Feb. 20, 1962 O. J. BRATZ ETAL 3,021,722

BOAT STEERING DEVICES

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FIG. 1

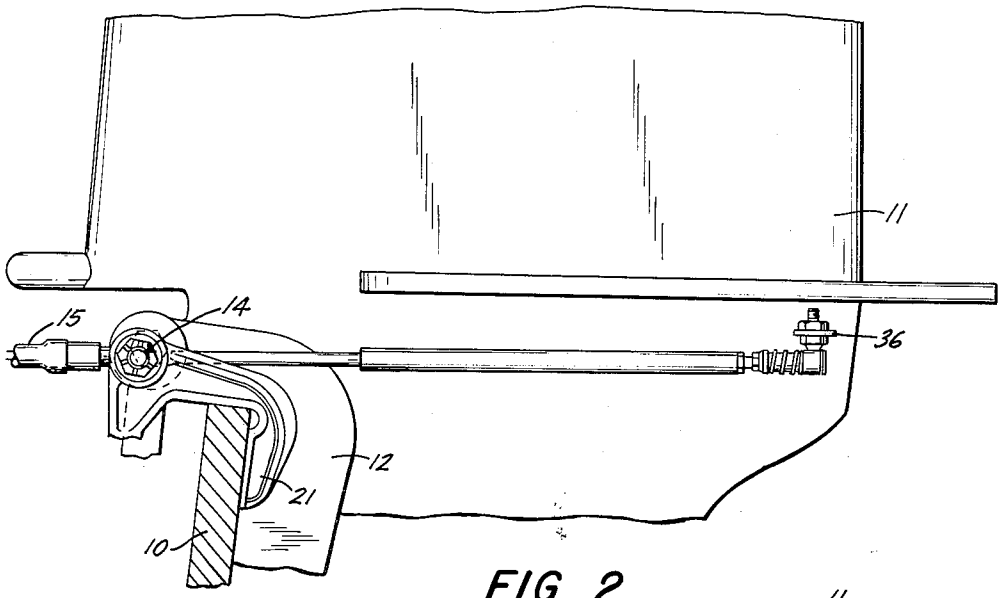
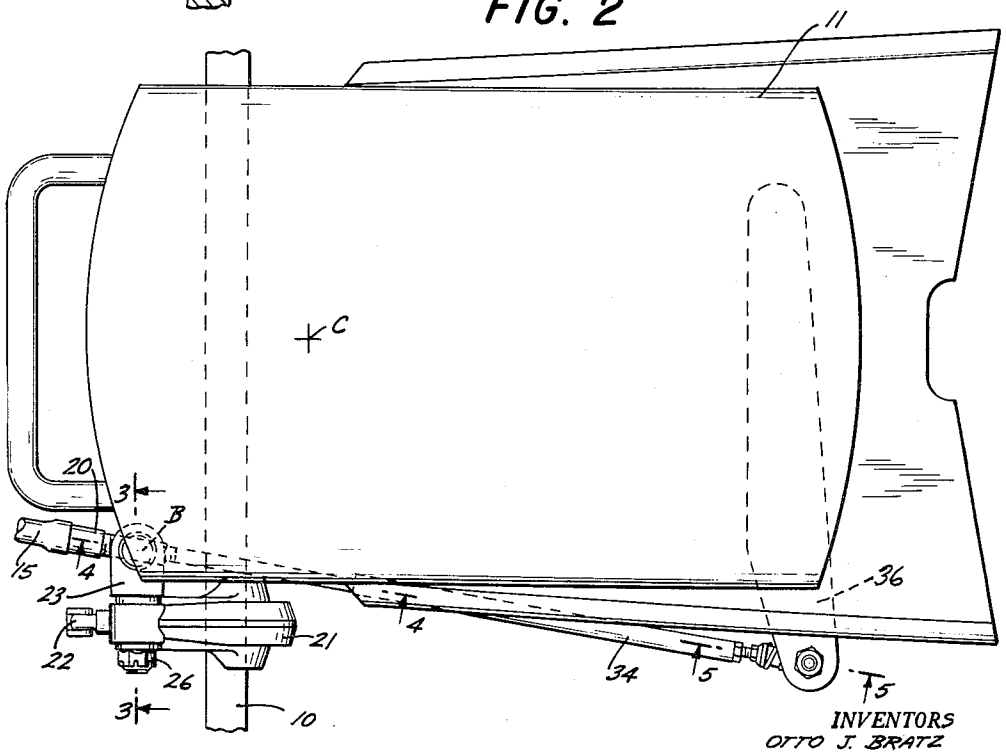


