May 27, 1952 W. L. HOLZHAUSER 2,598,383

REMOTE-CONTROL STEERING ATTACHMENT FOR OUTBOARD MOTORS

Filed Feb. 13, 1948 2 SHEETS—SHEET 1

Fig. 1.

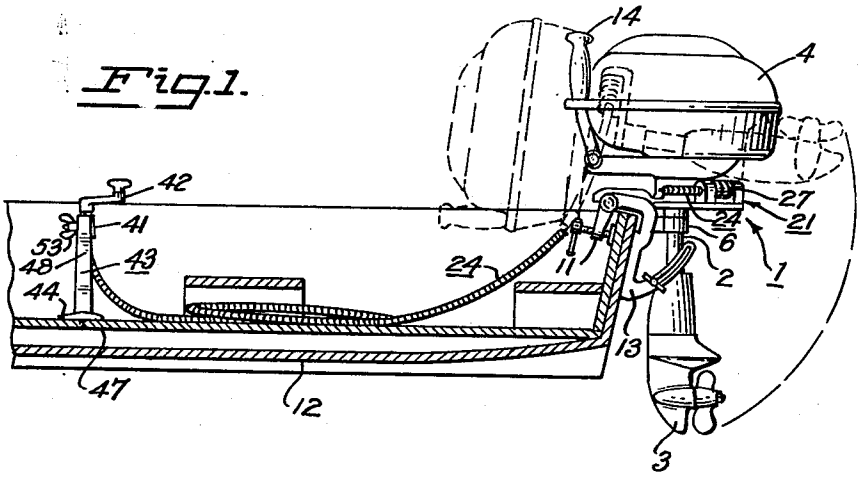


Fig. 2.

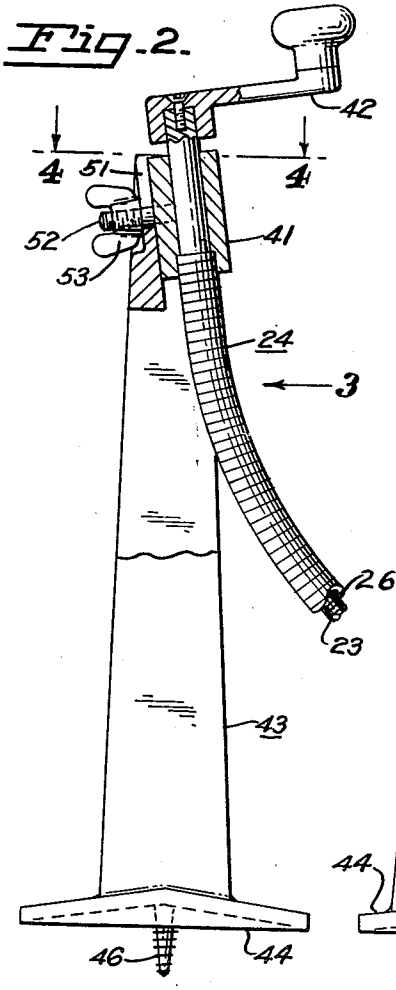
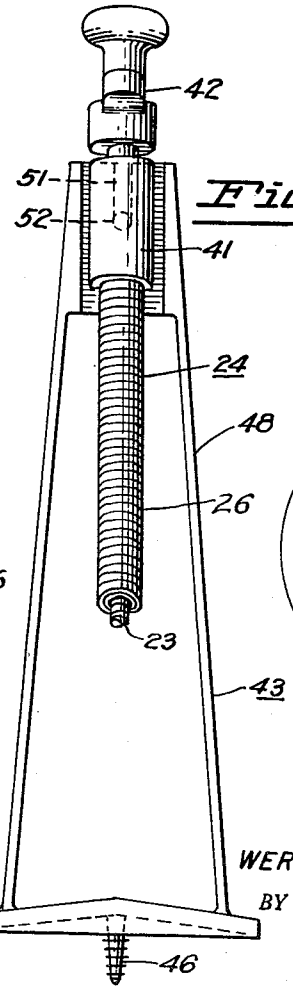


Fig. 3.



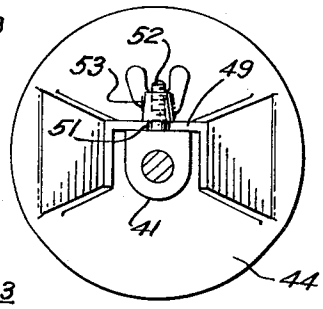


Fig. 4.

