

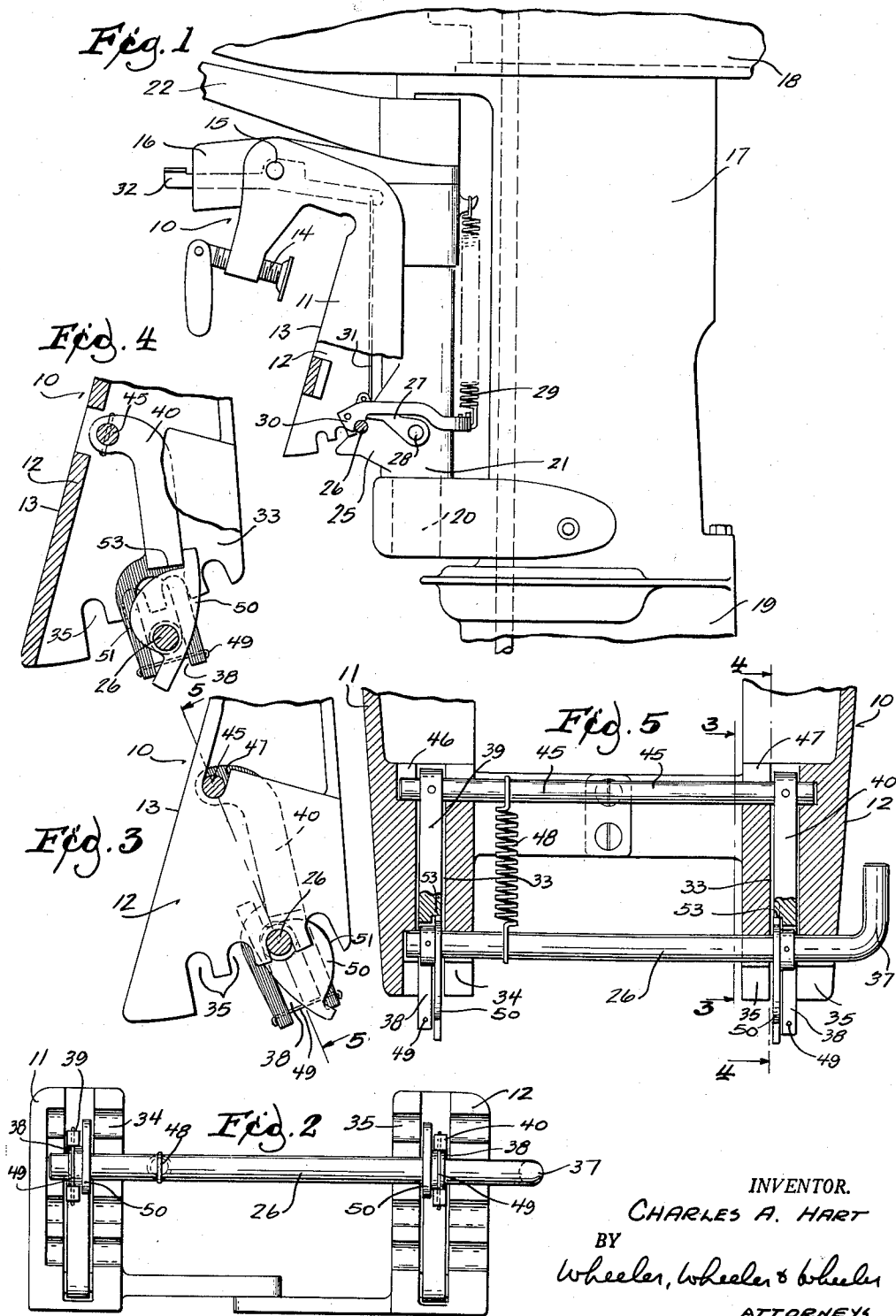
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OUTBOARD MOTOR TRANSOM BRACKET

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OUTBOARD MOTOR TRANSOM BRACKET

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This invention relates to an outboard motor transom bracket with a thrust member adjustable to position the propulsion unit.