FIG. 2



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FIG. 3

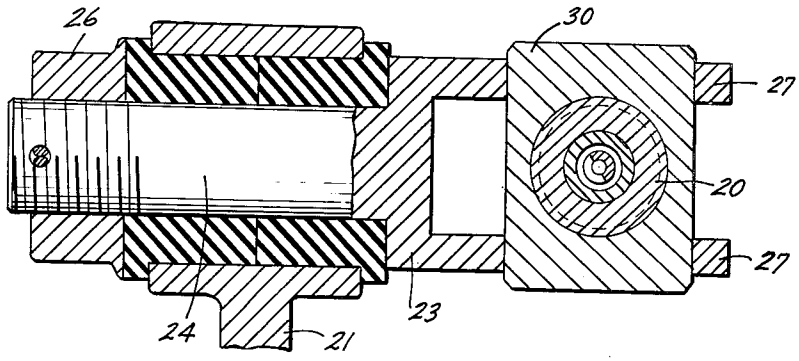


FIG. 4

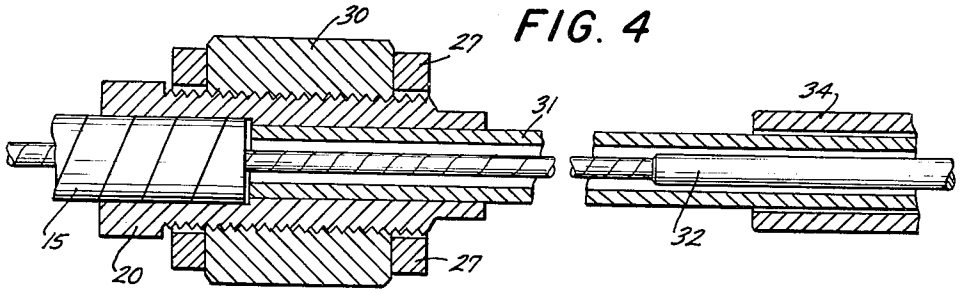
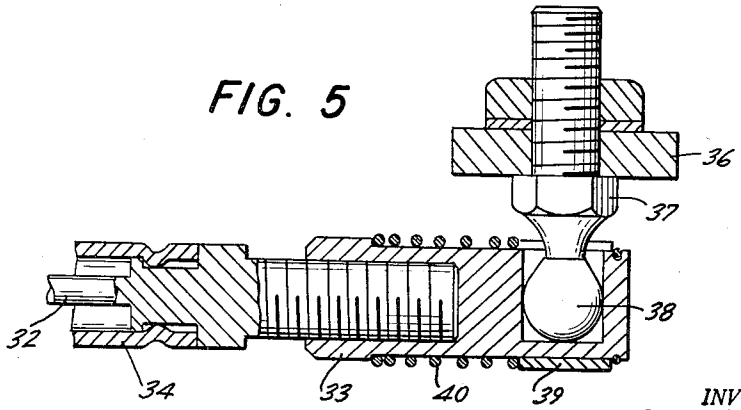


FIG. 5



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BOAT STEERING DEVICES

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This invention relates to push-pull devices, but more particularly to steering devices for boats employing outboard motors.

Push-pull devices, that is, flexible conduits having interior flexible cables which are reciprocable with respect thereto, have in recent years become imporatnt as portions of the steering mechanisms of outboard motors. As it is desirable for several reasons in certain types of motor boat to have the helmsman forward, it has been customary to rig steering wheels using tiller ropes to turn the entire engine about its vertical axis for steering. As a distinguishing characteristic of outboard motors is the ability of the motor to pivot about a horizontal axis, for the purpose of protecting the motor from harm in shallow moorings, and more important, to prevent damage in the event the motor strikes a submerged object when the boat is under way, all steering expedients must be arranged in such a manner which does not interfere with such tilting of the engine. Tiller ropes, if attached to the motor above the horizontal pivot, of course offer no resistance to such tilting, but push-pull devices are not so easily arranged to permit tilting. The reason for this, of course, is the fact that one element (usually the conduit) must be fixed relative to the hull of the boat, while the other element (usually the interior cable) is secured to some part of the motor to cause it to swing about its upright axis as the cable moves relative to the conduit. The problem is further complicated by the fact that there are a number of makes and models of outboard motors now on the market, and thus whatever expedient is adopted for utilization of a push-pull control for steering must be readily adaptable to many structures of different dimensions.