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REMOTE-CONTROL STEERING ATTACHMENT FOR OUTBOARD MOTORS

Filed Feb. 13, 1948 2 SHEETS—SHEET 2

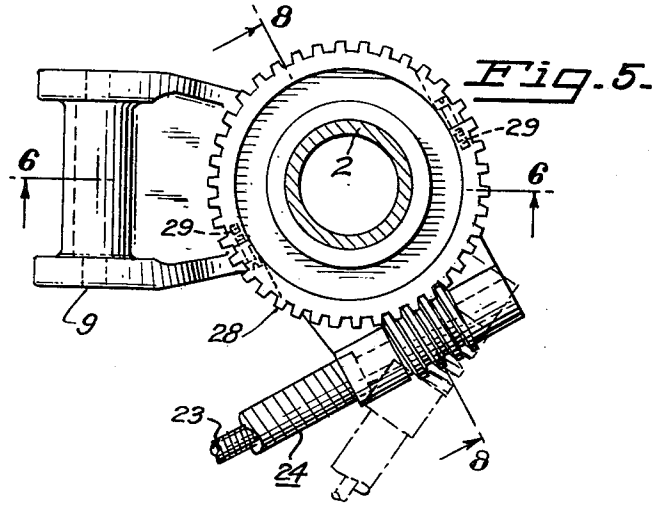


Fig. 5.

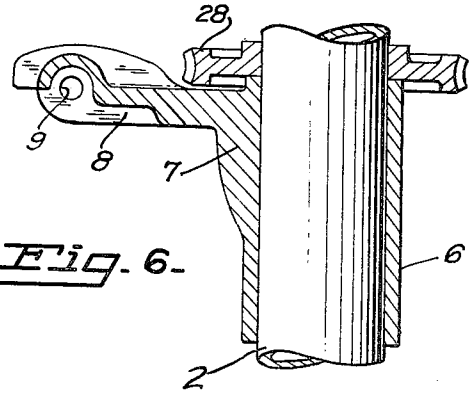


Fig. 6.

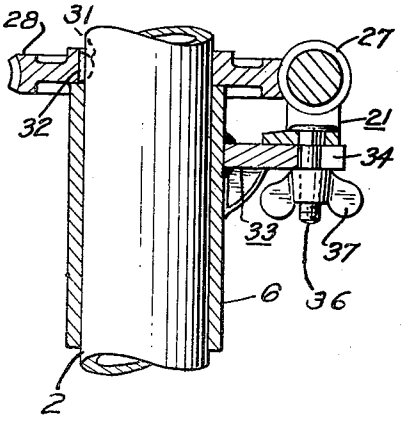


Fig. 8.

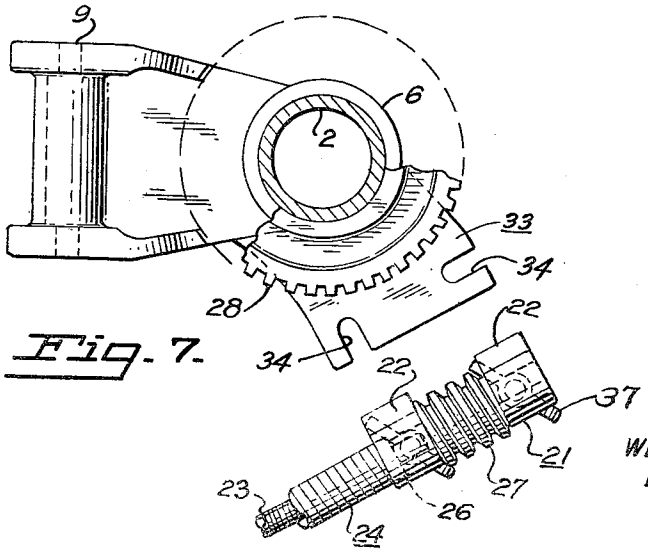


Fig. 7.

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UNITED STATES PATENT OFFICE

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REMOTE-CONTROL STEERING ATTACHMENT FOR OUTBOARD MOTORS

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Application February 13, 1948, Serial No. 8,255

7 Claims. (Cl. 74—507)

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My invention relates to a steering attachment for outboard motors, and more particularly to a remote control attachment which is readily and quickly attachable or detachable, and which is also portable.

