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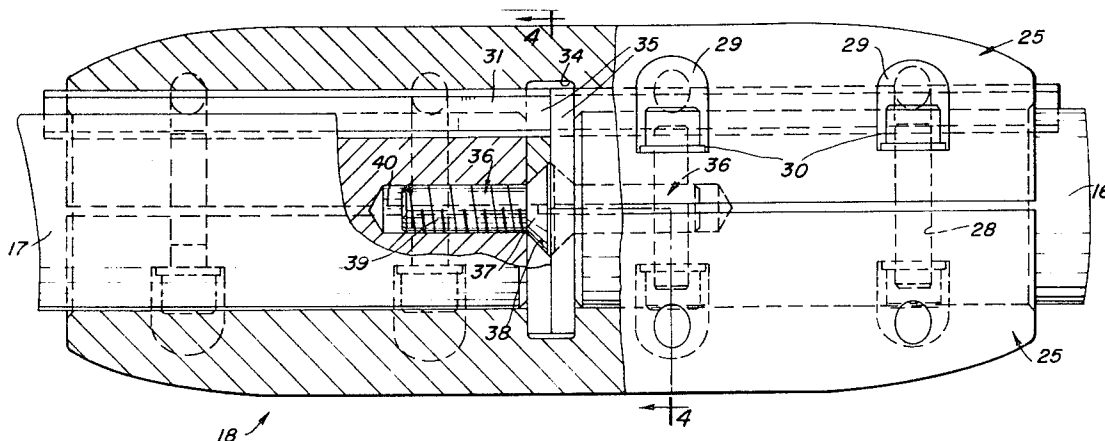
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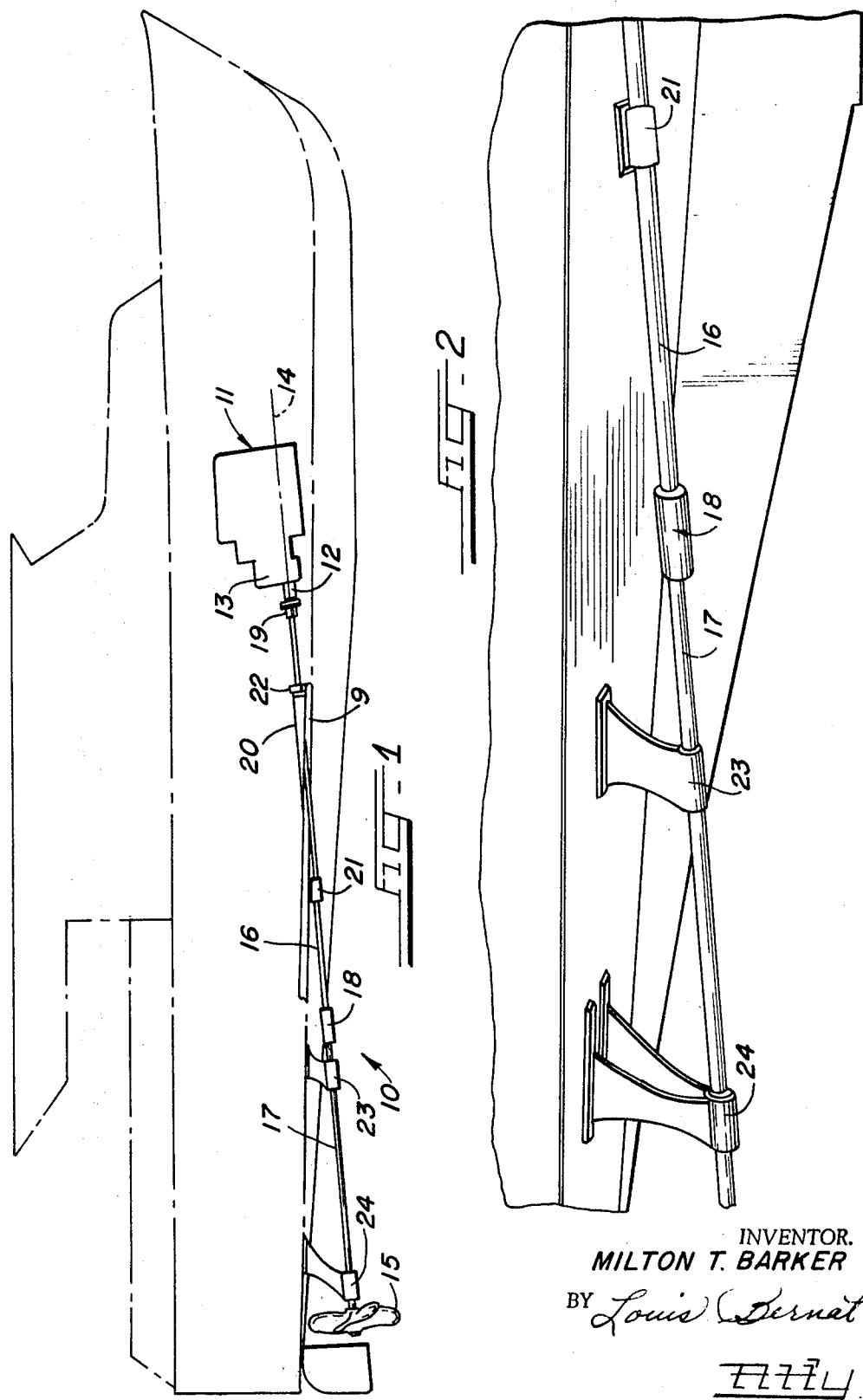
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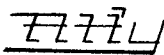
[54] **PROPELLER SHAFT COUPLING FOR MARINE CRUISERS**
6 Claims, 4 Drawing Figs.