In an outboard motor, the propulsion unit having a power head at its upper end and a gear housing and propeller shaft at its lower end is adjustable respecting the transom bracket in order that it may be fixed in its most desirable position notwithstanding differences in the angles of the various boat transoms upon which the device may be mounted. Except when the propulsion unit is reversed as to its direction of thrust, it is free to tilt about the same transverse axis upon which it is adjusted respecting the bracket for its initial position. When the propulsion unit is reversed, it is automatically locked to the adjustable thrust member on the transom bracket against which its thrust is exerted in forward propulsion. Thus, in the case of a reversible outboard motor, regardless of the means by which reversal is effected, the same adjustable thrust member takes the thrust both in forward and in reverse.

It is desirable that this thrust member be so mounted on the transom bracket as to make its adjustment simple, easy and secure. In the present device, this result is achieved by providing downwardly opening notches in regular series on each of the laterally spaced arms between which the thrust member extends. The thrust member has the form of a bar selectively receivable into the corresponding notches of the respective arms and biased into these notches subject to displacement by a cam which is effective when the thrust member is rotated. The bar is rotatably positioned in slotted levers pivoted on a fulcrum rod seated in upwardly opening notches in the said arms and serving as an anchorage for the spring which biases the thrust-receiving bar. This arrangement facilitates assembly of the parts and provides simple means for mounting the thrust bar for oscillatory movement on its own axis, bodily movement in the slots of the respective levers to and from engagement in the respective notches, and translative movement with the levers to and from positions of registry with different notches in the respective arms. When the bar is oscillated, its cam displaces it radially of the guiding levers out of the notches in which it is then engaged, leaving it free for translative manipulation into registry with different notches, whereupon a release of the manipulating handle allows the spring to act to return the bar to its initial position of oscillation, at the same time engaging it with the notches with which it is then in registry.

The propulsion unit has thrust elements which engage the thrust bar in forward propulsion and are normally free to swing to and from the bar in the tilting of the propulsion unit. However, the propulsion unit also

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carries hook means as shown in Hulsebus application 526,232, filed August 3, 1955, now Patent No. 2,911,938. The hook means normally connects the propulsion unit to the bar so that reversal thrust is also transmitted to the bar of the transom bracket and the boat upon which it is mounted. However, the hook acts impositively and is readily released manually for beaching or automatically if the unit encounters a submerged obstacle.

In the drawings:

Fig. 1 is a fragmentary side elevational view of an outboard motor embodying the invention, portions of the transom bracket being broken away.

Fig. 2 is a bottom plan view of the transom bracket and thrust bar omitting all parts of the propulsion unit.

Fig. 3 is a view taken in section on line 3—3 of Fig. 5 showing the thrust bar engaged with selected notches in one arm of the transom bracket.

Fig. 4 is a view similar to Fig. 3 taken on line 4—4 of Fig. 5 showing the bar oscillated and in the course of translative adjustment from the position of Fig. 3.

Fig. 5 is a view taken in section on line 5—5 of Fig. 3. The transom bracket generically designated by reference character 10 comprises laterally spaced portions 11 and 12 which may be designated as arms. These provide a clamping surface 13 for engagement with the rear of a boat transom and there are one or more cooperating set screws 14 to fix the bracket to the transom.

The transversely extending pintle bolt 15 pivotally connects to the bracket the arm 16 which projects forwardly from the propulsion unit. The propulsion unit comprises the usual upright strut 17 provided at its upper end with power head 18 and at its lower end with gear housing 19 bearing the reversible propeller shaft (not shown). The particular propulsion unit illustrated happens to be of the type which is dirigible upon the axis of a king pin 20 rotatable in the swivel bearing 21 to which the arm 16 is fixed. The steering movement is controlled by the usual tiller 22.

