Dec. 13, 1932. E. H. FAHRNEY 1,890,938

MEANS FOR PROTECTING THE PROPELLERS AND RUDDERS OF BOATS

Filed Dec. 15, 1930 2 Sheets-Sheet 1

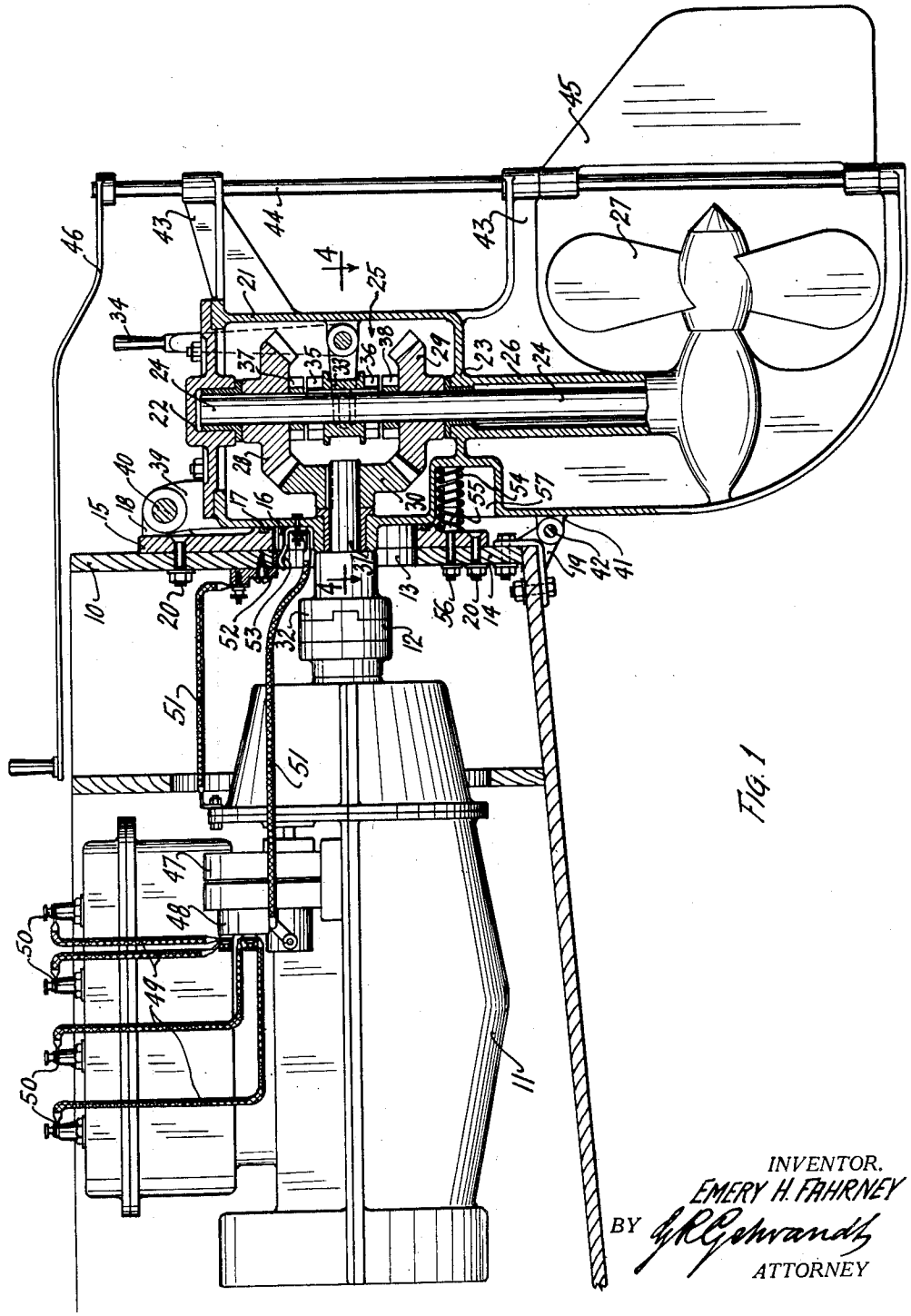


FIG. 1

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MEANS FOR PROTECTING THE PROPELLERS AND RUDDERS OF BOATS

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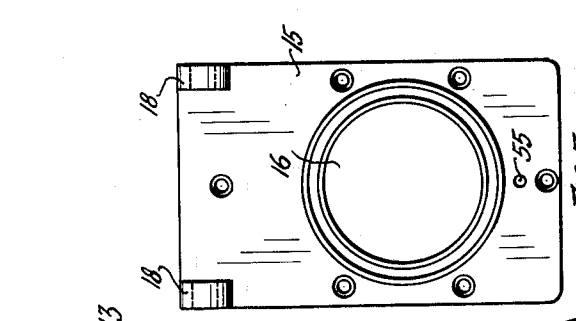