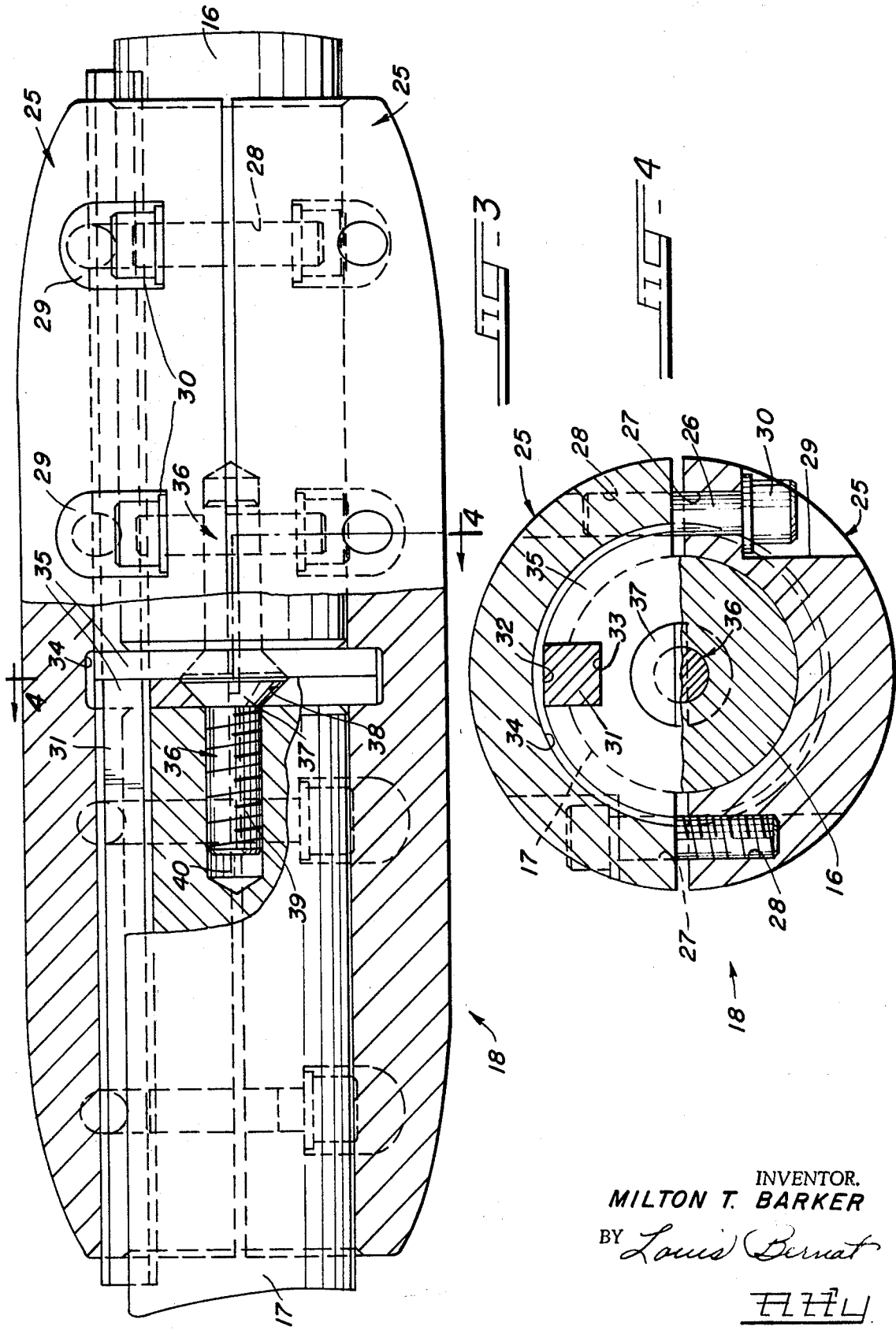
[52] U.S. Cl..... **115/34, 287/111**
[51] Int. Cl..... **B63h 23/34**
[50] Field of Search..... **115/34, .05, 37, 38; 287/111, 108**