In order to compensate for different boat transom angles, the propulsion unit is adjustable about its pivotal connection on pintle 15 with the bracket. It is also freely tiltable aft about the pintle 15 if the gear housing encounters a submerged obstacle, or if it is desired to swing the propeller out of water for beaching purposes. It may, however, be locked against tilting and a latch is provided for that purpose, the latch being manually operable and also automatically operable in the case of reverse of the propeller thrust.

In a forward direction, the propeller thrust is transmitted from the propulsion unit to the bracket by means of the thrust element 25 which projects forwardly from the swivel bearing 21 and engages the bar 26 adjustably mounted in the bracket to receive this thrust. The position of the bar respecting the bracket will determine the extent to which the propulsion unit can oscillate about the fulcrum bolt 15 under forward propeller thrust and hence will determine the normal upright position of the propulsion unit. The propulsion unit is normally connected to the adjustable bar 26 by the hooked latch lever 27 which is pivoted at 28 to the propulsion unit and is subject to the bias of a tension spring 29 which is overcome by shock to release the hook if the unit strikes something. The latch lever 27 may also be released manually by link 31 connected to the manually operable lever 32 as in Hulsebus 526,232.

Each of the bracket arms 11 and 12 is provided with an interior cavity 33. At the lower end, the arms 11 and 12 have corresponding series of downwardly opening notches 34, 35 at their lower ends. While it is not essential, it will be noted from Figs. 2 and 5 that the notches 34 are blind in that they do not open to the outside of arm 11, whereas the notches 35 extend continuously across the lower margin of arm 12 so that the thrust bar 26 adjustably engaged in the notches projects and is provided with a handle 37 for its manipulation.

For guidance, the thrust bar 26 is mounted for vertical movement as well as oscillatory movement in slots or ways provided at 38 in the lower ends of bifurcated levers 39 and 40 respectively mounted in the cavities 33 of arms 11 and 12 and fixed to a rod 45. For convenience of assembly, this rod is seated in notches provided at 46 and 47 which are formed in the arms 11 and 12 at the upper ends of their channels 33 as best shown in Figs. 3 and 5. The bar 26 and rod 45 are both biased toward their seats in their respective notches by tension spring means 48 which acts downwardly on rod 45 and upwardly on rod 26, as shown in Fig. 5. Escape of the bar 26 from the ways 38 may be precluded by pins 49 which span the slots 38 to connect the bifurcated ends of the bars as best shown in Fig. 3.

Fast to thrust receiving bar 26 are cams 50 which have margins 51 progressively increasing in radius in a clockwise direction as viewed in Figs. 3 and 4. The normal position of these cams 50 is the position in which they are illustrated in Fig. 3, wherein they present the minimum radius portion of the edge 51 to the respective arms 39 and 40 at the upper ends of the respective slots 38. In this position of parts, the thrust bar 26 will be held by its spring 48 in corresponding selected notches 34, 35 of the respective bracket arms 11 and 12, thus providing a secure seat to enable thrust communicated to the bar 26 by the propulsion unit to be transmitted to the bracket and thence to the boat.

However, if the rod 26 is rotated counterclockwise as viewed in Fig. 3 and Fig. 4, it will reach the position of Fig. 4 in which the maximum radius position of the camming edges 51 of the respective cams 50 with the surfaces 53 of the respective levers 39 and 40 at the upper ends of said notches 38 will cause bar 26 to move downwardly against the bias of spring 48 to the position shown in Fig. 4 wherein it has cleared the dividers between the notches 34, 35 and hence is free for translative movement with levers 39 and 40 about the axis of rod 45 into registry with any notch 34, 35 of the entire series. When the bar is adjusted to the desired point, the operator has only to oscillate the bar in a clockwise direction as viewed in Figs. 3 and 4 to relieve the camming pressure which has displaced the bar downwardly. Thereupon, the bias of spring 48 will reengage the bar with the bracket arms 11 and 12 in the newly selected position.