FIG. 3

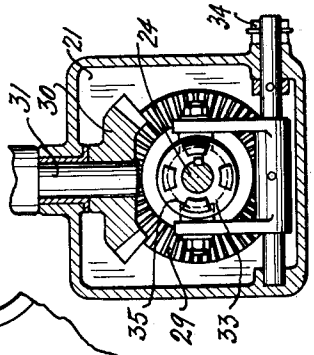


FIG. 4

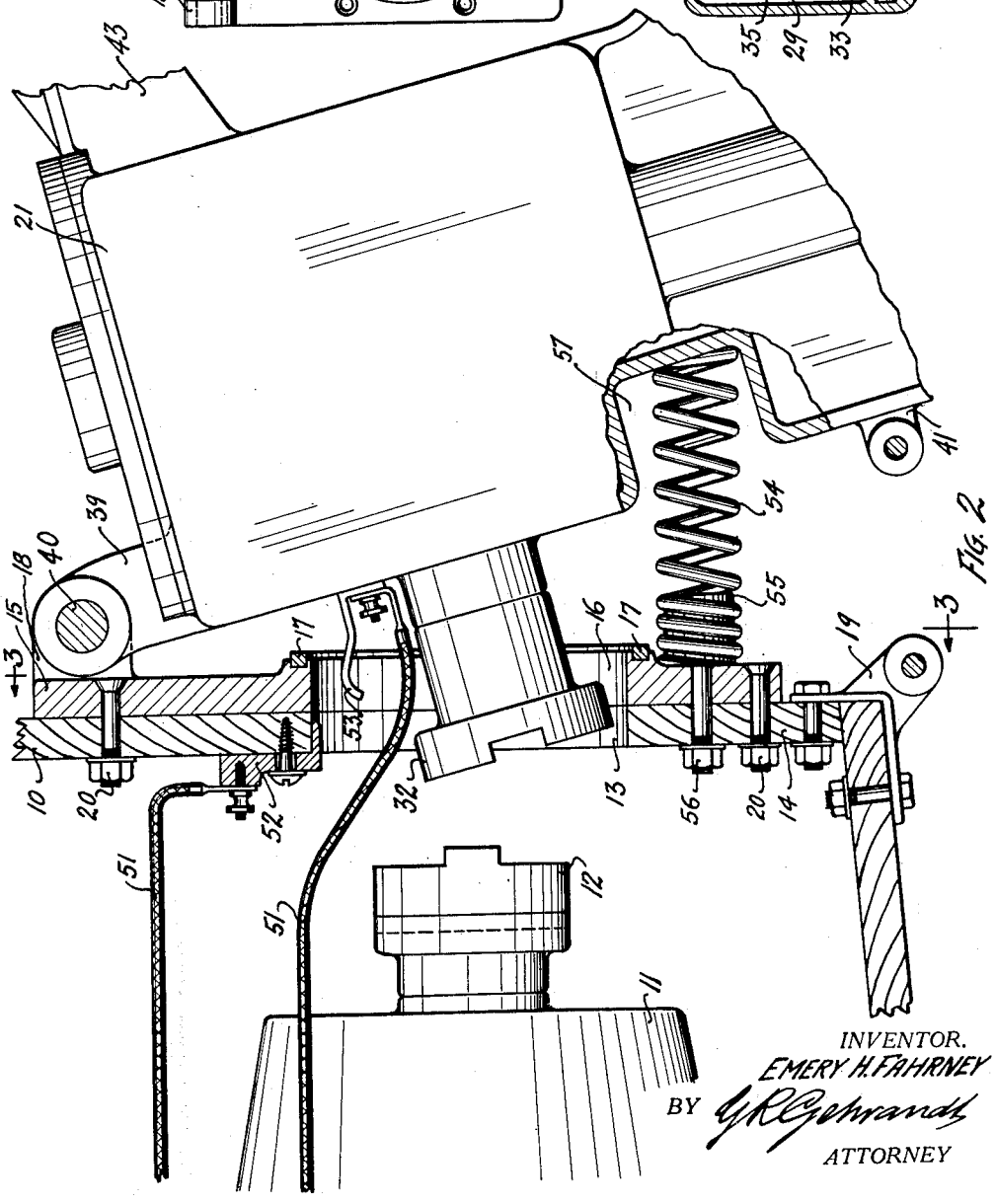


FIG. 2

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UNITED STATES PATENT OFFICE

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MEANS FOR PROTECTING THE PROPELLERS AND RUDDERS OF BOATS

Application filed December 15, 1930. Serial No. 502,276.

In my application Serial Number 327781, filed December 22, 1928, there is shown and described means for mounting and securing or holding the propeller, or the rudder, or both, in an operative position so that they will project below the boat bottom during normal conditions, but will yield when struck by a submerged object which would otherwise damage the same, or when running aground or into shallow water.

It is one of the objects of the present invention to provide in a structure of this character improved means for preventing damage to the engine, transmission or transmission case whenever the engine shaft or rudder or propeller are disconnected.

A further object is to provide improved means for maintaining the transmission case, when the parts are disconnected or separated, in a position to render it impossible to cause damage to any of the operating parts of the engine.

A further object is to provide improved means whereby when the rudder, or propeller, or both, is or are disconnected with respect to the engine, the operation of the engine will be automatically stopped.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompany drawings illustrating this invention, and in which

Figure 1 is a view partly in vertical section and partly in elevation of the rear portion of a boat having an attachment constructed in accordance with the principles of this invention applied thereto.

Figure 2 is a view similar to Figure 1, with parts omitted and showing the position the attachment will take when released by contact with a projecting object.

Figure 3 is a detail sectional view taken on line 3—3, Figure 2, and with parts omitted.

Figure 4 is a horizontal sectional view taken on line 4—4, Figure 1, with parts omitted.

Referring more particularly to the drawings the numeral 10 designates a boat having arranged therein the usual engine or motor 11. Connected to the engine shaft is a coupling member 12, and which coupling member is located in alinement with and preferably adjacent an opening 13 in the back 14 of the boat.

Encompassing the opening 13 and secured to the outer face of the back is a member 15 having an opening 16 therein registering with the opening 13 and encompassing the opening 16 is a packing gland, 17.

The member 15 is preferably provided with spaced projecting ears 18 preferably arranged adjacent the top thereof, and projecting from the back 14 of the boat are ears 19 preferably arranged adjacent the boat bottom, for a purpose to be set forth.

The member 15 is secured to the boat back in any desired or suitable manner, such as by means of fastening devices 20.