Practically all modern outboard motors are provided with a supporting structure connected to a bracket adapted to be detachably connected to the stern of a boat. A part of the housing structure of the motor, usually the propeller drive shaft housing, is journalled for rotation in such supporting structure, about an upright axis to enable angular adjustment of the propeller for effecting steering of the boat. A tiller or handle is connected to such steerable member of the motor to effect the steering; this necessitates that the operator be positioned in the stern of the boat adjacent the motor, and that he substantially continually hold the steering handle.

Such restrictions are inconvenient, particularly in the case of an operator who may be fishing, and hence may desire to control the boat from some other location than the stern, or who is frequently called upon to employ both hands in his sport but cannot release the steering handle without the boat changing its course. Inasmuch as a popular feature of outboard motors are their relative economy, it is commercially impractical to supply them with expensive remote control steering equipment, and hence they are usually employed without such equipment.

My invention has as its objects, among others, the provision of a simple and inexpensive improved steering attachment for outboard motors, which can be remotely controlled, which, after a few simple parts are initially and permanently installed on the motor, is readily assembled and detachable without requiring special tools; can be steered from any desired position in the boat, which position can be quickly and easily changed at the will of the operator; is self-locking so that the operator may employ both hands should he be fishing or for any other purpose; is light in weight and composed of a few simple parts; and which is readily portable or transportable. Other objects of my invention will become apparent from a perusal of the following description.

In the drawings:

Fig. 1 is a fragmentary longitudinal section of the rear portion of a boat having an outboard motor attached to its stern, and illustrating my steering attachment for such motor.

Fig. 2 is a side sectional elevation of a detachable pedestal or support for the steering control member of my attachment.

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Fig. 3 is an elevational view looking in the direction of arrow 3 in Fig. 2.

Fig. 4 is a horizontal section taken in a plane indicated by line 4—4 in Fig. 2.

Fig. 5 is a horizontal sectional elevation of a portion of the outboard motor supporting frame and housing structure, illustrating the mode of connection of my steering attachment to the motor.

Fig. 6 is a vertical section taken in a plane indicated by line 6—6 in Fig. 5.

Fig. 7 is a view similar to Fig. 5, but illustrating my steering attachment disconnected from the motor, to illustrate more clearly the construction.

Fig. 8 is a vertical section taken in a plane indicated by line 8—8 in Fig. 5.

My invention is applicable to any type of outboard motor which is steerable by angular adjustment of the propeller, through turning of a steerable frame member of the motor about an upright axis, to which frame member the propeller is connected for bodily movement. A modern type of such motor is shown in the drawings for purposes of illustration, and comprises the motor frame-work 1 which includes the propeller drive shaft housing 2, propeller shaft housing 3, and engine 4. Drive shaft housing 2 provides a steerable member of the motor and is journalled in journal 6 for rotation about a normally upright axis, the journal forming part of a structurally integral bracket support member 7 for the motor, having an extension 8 provided with pivotal connecting means 9 connected for pivotal movement about a horizontal axis to bracket 11 clamped to the stern of the boat 12.

Such pivotal mounting of the motor on bracket 11 enables the motor to be swung upwardly, as indicated by the broken line position in Fig. 1, so that the propeller may be moved out of the water should the going be shallow. For regulation of the depth of the propeller in the water, the motor may be clamped in various adjusted positions, to arcuate clamping arm 13 secured to bracket 11. A pivotally mounted steering control handle or tiller 14 is connected to steerable housing frame member 2; and when in a horizontal position, this handle can be readily grasped to effect angular turning of frame member 2 to steer the boat through corresponding angular turning of the propeller. When the motor is not in use, the handle is generally moved to vertical position.

The structure thus far described is more or less conventional in substantially all outboard motors, and adapts itself readily for employment with my steering attachment. Such attachment com-

prises a bearing bracket 21 having spaced bearings 22 in which is journalled the flexible driving member 23 of a conventional flexible drive shaft 24 having flexible sleeve 26 one end of which is fixedly attached to one of bearings 22. Fixedly secured to driving member 23 between bearings 22 is a driving gear element, preferably a worm 27 adapted to engage or mesh with a driven gear element in the form of worm wheel 28 fixedly secured to the turnable housing frame member 2, so that upon turning of the flexible driving member 23, the propeller may be angularly adjusted to steer the boat.

