C. A. & O. W. HULT.

OUTBOARD MOTOR.

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1,166,523.

Patented Jan. 4, 1916.

Fig. 1.

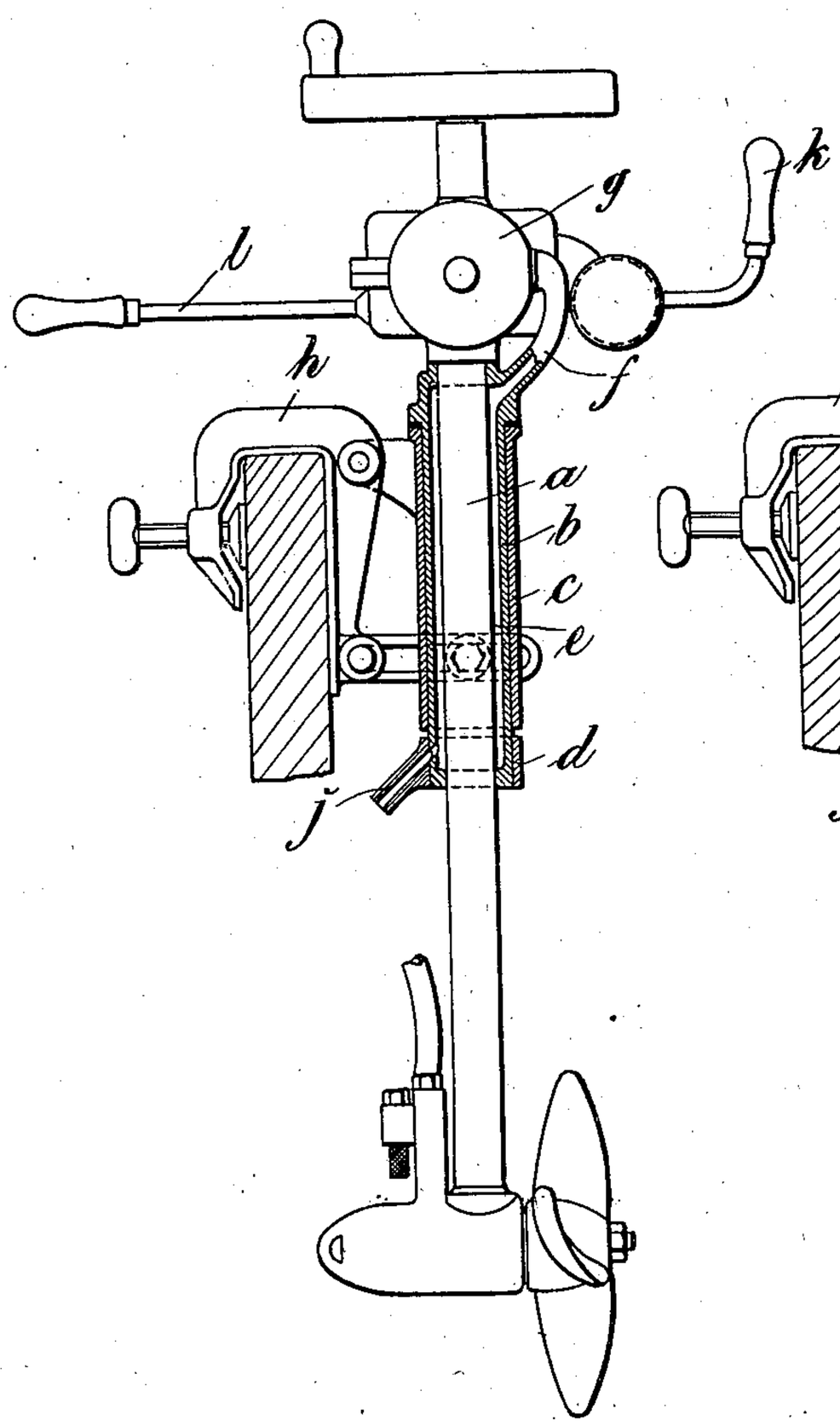
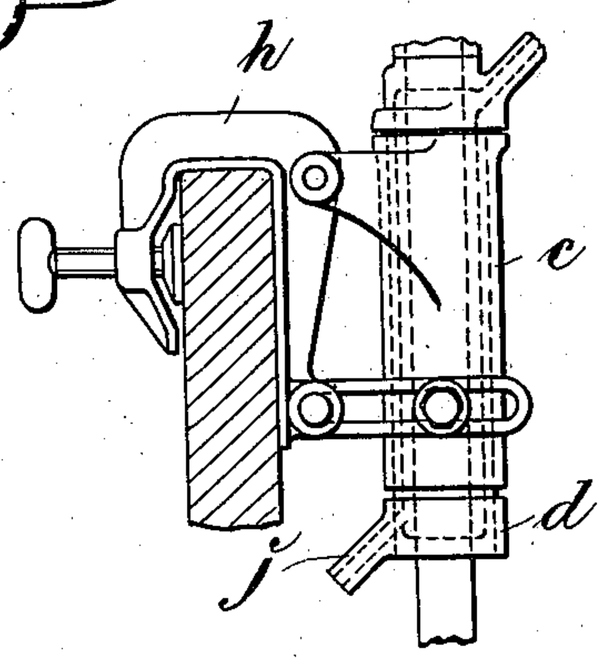