A supporting member or frame designated generally by the reference numeral 21 is provided with bearings 22—23 in which a vertical shaft 24 is journaled, the shaft being arranged within a chamber 25 and extending through a tubular extension 26 and has an operative connection with a propeller 27. Loosely mounted upon the shaft 24 for rotation therewith are gear wheels 28—29, preferably of the bevel type, which mesh with a beveled gear 30, the latter being secured to a shaft 31 for rotation therewith, and connected to the shaft 31 is a coupling member 32 which projects for a considerable distance beyond the casing 25. Keyed to the shaft 24 is a clutch member 33 which is adapted to be moved longitudinally of the shaft by means of an operating lever 34 arranged in a convenient position for the operator.

Clutch faces 35—36 are provided on the clutch member 33 and these clutch faces respectively co-operate with clutch faces 37—38 respectively secured to the gears 28—29 so that when the clutch member 33 is shifted, one or the other of the gears 28—29 may be connected with the shaft 24 for rotation there-

with, the direction of rotation of the shaft being controlled by the respective gears 28—29.

The supporting structure 21 is provided with spaced ears 39 which are adapted to be connected with the ears 18 on the member 15 by means of a suitable fastening pin 40 so that the entire structure or frame 21 with the propeller shaft and propeller, together with the gears 28—29 and 30, and the actuating lever 34 may be swung about the pivot formed by the shaft or pin 40. When the supporting structure 21 is in the position shown in Figure 1, the coupling member 32 will pass through the openings 16 and 13 respectively in the members 15 in the wall 14 of the boat to engage and co-operate with the coupling member 12 on the shaft of the engine or motor 11, thereby connecting the shaft 31 with the motor.

In order to hold the parts in this position the supporting structure 21 is preferably provided with additional ears 41 which are adapted to be positioned adjacent the ears 19 on the back of the boat 14 and a fastening member 42 in the form of a pin or bolt is passed through the co-operating ears for holding the supporting structure 21 in the position shown in Figure 1.

This fastening pin or bolt 42 is constructed of some frangible material or material adapted to be sheared or cut when undue strain is placed thereupon, so that when the parts are in the position shown in Figure 1 and when the boat is advancing, should the depending portion of the supporting structure 21 strike a projecting submerged object, or the bottom when in shallow water, the fastening device or pin will be sheared, cut or broken, so as to allow the supporting structure 21 to swing to the position shown in Figure 2 about the pivot 40, or to a sufficient extent to allow the depending portion of the supporting structure to pass over the projecting object or drag along the bottom in shallow water, thereby preventing the propeller and operating mechanism therefor from being injured. When the supporting structure swings to the position shown in Figure 2, the coupling members 32—12 will readily separate to permit of such movement.

If desired the supporting structure 21 may be provided with suitable bearings 43 for the rudder shaft 44 to which the rudder 45 is connected, and the rudder is adapted to be actuated by means of the usual tiller arm or lever 46.

It has been found that the pin or bolt 42 is not always necessary. That is to say, if the pin or bolt is omitted, the supporting frame therefor will be held in the position shown in Figure 1, by the action of the propeller upon the water, when the boat is advancing, as the propeller exerts a pressure upon the water in a direction to force the supporting frame or structure 21 against the end of the boat.

However, when the boat is being propelled backwardly, the pin will be necessary.

In order to prevent damage to the engine of the boat or to the transmission or any of the operating parts whenever the shaft and propeller or rudder are disconnected and the parts moved into the position shown in Figure 2, means are provided for stopping the motor and additional means may be provided for holding the parts, particularly the supporting structure 21 and the associated parts in the position shown in Figure 2.

The operation of the motor may be controlled by the swinging of the support 21 by controlling the circuit to the motor in any desired or suitable manner, but preferably as follows.