With the above considerations in view, it is a primary object of the present invention to provide a connection between a steering mechanism of the push-pull type and an outboard motor which interferes as little as possible with the pivoting of the motor about a horizontal axis.

It is a further object of the present invention to provide a push-pull mechanism which can be utilized with motors of different construction without extensive alteration.

Other objects and advantages will become apparent as the description proceeds.

Referring now to the drawings:

FIG. 1 is a side view of the stern of a boat, showing part of the transom and part of an outboard motor attached thereto;

FIG. 2 is a top view of the showing of FIG. 1; and,

FIGS. 3, 4 and 5 are sections taken on lines 3—3, 4—4 and 5—5 respectively in FIG. 2.

Referring particularly to FIGS. 1 and 2, the transom 10 of a boat is shown, upon which an outboard motor 11 is secured by means of a large clamp, fragmentarily shown at 12. The particular motor shown is capable of pivoting with respect to the clamp about the axis 14 shown in FIG. 1. The position of this axis 14 depends upon the particular motor involved, but it has been found convenient by the various makers of outboard motors to locate the axis in substantially the same position, that is, the axis 14 is not more than an inch or two from the shown position. The designers desire the

axis 14 to be as far forward as posisble so that the path of movement of the propeller upon tilting of the motor has the maximum upward component upon initiation of the tilting, which, of course, minimizes the stresses upon the motor in the event the propeller or rudder strikes a fixed object as the boat is moving forward.

For the purpose of explanation of the mechanism involved, reference is made to FIG. 2. The point A, which is secured to the motor, and the point B, which is secured to the transom, are spanned by a telescoping mechanism, to be explained. It can be seen that if the telescoping mechanism increases or decreases in effective length, the motor must perforce pivot about its vertical axis, which is located at the point C. Of course, the telescoping mechanism must pivot at points A and B and means must be provided to permit pivoting of the entire motor about the axis 14 as was mentioned before.

The telescoping mechanism comprises a fitting 20 secured to the transom against translation, but free to pivot and to rotate on its own axis. For this purpose a clamp 21 is provided, which is secured to the transom by rotation of the screw 22, shown in FIG. 2. Mounted in the clamp body is a forked body 23, which, as shown in particular in FIGS. 2 and 3, comprises a cylindrical portion 24 passing through a pair of bushings 25 which are mounted in an opening in the clamp 21. A nut 26 bears against one end of a bushing, and a shoulder on the forked body bears against another. A certain amount of stiffness at this point is desirable, but the main purpose of the bushings is to assure that corrosion of the metals of which the parts are made will not cause seizing of the fork to the clamp.

Mounted through the ears 27 of the fork is a generally cylindrical body 30, which is provided with a tapped bore to receive the fitting 20, the exterior of which is threaded to match. Tightly secured in the fitting 20 is a tubular element 31, which is rigid, while a flexible conduit 15 is secured to one end of the fitting to extend inboard from the fitting 20.

Secured to the end of the flexible inner cable is a rod 32, the outer end of which is threaded to receive a terminal fitting 33, which is to be secured to the motor. Also secured to the outer end of the rod is a tube 34, which telescopes with the tubular element 31. The purpose of the tube 34, aside from its rigidity, is to provide a long overlap between the two tubes which may, if desired, be sealed, to prevent the entry of water or spray.

As was mentioned before, it is necessary to provide a means adapting the construction so far described to many models of motor. For this purpose, an adaptor tiller 36 is provided to be secured to the motor. Different motors utilize different adaptors, which are secured by any feasible means, such as under bolts or nuts already on the motor, or by bolts in specially made openings in the motor body. Within reason, the operative end of the tiller, that is, the point A, does not have to be exactly in a plane perpendicular to the axis C about which the motor pivots in steering.