ABSTRACT: A propeller shaft coupling for marine cruisers comprises a casing split longitudinally into two halves which are fastened together by cap screws to clamp the ends of adjacent propeller shaft sections. At the end of each shaft is secured a disc and the coupling has an internal recessed groove for receiving said discs thereby compensating for the tension produced when the power transmission is in reverse.





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PROPELLER SHAFT COUPLING FOR MARINE CRUISERS

BACKGROUND OF THE INVENTION

It is standard practice in the industry to use one long piece of shafting to connect an inboard engine with the propeller of a marine cruiser. In boats of smaller size this is quite satisfactory but in marine cruisers and other boats of a length on the order of 50 feet or more, there are problems both in the manufacture and in the use of a single piece of shafting. The present invention utilizes two or more shorter sections of shafting and connects them with a coupling of special design as hereinafter set forth.

SUMMARY OF THE INVENTION

According to the present invention, the propeller shaft from the inboard engine consists of two separate sections of shafting connected together by a coupling of improved design. The coupling consists of two halves of a longitudinally split cylindrical casing which are fastened together by cap screws. The coupling is positioned over the junction of the adjacent shaft sections. By tightening the cap screws, the ends of the shafts are clamped together to maintain alignment of the shafts. For transmitting torque the coupling is provided with a long thin key inserted within a machined keyway. To adequately compensate for the tension produced when the boat is in reverse, each shaft has attached thereto a disc and the coupling is provided on its inner surface with an accurately machined recessed groove for receiving the discs. This special coupling is easy to install during assembly of the propeller shaft and is easily removable whenever it is necessary to make repairs in the propeller driving mechanism.

THE DRAWINGS

FIG. 1 is a side elevation of a marine cruiser with parts broken away to show the location of the inboard engine.

FIG. 2 is a side elevation on a larger scale.

FIG. 3 is a longitudinal section through the coupling.

FIG. 4 is a transverse section on the line 4-4 of FIG. 3.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawings and more particularly to FIG. 1, 10 represents a marine cruiser which is shown in general outline so that only those mechanisms that are needed for an understanding of the invention are indicated. An inboard engine 11 is suitably mounted within the hull in a desirable location in accordance with conventional practice. The actual mounting of the engine is not shown in detail, but at the rear end of the engine there is shown in outline a gearbox 13 or other form of transmission mechanism from which projects the driving shaft 12. The engine is so mounted that the longitudinal axis 14 of the engine drive shaft 12 is in alignment with the axis of the propeller wheel 15. It is conventional practice to provide the shafting between the engine and the propeller with suitable intermediate supports. According to the present invention, the propeller shaft consists of two or more separate shafts connected together with one or more couplings.

As specifically shown in FIG. 1, there are two shaft sections 16 and 17, respectively, with a single coupling 18 connecting the two sections. The forward shaft 16 is attached to the engine drive shaft 12 by means of the engine coupling 19. The rear end of the forward shaft 16 extends downwardly and aftward along the axis 14 through the hull 9. A suitable stuffing box 20 is provided at the point where the shaft 16 protrudes through the hull, said stuffing box being conventional, and therefore not further described or illustrated in detail. The forward shaft 16 is rotatably mounted in a bearing bracket 21 attached to the underside of the hull. The shaft 16 is also rotatably mounted in bearing bracket 22 within the hull adjacent the stuffing box 20. The rear shaft 17 is supported by a forward bearing bracket 23 and a rear bearing bracket 24, both attached to the underside of the hull. The coupling 18

connected to the shaft sections 16 and 17 is located beneath the hull between the brackets 21 and 23. The coupling is shown in more detail in FIGS. 3 and 4.