Although it is preferred to employ a worm and worm wheel connection for steering the motor, because this provides a self-locking connection not requiring the operator to hold the steering control continuously, any other type of pinion and gear connection may be employed, such as bevel or spur gearing. An efficient gear ratio should be employed, depending on the motor horse power. For a 5 H. P. motor, which is quite popular, a 25 to 1 ratio is suitable.

Worm wheel 28 may be initially installed at the factory or it may be installed at the time of adoption of my attachment with the motor. To facilitate attachment of the worm wheel 28, if not originally supplied with the motor, it is preferably in the form of a split gear clamped to turnable frame member 2 by the usual screws 29; a notch or keyway 31 being formed in member 2 to engage a lug or key 32 on the gear so that the gear will be fixed for turning movement with member 2.

Means, which may be initially installed at the factory but which if not, can be easily installed when the attachment is first assembled, is provided as a mounting for bearing bracket 21. Such means comprises bracket shelf 33 fixedly secured at the proper position to the fixed journal 6, by any suitable means such as welding. Any suitable means may be employed to provide for quick detachable connection of the bearing member 21 to shelf 33. For this purpose, I preferably provide openings in the form of slots 34 in shelf 33, extending inwardly from adjacent edges of the shelf so that they are at substantially a right angle with respect to each other, into which can be inserted attaching screws 36 on the underside of bearing member 21, thus enabling the bearing member carrying worm 27, to be fixedly clamped in position by wing nuts 37.

It is preferred to have the slots 34 in the position described, because should one desire for any reason to disconnect worm 27 from worm wheel 28 without removing the entire bracket assembly, for example, in instances where one may desire to use handle 14 for steering, such disconnection can be readily accomplished by loosening the wing nut adjacent the left hand slot 34 with reference to Fig. 7, and pivoting the bracket assembly on the right hand screw, so that it can be moved out of the way, as indicated by the broken line position in Fig. 5.

It is to be understood that after worm wheel 28 and bracket shelf 33 are first attached, which, as previously explained, may be either at the factory or when my steering attachment is first assembled, they remain as permanent fixtures on the motor. Consequently, since no special tools are required to mount bearing member 21 on bracket 33 so that worm 27 can be engaged with worm wheel 28, the described detachable mounting can be quickly assembled or detached at all times.

A simple, and also quickly attachable and detachable control means is provided for effecting the steering. For this purpose, the end of flexible driving member 23 opposite the end secured to worm 27, is journalled in a bearing 41 in which sleeve 26 of the flexible drive shaft is secured. Driving member 23 extends through bearing 41, and to its projecting end is fixedly secured a steering control handle or crank 42 which may be of a suitable length to provide the desired leverage. The control member 42 may be in the form of a wheel if so desired, but the handle is preferred because it is less bulky. Thus, by turning control member 42 in either one of opposite directions, the motor can be turned to steer the boat, through the self-locking worm gear drive.

Support means is provided for the steering control, which can also be quickly attached to the boat at any desired location, such as a seat, the bottom or the side of the boat, and disconnected therefrom when the steering attachment is to be removed. Such support means comprises a pedestal 43 having a base 44 to which is secured a hardened wood screw 46, enabling the base to be screwed to the boat, for example, bottom 47 as illustrated; base 44 being broad enough to provide for stability when the pedestal is so attached. For lightness, pedestal 43 is perferably formed of spaced upright legs 48 secured to base 44 by any suitable means such as welding; and the legs terminate at their upper end in a U-shaped socket 49 adapted to receive bearing 41 of the steering control. The intermediate side of such socket is formed with an opening or slot 51 open at the top; so that an attaching screw 52, secured to bearing 41 can be quickly inserted in slot 51 and the bearing quickly clamped in socket 49 by wing nut 53.

As is indicated in Fig. 1 of the drawings, flexible drive shaft 24 is made sufficiently long so that pedestal 43 can be mounted at any position on the boat, and still support the steering control 42. Hence, the operator of the motor is not limited to one location in steering the motor. In this connection, the flexible character of the drive shaft, enables the shaft to be detoured around any obstructions that may be in the boat and to be moved under the boat seats. Also, this form of cable readily permits the entire motor to be tilted in case shallow water is encountered, or otherwise, without requiring disconnection between the gear elements 27 and 28. Since the detachable parts of my attachment consist essentially of only the flexible driving shaft 24 having the steering gear member 27 at one end and the steering control member 42 at the other end, together with the pedestal or support 43 for detachably mounting control member 42, the attachment can be made very light in weight, and is hence readily portable or transportable, besides being capable of quick assembly or disassembly.