As a convenient method of securing the end of the fitting 33 to the tiller, the tiller may be provided with a ball-headed bolt 37, and the fitting 33 with a recess to receive the ball head 38 of the bolt. To retain the ball in the recess, a sleeve 39 is provided, slotted at the top, and held in the position shown in FIG. 5 by a spring 40. Connection and disconnection can be quickly accomplished by merely sliding the sleeve to the left (in FIG. 5).

Installation of the device is a relatively simple procedure. After equipping the motor with an appropriate tiller, and mounting it on the boat transom, the clamp of the steering device is also secured to the transom and moved by trial and error (or placed as directed by the

manufacturer for the particular motor used), in such a position as to give approximately equal swing to the motor on full left and full right of the helm wheel.

It should be understood that it is perfectly possible to change from one motor to another without any alteration of the steering mechanism, except perhaps to move the clamp thereof in an athwartships directions. Thus, a boat provided with the steering mechanism described can receive any motor suitable to its size without the necessity of drilling holes, or otherwsie marring the transom.

What is claimed is:

1. A boat steering device for use with an outboard motor secured to a boat transom comprising a pair of telescopingly related elements, means for operatively connecting one end of one of said elements to the transom, said means permitting pivoting of the element about its point of attachment in a vertical and in a horizontal plane, means operatively connecting the other element to a portion of the motor for pivoting in a horizontal plane, whereby telescoping of said elements causes steering pivotal movement of the motor with respect to the transom, means connecting the conduit of a flexible push-pull mechanism comprising a conduit and a cable therewithin to one of said telescoping elements at the transom and means connecting the cable of said push-pull mechanism to the other of said elements.

2. A boat steering device for use with an outboard motor secured to a boat transom comprising a support adapted to be secured to said transom, a member mounted in said support for rotation, a second member mounted on the first member for rotation about an axis at right angles to the axis of rotation of the first member, a fitting secured to the second member having a bore at right angles to the axis of rotation of the second member, an elongated rigid tubular member secured to the fitting with its bore in axial alignment with the bore of the fitting and adapted to extend outboard of the support, a flexible push-pull control mechanism comprising a flexible conduit and a cable therein, said conduit being secured to said fitting in alignment with the bore thereof, an elongated rigid extension on said cable in telescoping relation with the tubular member and extending beyond the end thereof, and means adapted to pivotally secure said extension to the motor.

3. A boat steering device for use with an outboard motor secured to a boat transom comprising a support adapted to be secured to the transom, a member mounted on said support for rotation about an athwartships axis,

a second member mounted on the first member for rotation about a vertical axis, a fitting secured to the second member having a bore at right angles to the axis of rotation of the second member, an elongated tubular member secured to the fitting with its bore in axial alignment with the bore of the fitting and adapted to extend outboard of the support, a flexible push-pull control mechanism comprising a flexible conduit and a cable therein, said conduit being secured to said fitting in alignment with the bore thereof, an elongated rigid extension on said cable in telescoping relation with the tubular member and extending beyond the end thereof, and means adapted to pivotally secure said extension to the motor.

4. A boat steering device for use with an outboard motor secured to a boat transom comprising a support adapted to be secured to the transom, an elongated tubular member, means connecting said member to said support for swivelling movement with respect thereto, a flexible push-pull control mechanism comprising a flexible conduit and a cable therein, said conduit being secured to said elongated tubular member with its bore in alignment with the bore thereof, a second tubular member telescopingly disposed exterior of the first tubular member, means connecting the cable of the push-pull mechanism to the second tubular member, and means adapted to secure the second tubular member to the motor.

5. A boat steering device for use with an outboard motor secured to a boat transom comprising a support adapted to be secured to the transom, an elongated tubular member, means connecting said member to said support for swivelling movement with respect thereto, a flexible push-pull control mechanism comprising a flexible conduit and a cable therein, said conduit being secured to said elongated tubular member with its bore in alignment with the bore thereof, a second tubular member telescopingly disposed exterior of the first tubular member, a rigid extension of the cable disposed within the first tubular member, means connecting the second tubular member to the rigid extension for reciprocation therewith, and means adapted to connect the tubular member to the motor.

References Cited in the file of this patent

UNITED STATES PATENTS

2,796,289	Tocchetto	June 18, 1957
2,829,616	O'Brien et al.	Apr. 8, 1958