The numeral 47 designates a generator and 48 a distributor box, leading from which latter are the connections or conduits 49 that are connected with the ignition devices 50 of the motor. The numeral 51 designates the ground connection of the circuit and arranged within the connection 51 is a make and break device preferably comprising a stationary contact member 52 and a contact member 53 which co-operates therewith, the contact 53 being connected to and insulated from the supporting structure 21 so as to move therewith and with respect to the contact 52 so that when the structure 21 is in the position as shown in Figure 1, the circuit of the motor will be completed but when the supporting structure 21 is moved to the position shown in Figure 2, the movable contact 53 will be carried thereby and will be moved out of engagement with the contact 52 to break the circuit of the motor. Obviously, the conductor 51 will be of a suitable length to permit such movement of the parts.

Any suitable means may be provided for maintaining the supporting structure 21 in the position shown in Figure 2. A simple and efficient means, however, embodies a resilient element 54, here shown in the form of a coiled spring. One end of the element 54 encompasses a plug 55 which is anchored by means of an anchoring device 56 to the back of the boat. The other end of the element 54 is preferably seated in a recess 57 in the supporting structure 21 and the stress of the member 54 is sufficient to overcome the weight of the supporting structure 21 and the parts associated therewith to maintain the same in substantially the position shown in Figure 2, so as to prevent injury to the parts which would be caused by the swinging of the supporting structure 21 back upon the pivot 40.

When the supporting structure 21 is moved to the position shown in Figure 1 so as to permit the insertion of the pin or bolt 42, the

member 54 will be compressed and placed under tension.

Obviously any other suitable means may be provided for holding the supporting structure 21 in the position shown in Figure 2.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. In combination, a boat, a propeller, a support for the propeller, a propeller shaft, a motor for driving the shaft, means swingingly connecting the support to the boat, means holding the propeller in a position to project below the bottom of the boat, a separable connection between the propeller shaft and the motor, the second said means operating automatically to permit the support to swing about its pivot under abnormal conditions to render the connection between the propeller shaft and the motor inactive, resilient means acting directly upon the support for maintaining the support in the position to which it has been moved and serving as a cushion for the support, and means for rendering the motor inactive when the said support is thus swung about its pivot.

2. In combination, a boat, a propeller, a support for the propeller, a propeller shaft, a motor for driving the shaft, means swingingly connecting the support to the boat, means holding the propeller in a position to project below the bottom of the boat, a separable connection between the propeller shaft and the motor, the second said means operating automatically to permit the support to swing about its pivot under abnormal conditions to render the connection between the propeller shaft and motor inactive, and resilient means operating directly upon the support to maintain the said support in the position to which it has been moved about its pivot and to serve as a cushion for the support when in the latter position.

3. In combination, a boat, a motor therein fixed against bodily movement, a propeller, a support for the propeller, a propeller shaft, means connecting the propeller support to the boat for swinging movement with respect to the motor, a separable connection between the propeller shaft and the motor, means releasably holding the propeller in position to project below the boat bottom and operating automatically to permit the propeller support to swing about its pivot, and resilient means operating directly upon the support to maintain the propeller shaft in the position into which it is moved about its pivot and to serve as a cushion for the support when in the latter position.

4. In combination, a boat, a motor therein fixed against bodily movement with respect to the boat, a propeller, a support for the propeller, a separable connection between the propeller and the motor, means mounting said support for swinging movement with respect to the motor to render said connection inactive, and resilient means operating directly upon the support for maintaining the support in the position to which it has been moved about its pivot, and the said connection inactive, said resilient means also serving as a cushion for the support when in the latter position.

5. In combination, a boat, a motor therein fixed against bodily movement with respect to the boat, propelling mechanism therefor, said propelling mechanism projecting below the bottom of the boat, means adapting the propelling mechanism for bodily yielding movement automatically under abnormal conditions, and resilient means operating directly upon the support and rendered active by the last recited movement of the propelling mechanism for maintaining the propelling mechanism in the position into which it has thus been bodily moved and also serving as a cushion for the support when in the latter position.

In testimony whereof, I have signed my name to this specification on this 11th day of December, 1930.

EMERY H. FAHRNEY.