The coupling consists of two complementary half cylindrical casings 25, each having internal surfaces fitted around the two shafts 16 and 17. The two halves are clamped into engagement with the shafts by a series of cap screws 26 each of which extends through a bore 27 into an aligned threaded hole 28 in the other half section. Counterbores 29 are provided for receiving the heads 30 of the cap screws. A key 31 is inserted lengthwise into the aligned keyway slots 32 and 33, respectively.

Midway of the coupling there is an annular recess 34 for receiving a pair of discs 35. These discs are secured to the adjacent ends of the respective shafts 16 and 17, respectively, by machine screws 36. The heads 37 of said machine screws lie within the beveled recesses 38 while the threads 39 of the screws engage threaded apertures 40 in the ends of the shafts.

In the assembly of the parts the two shafts 16 and 17 are placed in position within their supporting brackets with the discs 35 adjacent. The two halves of the coupling are then placed in position over the ends of the shafts and clamped together by means of the cap screws 26. The torque is transmitted from the forward driving shaft to the rear propeller shaft by reason of the key which extends for the full length of the coupling.

The two shafts are maintained in alignment because they are clamped together within the coupling. The coupling prevents the shafts from pulling apart when under tension when the driving mechanism is in reverse by reason of the engagement of the discs within the machined annular recess. The fit of the discs within the internal groove is provided with enough clearance so that the coupling can be readily assembled. Because the discs and the coupling are manufactured in the machine shop, the parts can be made with close tolerances so that interchangeability can be provided for shaft sections and couplings.

I claim:

1. In a marine cruiser, a boat hull, an inboard engine, a propeller at the stern of the cruiser, means for drivingly connecting said engine to said propeller including at least two separate shafts in axial alignment, one of the shafts being connected to the engine and the other to the propeller, each of said shafts being supported in brackets attached to said hull, a coupling for interconnecting said two shafts, means in said coupling including a key fitting into aligned keyways extending through each of said shafts for positively transmitting torque between said shafts, and means entirely within said coupling for absorbing axial thrust produced when said propeller is driven in reverse.

2. The construction according to claim 1 in which said axial thrust absorbing means includes transversely extending flanges secured to the respective shafts, and abutments within the coupling for engaging the respective flanges aforesaid.

3. In a marine cruiser, a boat hull, an inboard engine, a propeller at the stern of the cruiser, means drivingly connecting said engine to said propeller including at least two separate shafts in axial alignment, one of said shafts being connected to the engine and the other to the propeller, said shafts each being supported in brackets attached to said hull, a coupling for interconnecting said two shafts, means in said coupling for positively transmitting torque between said shafts, and means entirely within said coupling for absorbing axial thrust produced when said propeller is driven in reverse, said axial thrust absorbing means includes transversely extending flanges secured to the respective shafts and abutments within the coupling for engaging the respective flanges aforesaid, said flanges being annular discs attached to the ends of said shafts and said abutments are formed by the opposite sides of an annular recess within said coupling.

4. In a marine cruiser, a boat hull, an inboard engine, a propeller at the stern of the cruiser, means drivingly connecting said engine to said propeller including at least two separate

shafts in axial alignment, one of said shafts being connected to the engine and the other to the propeller, said shafts being supported in brackets attached to said hull, a coupling for interconnecting said two shafts, means in said coupling for positively transmitting torque between said shafts, means entirely within said coupling for absorbing axial thrust produced when said propeller is driven in reverse, said coupling including two complementary half-round casing sections, means for clamping said two sections in engagement with said shafts, and a key extending lengthwise through corresponding keyways within said coupling and through keyways in the ends of said shafts.

5. The construction according to claim 4, in which the half sections are provided with an annular recess for receiving annular discs attached to the adjacent ends of the respective shafts.

6. In a marine cruiser, a boat hull, an inboard engine, a propeller at the stern of the cruiser, means drivingly connecting said engine to said propeller including at least two separate

shafts in axial alignment, one of said shafts being connected to the engine and the other to the propeller, said shafts each being supported in brackets attached to said hull, a coupling for interconnecting said two shafts, means in said coupling for positively transmitting torque between said shafts, means entirely within said coupling for absorbing axial thrust produced when said propeller is driven in reverse, said coupling being provided with a machined annular recess, a pair of annular discs at the adjacent ends of said shafts, machine screws for securing said discs to said shafts having heads engaging countersunk apertures in said discs, said coupling comprising two complementary half-round casing sections, cap screws for securing said two sections in clamping engagement with said shafts, and a key extending lengthwise through corresponding keyways within said coupling and through keyways in the ends of said shafts.

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