Fig. 2.



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UNITED STATES PATENT OFFICE.

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OUTBOARD MOTOR.

1,166,523. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed November 23, 1914. Serial No. 873,442.

To all whom it may concern:

Be it known that we, CARL ALRIK HULT and OSCAR WALFRID HULT, subjects of the King of Sweden, and residents of 1 Inedalsgatan, Stockholm, in the Kingdom of Sweden, engineers, have invented certain new and useful Improvements in Outboard Motors, of which the following is a specification, reference being made to the accompanying drawing.

The present invention relates to improvements in outboard motors of the kind in which the working cylinder or cylinders are situated above the surface of the water at the stern or at the side of the boat and in which the driving device leading to the propeller forms an extension of the motor shaft itself, which extension, as well as the motor shaft, is surrounded by a sleeve, and by means of a gearing drives a propeller shaft journaled at a certain angle to the said extension shaft.

The invention has for its object to render possible in a simple manner the steering of a boat, or, as the case may be, both the steering of a boat and a reversal of its direction of movement.

The invention is characterized chiefly by the fact that the steering, or the reversal, is effected thereby that the motor with the propeller device appertaining to it is rotatably suspended in a sleeve or the like fastened to the boat.

On the accompanying drawing is shown by way of example a form of the present invention.

Figure 1 shows an outboard motor arranged in accordance with the invention, viewed from one side and partly in section, while Fig. 2 shows a part of the outboard motor, viewed from one side.

A tube or sleeve *a* mounted in the extension of the lower bearing of the motor shaft, which tube or sleeve is fastened to the motor bearing, is firmly connected with a sleeve *b*, which forms the outward limit of a space *e* serving to conduct the cooling water from a pump, driven in the ordinary way, upward around (or along one side of) the sleeve *a*, and from which space (or conduit) the water is conducted through a pipe *f* to the water jacket of the motor cylinder *g*. Around the sleeve *b* is placed a sleeve *c*, which by means of a clamp *h* is attached in some suitable way to the boat in such a manner that the sleeve *c* is adjustable to more or less inclined sterns. Through this arrangement the sleeve *a*, which is connected with the sleeve *b*, can freely be rotated with the latter in the sleeve *c*, which sleeve thus holds and steers the entire driving apparatus in relation to the boat and at the same time permits of the driving apparatus being freely rotated in relation to the boat. A short sleeve *d*, mounted at the lower end of the sleeve *b*, serves merely to carry a nozzle *j*, through which the water is conducted into the water space *e*, and the said short sleeve is detachable from the sleeve *b*, in order to enable the latter together with the sleeve *a* being pushed down into the sleeve *c*.

As shown in Fig. 1, the outboard motor is provided with two tillers *k* and *l*, the first-mentioned of which is used for steering, when going ahead. For backing, the motor is turned half a revolution, so that the tiller *l* will be directed forward, and this tiller is used for steering when backing.

