Dec. 2, 1941. W. C. CONOVER 2,264,364

OUTBOARD MOTOR BRACKET

Filed Dec. 26, 1940 2 Sheets-Sheet 1

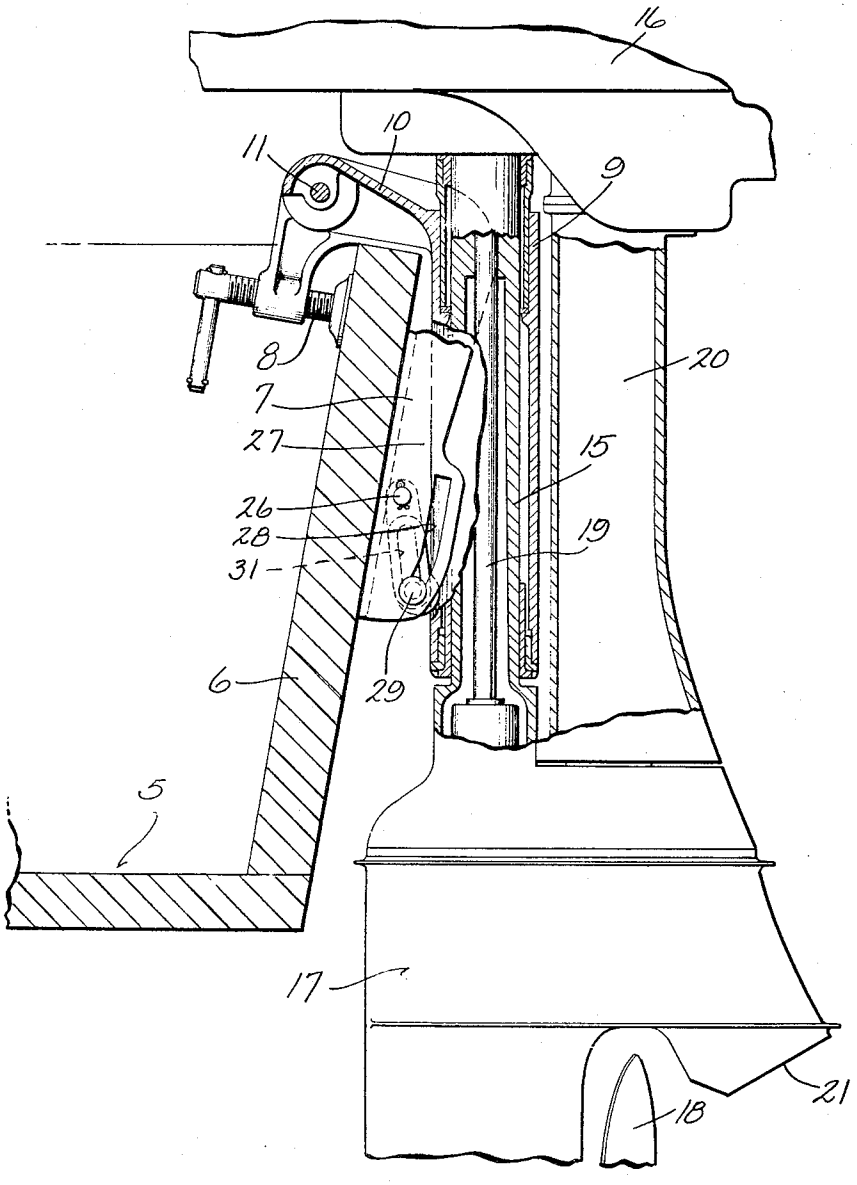

Fig. 1.

INVENTOR
WARREN C. CONOVER
BY
Wheeler, Wheelwright & Wheeler
ATTORNEYS.

Dec. 2, 1941. W. C. CONOVER 2,264,364

OUTBOARD MOTOR BRACKET

Filed Dec. 26, 1940 2 Sheets-Sheet 2

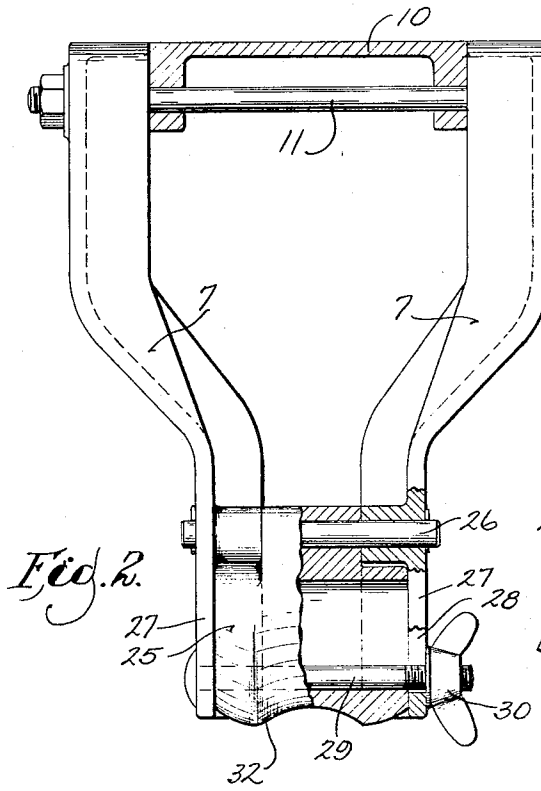

Fig. 2.