In connecting my attachment, all attachments can be made quickly without any special tools, merely by securing bearing bracket 21 in position on the motor to engage gearing 27—28, screwing pedestal 43 to the boat at the desired place, and attaching bearing 41 to the pedestal. In operating the attachment, the operator not only is not limited to one position in the boat, but he can face forwardly or backwardly in the boat, and also stand up, with the boat under steering control at all times. This is a decided advantage in fishing. The self-locking steering connection to the motor enables use of both hands, which is another desirable feature should the operator be

trolling or casting for fish. Should the operator desire to use the control handle 14 for steering, without removing the attachment, this can be done whenever desired, merely by pivoting worm 27 out of engagement with worm wheel 28.

I claim:

1. A remote control steering mechanism for an outboard motor having a steerable member journalled in a support member, comprising a driven gear element secured to said steerable member, a bracket supported by said support member, a flexible driving shaft having a flexible driving member and a flexible sleeve about said driving member, a bearing secured to one end of the sleeve in which the driving member can turn, a driving gear element secured to said driving member, means for detachably securing said bearing to said bracket to move said driving gear element into and out of engagement with said driven gear element, another bearing secured to the opposite end of said sleeve and through which the opposite end of said driving member projects, a steering control member secured to said opposite end of the driving member, a movable support adapted to be detachably mounted on a boat at any desired position remote from the motor, and means for mounting the latter bearing on the latter support.

2. A remote control steering mechanism for an outboard motor having a steerable member journalled in a support member, comprising a driven gear element secured to said steerable member, a bracket supported by said support member, said bracket having openings therein, a flexible driving shaft having a flexible driving member and a flexible sleeve about said driving member, a bearing secured to one end of the sleeve in which the driving member can turn, a driving gear element secured to said driving member, said bearing having spaced screws adapted for insertion in the openings in said bracket to enable the bearing to be quickly detachably mounted on said bracket by nuts, to move said driving gear element into and out of engagement with said driven gear element, another bearing secured to the opposite end of said sleeve and through which the opposite end of said driving member projects, a steering control member secured to said opposite end of the driving member, a movable support adapted to be detachably mounted on a boat at any desired position remote from the motor, and means for mounting the latter bearing on the latter support.

3. A remote control steering mechanism for detachable connection to an outboard motor having a steerable member journalled in a support member, comprising a driven gear element fixedly secured to said steerable member, a bracket fixedly supported by said support member, a flexible shaft, a driving gear element at one end of the shaft, means for detachably supporting such end of the shaft on said bracket to move said driving gear element into and out of engagement with said driven gear element, a steering control member at the opposite end of the shaft, a movable support column having means for detachably securing the column to a boat at any desired position remote from said motor, and means for detachably securing said opposite end of the flexible shaft on said column.

4. In a remote control steering mechanism for detachable connection to an outboard motor having a steerable member carried by a support member, a driven gear element secured to said steerable member, a bracket carried on said support member, a flexible driving shaft having a flexible driving member and a flexible sleeve about said driving member, a bearing secured to one end of the sleeve in which the driving member can turn, a driving gear element secured to said driving member, and means for detachably securing said bearing to said bracket to move said driving gear element into and out of engagement with said driven gear element.

5. In detachable steering mechanism for remote control of an outboard motor having a steerable member journalled in a support member, a driven gear element secured to said steerable member above said support member, a bracket supported by said support member below said driven gear element, a driving gear element adapted to engage said driven gear element, a bearing in which the driving gear element is journalled, and means for detachably securing said bearing member to said support member to move said gear elements in to and out of engagement comprising spaced fastening elements on said bearing member connected to spaced fastening stations on said bracket member.

6. The construction of claim 5 in which said bracket member comprises a shelf having adjacent edges transverse with respect to each other, one of said fastening stations being a slot extending inwardly from one of said edges and the other of said fastening stations being a slot extending inwardly from the other of said edges, and said fastening elements comprising screws adapted to be secured by nuts whereby by loosening a nut on one of said screws, the gear elements can be disengaged upon pivoting the bearing member about the other screw.

7. The construction of claim 6 in which the driven gear element is a worm wheel and the driving gear element is a worm.

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