It will be observed that inasmuch as the levers 39 and 40 are fixed to the rod 45, they are constrained to operate in unison, thereby requiring that the two ends of the thrust receiving bar 26 will always register with corresponding notches in the respective bracket arms 11 and 12. As the bar 26 is free for rotation in the slots 38 in the bifurcated ends of the levers, it is also free for movement radially to and from the rod 45 subject to the bias of spring 48 and the opposing camming action of the cams 50 which become effective when the bar is rotated.

Thus, I have provided a simple, easily assembled and easily operable means whereby a thrust receiving bar is solidly fixed in any of a number of selected positions respecting the transom bracket and is almost effortlessly movable from one position to another by rotating the bar to cam it from the notches previously occupied by it and to leave it free for swinging movement with its stabilizing levers into registry with different notches.

I claim:

1. In an outboard motor, the combination with a transom bracket having spaced arms each provided with a plurality of downwardly opening notches in corresponding series, of a thrust receiving member selectively engageable with corresponding notches of said series, a pair of levers pivotally connected with the transom bracket and having ways in which said member is reciprocable, the member being movable with the levers upon their pivotal connection with the bracket to positions in registry with the several notches of the series, means biasing the member upwardly into the notches with which it registers, and cam means for urging the member downwardly against said bias to a position free of said notches to permit the levers and member to swing to a different position.
2. The device of claim 1 in which the member comprises an oscillatable bar to which the cam means is fixed, the respective levers having surfaces with which the cam means interact in the oscillation of said bar to move the bar downwardly in opposition to said bias.
3. The device of claim 2 in further combination with a pintle rod to which the levers are fixed for equal oscillation whereby the ends of the bar register concurrently with corresponding notches of the respective bracket arms.
4. The device of claim 3 wherein the biasing means comprises a tension spring connecting the bar and the rod.
5. An outboard motor transom bracket comprising laterally spaced arms having interior upright cavities and provided adjacent the upper ends of the respective cavities with pintle rod notches and adjacent the lower ends of the respective cavities with thrust bar notches in corresponding series in a fore and aft direction, a pintle rod disposed in the pintle rod notches and extending transversely between the arms, levers mounted on the pintle rod and disposed in the cavities and oscillatory therein, the said levers being provided with ways at or below the lever of said series of notches; a thrust bar mounted for oscillation and reciprocation in the ways of the levers, its reciprocative movement being such as to move it to and from engagement with corresponding notches with which it has registered in given positions of said levers, means for the manipulation of said bar, a tension spring connecting the bar and the rod and biasing the bar into notches of said arms with which it is registered and cam means fixed to said bar and operable upon the oscillation thereof, the levers having surfaces with which the cam means interact and the cam means having an edge of progressively increasing radius for engaging said surfaces to displace the bar downwardly against the bias of said spring to a level below the level of said notches, leaving the bar free for oscillation with said levers to different positions respecting said bracket arm for engagement with selected notches upon the counter rotation of the bar to permit the biasing spring to act thereon.
6. A transom bracket comprising laterally spaced portions each provided along its lower margin with a series of thrust receiving shoulders spaced fore and aft, a thrust member spanning the space between said portions and selectively engageable with said shoulders, a pair of guide levers connected for movement in unison and pivoted to the transom bracket above said shoulders and with which the thrust member has connection, the levers having ways in which the member is movable between shoulder-clearing and shoulder-engaging positions, means biasing said member toward shoulder engagement, and means for effecting the movement of said member in said ways against said bias in a direction to clear it from shoulder engagement, said biasing means comprising an upwardly acting biasing spring, and said means for moving the member against spring bias comprising a cam for urging the member downwardly in opposition to said spring.

7. The device of claim 6 in which said member is mounted for rotation respecting the levers and has two cams fixed to it, each cam being provided with an edge surface of progressively increasing radius and each lever having a surface engaged by the edge surface of one cam whereby the cam rotation with said member effects displacement of said member outwardly along said ways from the fulcrum of the respective lever toward the shoulder-clearing and from the shoulder-engaging positions.

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