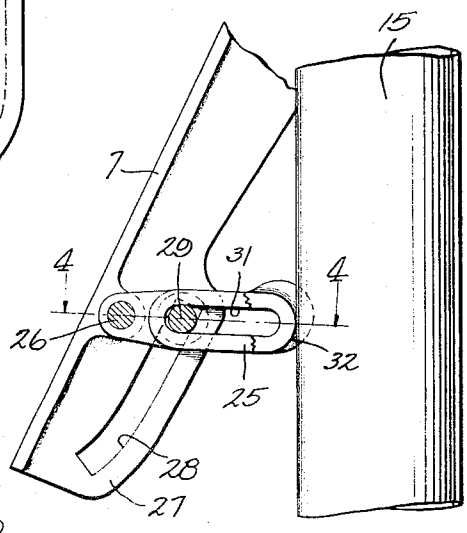

Fig. 3.

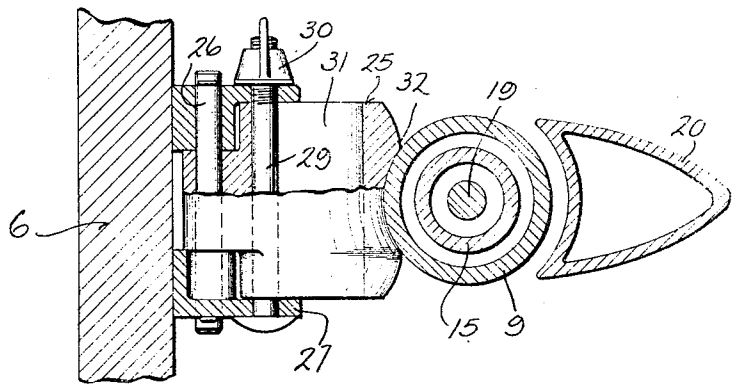

Fig. 4.

INVENTOR
WARREN C. CONOVER
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

Patented Dec. 2, 1941 2,264,364

UNITED STATES PATENT OFFICE

2,264,364

OUTBOARD MOTOR BRACKET

Warren C. Conover, Waukegan, Ill., assignor to Outboard, Marine & Manufacturing Company, Waukegan, Ill., a corporation of Delaware

Application December 26, 1940, Serial No. 371,635

7 Claims. (Cl. 115—17)

This invention relates to improvements in outboard motor brackets.

It is conventional for outboard motors to be mounted tiltably upon the bracket which carries the motor from the transom of a boat, and it is also conventional to provide means adjustable upon the bracket for maintaining the outboard motor structure upright in compensation for the differing angles of various boat transoms.

In the past a thrust block has ordinarily been adjustable between segment arms connected with the bracket and projecting rearwardly therefrom. Such segment arms, in some positions of the thrust block project rearwardly of the shaft housing of the outboard motor, thereby limiting the freedom of angular swinging movement of the outboard motor for steering purposes, particularly when the outboard motor has an exhaust pipe leading downwardly at the rear of its shaft housing in a position to be engaged by the segment arms of the bracket.

It is the primary object of the present invention to provide a thrust member adjustable upon a bracket in such a way that no part of the bracket or thrust member necessarily projects rearwardly of the shaft housing to interfere with the free movement thereof for steering purposes.

Another major object of the present invention is to provide a construction in which the adjustment of the thrust block may be fixed in a simple manner and without the use of tools despite the varying moment of forces to which it is subject in its various positions.

More specifically, I propose to provide an arrangement in which the thrust on the block may be transmitted through either of two different elements to the bracket, one of the elements being adjustable but the organization being such that only a slight amount of pressure is ever exerted on the adjustable element in a direction to change its position of adjustment, thus minimizing the amount of clamping pressure required to secure it in position.

A further object is generally to simplify and improve the construction, arrangement and operation for one or more of the purposes mentioned, and still other objects will be apparent from the specification.

In the drawings:

Fig. 1 shows an outboard motor and bracket on the rear end of a boat in assembly, the line assembly being illustrated partially in side elevation and partially in section.

Fig. 2 is a view showing the bracket and thrust block partially in rear elevation and partially in section, the motor and associated parts being removed.

Fig. 3 is a fragmentary detail view showing the relation between the bracket, the thrust block and the shaft housing of the outboard motor as they appear partially in side elevation and partially in section at the extreme angle to which the thrust block may be set.

