pivot pin 56 by means of an overhead hoist. In connection with the pivotal movement of the power unit, such unit is so designed that the lower extremity of the rear wall 38 thereof will clear the bottom of the transom 31 of the hull.

The hydraulic cylinder 22 of Fig. 1, may if desired, be incorporated in the Fig. 10 type of construction, whereupon the power unit 36 may be pivoted upwardly without the need of an overhead hoist.

The use of an integrated power unit, such as the units 2 or 36, permits easy withdrawal and insertion of such mechanism in the hull of the boat. It is of considerable advantage in the servicing of boats and permits complete replacement of the power unit simply and rapidly, should such replacement be necessary.

The same concept of an integrated power mechanism is applicable to large boats with but slight change in structure. In larger hulls the removability feature of the power nacelle is not as necessary and may therefore be omitted. The formation of the integral one-piece hull is comparable to that produced by the use of the removable power nacelle which permits the close coupling of the engine, transmission and propeller unit. Such units are mounted adjacent the stern of the hull, the hull being formed with a streamlined downwardly extending projection comparable to the projection 17—41 for accommodation of the power mechanism. While such construction embodies an integral hull unit, the availability of the power mechanism for service, and the close coupling of the power mechanism are retained.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed

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comprise but one of several modes of putting the invention into effect.

Having thus described my invention, I claim:

A propeller driven boat including a hull structure having recesses on each side of the hull at the stern thereof, a package power unit including power supply means and an enclosure for the power supply means forming a continuation of the hull across said recess, each of said power units being pivotally supported adjacent its forward end on the hull structure, a piston and cylinder arrangement connected to each of the power units and to the hull

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structure forming means for pivoting each of the power units independently.

References Cited in the file of this patent

FOREIGN PATENTS

181,959	Great Britain	June 29, 1922
270,717	Great Britain	Nov. 24, 1927
314,095	Germany	Aug. 27, 1919
410,400	Germany	Mar. 6, 1925
500,822	Great Britain	Feb. 16, 1939