The motor shown in the drawing is a two-cylinder, balanced motor, viewed from one end, but the invention may obviously be applied equally well to a one-cylinder motor.

The motor may also be air cooled, in which case the sleeve *b* surrounding the sleeve *a* is superfluous, the sleeve *a* being in this case placed immediately in the sleeve *c*, which must then be adjusted to the first-mentioned sleeve.

By making, in a driving device of this kind, both the motor itself and the other outer parts belonging to the driving device firmly or non-rotatably connected with one another, is obtained the advantage, in steering the boat or in reversing its direction of movement through the swinging or rotation of the propeller, that the force which, when the motor is suspended in the usual manner, tends to turn the driving system around in the direction of rotation of the motor shaft, is annulled by the fact that the motor itself by its counter-pressure on the cylinders in opposite directions annuls the tendency of rotation of the steering apparatus. The said tendency in an ordinary outboard motor steered by a propeller, where the motor itself is not rotatable together with the remaining driving device, is very considerable, and thus in direct steering rather fatiguing for the person steering, even when steering a straight course, inasmuch as the entire system working in the water always tends to rotate along with the motor shaft, the effect

of which is that the tiller cannot be released for a moment without the lower parts of the driving device swinging to the side as far as the tiller has play.

By the present arrangement, viz. that the whole propelling system is firmly (or non-rotatably) connected with the very motor and rotatable along with it, the said drawback is obviated, and at the same time there is obtained the simplest possible steering and reversing device without any extra mechanical arrangements. Moreover, the entire suspension device is as simple or nearly as simple as in an ordinary non-reversible motor.

Besides the tillers or handles *k* and *l* mentioned above the motor may be provided with one or more further handles adapted to be acted upon on a reversal of the direction of motion of the boat or in steering.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is—

1. In an outboard motor, the combination of a boat, a motor support carried thereby, a motor loosely carried in said support, whereby said motor may itself be manipulated to reverse the direction of motion of the boat or to steer the latter when traveling in either direction, and a plurality of tillers carried by said motor for reversal and steering of the boat.

2. In a device of the character specified, the combination of an outboard motor, having an extended motor shaft, a propeller connected to said motor shaft, a sleeve surrounding said motor shaft and connected to the motor and to the propeller, and a second sleeve surrounding the first mentioned sleeve whereby the motor can be turned for the reversal of the direction of motion of the boat and for the steering of the boat when going ahead or astern.

3. In a device of the character specified, the combination of an outboard motor, having an extended motor shaft, a propeller connected to said motor shaft, a sleeve surrounding said motor shaft and connected to the motor and to the propeller, a second sleeve surrounding the first mentioned sleeve whereby the motor can be turned for the reversal of the direction of motion of the boat and for the steering of the boat when going ahead or astern, and a plurality of tillers carried by said motor for reversal and steering of the boat.

4. In a device of the character specified, the combination of an outboard motor having an extended motor shaft, a propeller connected to said motor shaft, a sleeve surrounding said motor shaft and connected to the motor and to the propeller, a second sleeve connected with and non-rotatable in respect to said first named sleeve, and means for rotatably supporting said motor and the parts carried thereby from a boat.

5. In a device of the character specified, the combination of an outboard motor having an extended motor shaft, a propeller connected to said motor shaft, a sleeve surrounding said motor shaft and connected to the motor and to the propeller, a second sleeve connected with and non-rotatable in respect to said first named sleeve, and a third sleeve embracing said second named sleeve and in which third sleeve said motor and the parts carried thereby may be rotatably supported from a boat.

6. In a device of the character specified, the combination of an outboard motor having an extended motor shaft, a propeller connected to said motor shaft, a sleeve surrounding said motor shaft and connected to the motor and to the propeller, a second sleeve connected with and non-rotatable in respect to said first named sleeve, means for rotatably supporting said motor and the parts carried thereby from a boat, and means for conducting a cooling medium from a space about said first named sleeve to said motor.

In witness whereof we have hereunto set our hands in presence of two witnesses.

CARL ALRIK HULT.
OSCAR WALFRID HULT.

Witnesses:
SALLY JACK,
H. G. CHESSON.