Fig. 4 is a detail view taken in horizontal section on the line indicated at 4—4 in Fig. 3.

Like parts are identified by the same reference characters throughout the several views.

The boat 5 is illustrated as being provided with a conventional transom 6 to which the bracket 7 is clamped by set screw 8.

The outboard motor comprises the usual swivel bearing 9 connected with the bracket by arm 10 which is fulcrumed at 11 to the bracket to permit the tilting of the outboard motor in a vertical plane with respect to the boat and the bracket.

The motor is also turnable in the bracket for steering purposes. The shaft housing 15 turns within the swivel bearing. At its upper end is the engine 16, while at its lower end there is a conventional lower unit 17 carrying the propeller 18 which is driven in the conventional manner through gearing (not shown) by drive shaft 19.

A pipe 20 carries the exhaust gases from engine 16 to a discharge mouth 21 in the lower unit below normal water level and behind the propeller 18.

The outboard motor tilts freely about the pivot bolt 11 when a shoal is encountered and thereafter returns to its normal upright position in abutment with a thrust block carried by the bracket. It is the thrust block in its relation to the bracket and the shaft housing of the outboard motor with which this invention is primarily concerned.

In accordance with the present invention the thrust block 25 has the form of a link pivoted upon pintle 26 of the bracket for movement between the position illustrated in Fig. 3 and the dotted line position in which it is shown in Fig. 1. The lateral flanges 27 of the bracket in which the pintle 26 is carried, are provided with slots at 28, the general direction of which is parallel to the boat transom, though the slots may be slightly curved inwardly at their lower ends as shown in Fig. 1. A clamping bolt 29 passes through the slots 28 and extends between the flanges 27 of the bracket, being provided with a wing nut 30 whereby it may be fixed manually in any desired position in slot 28.

The thrust element 25 is likewise provided with a slot at 31. This slot is disposed radially with reference to pintle 26 and opens transversely through the thrust block 25. When the thrust block is in the lowermost position, as illustrated in dotted lines in Fig. 1, the clamping bolt 29 will be at the outer end of the thrust block slot 31 and at the lower end of the bracket slots 28. When the thrust block is in its position of greatest projection as shown in Fig. 3, the clamping bolt 29 will lie at the inner end of the thrust block slot 31 and the upper end of the bracket slots 28,

The thrust block is preferably, though not necessarily, provided with a terminus 32 channeled at its end and front to provide a saddle in which the shaft housing 15 is engaged in the manner clearly shown in Fig. 4, so that lateral relative movement between the shaft housing and the bracket is inhibited.

It will be observed from Fig. 1 that even where the boat transom 6 is almost vertical and the thrust block 25 is adjustable to its most retracted position, no part of the bracket flanges 27 projects rearwardly even as far as the center of shaft housing 15. Consequently there is nothing to impede the steering movement of the outboard motor, including the exhaust pipe 20, through an extremely wide angular range.

Of course, when the thrust block is adjusted to its rearmost extension as shown in Figs. 3 and 4, the shaft housing 15 and associated exhaust pipe 20 may swing through the same wide angular range for steering purposes.

Despite the fact that the pivotal movement of the thrust block might be expected to subject it to a considerably increased moment of thrust, the arrangement disclosed provides for the transmission of the thrust directly to the bracket, thus relieving the thrust block itself from such moment and making it possible to operate the clamp bolt 29, but as this happens the clamp the thrust block is in the position shown in Fig. 3 the clamping bolt 29 is virtually relieved of all stress and the entire thrust of the propeller is transmitted by shaft housing 15 through the thrust block 25 directly to the pintle 26.

As the thrust block 25 is pivoted downwardly about the pintel toward the position shown in Fig. 1, an increasing amount of thrust is transferred by the block from the pintle 26 to the clamp bolt 29, but as this happens the clamp bolt moves to a greater radius and therefore the leverage or moment of forces thereon is reduced as the total value of the forces transmitted to the clamp bolt becomes increased.

Moreover, it will be noted that due to the generally vertical direction of the slots 28 in which the clamp bolt moves in the bracket, the component of force exerted on the clamp bolt in a direction parallel to that of slots 28, becomes decreased and the component of force directed at right angles to the slot against the bracket itself becomes increased. Consequently, the more nearly the thrust block approaches the position shown in Fig. 1, the greater is the tendency for all of the forces on the block to be transmitted directly from the bolt to the bracket with less and less tendency for such forces to occasion the slippage of the bolt from the position to which it is adjusted.

In the position shown in Fig. 3, as well as in the position shown in Fig. 1, the channel which extends about the end and face of the saddle member 32 on the end of the thrust block 25 serves to confine the shaft housing against lateral vibration, the shaft housing being fitted into such channel, as best shown in Fig. 4.

I claim:

1. The combination with a bracket and an outboard motor pivotally connected therewith for tilting movement respecting the bracket, of a thrust member comprising a link pivoted to the bracket below the pivotal connection of the motor therewith, and means for fixing said link against forward displacement about its said pivotal connection with respect to the bracket in a plurality of angular positions of rearward projection from the bracket for engagement by said motor.

2. The combination with an outboard motor bracket and an outboard motor pivotally connected to the bracket for tilting movement, of a link pivoted to the bracket below the pivotal connection of the outboard motor therewith and provided with a free end comprising a thrust member engageable by said outboard motor and to and from which said motor is free for unrestricted tilting movement, and means for adjustably securing said link to the bracket against forward displacement of its free end about its pivotal connection with the bracket for fixing the angular position of said link whereby to vary the minimum angular relation between the outboard motor and bracket.

3. The combination with an outboard motor bracket and an outboard motor in pivotal connection therewith and having a portion depending rearwardly of the bracket, of a thrust member pivoted to the bracket adjacent said rearwardly depending portion and provided with a channeled end with respect to which said portion is freely engageable and disengageable, said portion being fitted to the channel whereby said channel resists lateral displacement of said motor portion respecting said member, and means for adjustably fixing the angular position of said member rigidly respecting the bracket whereby to vary the minimum angle between the outboard motor and bracket.

4. The combination with an outboard motor bracket having a portion depending to lie at the rear of a boat transom and an outboard motor in pivotal connection with the bracket for tilting movement, of a thrust member pivoted to said bracket portion and movable upon its pivot from a rearwardly directed position to a generally upright position, said member being slotted in a direction generally radial in respect to its pivot, a clamping bolt extending through the slot of said member, said bracket portion having a generally upright slot in which said clamping bolt is adjustable, and the end of said member being adapted to receive the thrust of the adjacent portion of said outboard motor at various minimum angular positions respecting said bracket portion.

5. The combination with an outboard motor bracket and an outboard motor comprising a swivel bearing in pivotal connection with the bracket for tilting, an outboard motor structure journaled in said swivel bearing for steering, of means for receiving the thrust of said outboard motor about the pivotal connection of the swivel bearing with the bracket without interfering with steering movements of the motor, said means comprising a thrust member in pivotal connection with the bracket and having a free end portion adapted to be engaged by said motor in the various angular positions of said member respecting said bracket, said member being

provided with clamp engageable means extending generally radially from the pivotal connection of said member with the bracket and said bracket having clamp engaging means extending generally vertically, together with a clamping device co-acting with said means of the member and bracket and adjustable for the positioning of said member in its various angular relations to the bracket.

6. The combination with an outboard motor bracket and an outboard motor comprising a swivel bearing in pivotal connection with the bracket for tilting, an outboard motor structure journaled in said swivel bearing for steering, of means for receiving the thrust of said outboard motor about the pivotal connection of the swivel bearing with the bracket without interfering with steering movements of the motor, said means comprising a member pivoted to the bracket for movement between a rearwardly directed position and a generally upright position and provided with a slot extending in a direction generally radial with respect to the pivotal connection of the motor with the bracket, rearwardly projecting flanges carried by the bracket at each side of said member and provided with corresponding slots across which said member projects in its various angular positions of pivotal adjustment, the general direction of said slots being upright, a clamping bolt extending through said flanges in the slots thereof and the slot of said member and provided with manually operable nut means for positioning the bolt and thereby fixing the position of said member, the end of the member being engaged by a portion of said outboard motor but free of connection therewith.

7. The combination with an outboard motor bracket and an outboard motor comprising a swivel bearing in pivotal connection with the bracket for tilting, an outboard motor structure journaled in said swivel bearing for steering, of means for receiving the thrust of said outboard motor about the pivotal connection of the swivel bearing with the bracket without interfering with steering movements of the motor, said means comprising a member pivoted to the bracket for movement between a rearwardly directed position and a generally upright position and provided with a slot extending in a direction generally radial with respect to the pivotal connection of the motor with the bracket, rearwardly projecting flanges carried by the bracket at each side of said member and provided with corresponding slots across which said member projects in its various angular positions of pivotal adjustment, the general direction of said slots being upright, a clamping bolt extending through said flanges in the slots thereof and the slot of said member and provided with manually operable nut means for positioning the bolt and thereby fixing the position of said member, the end of the member being engaged by a portion of said outboard motor but free of connection therewith, said member having its terminal portion channeled at its end and one face to provide a saddle in which the outboard motor is engaged for restraint against lateral displacement respecting the member and bracket.

WARREN C. CONOVER.

CERTIFICATE OF CORRECTION.

Patent No. 2,264,364. December 2, 1941.

WARREN C. CONOVER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 42, for ", but as this happens the clamp" read --manually and without tools. When--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of January, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.