June 9, 1964 R. L. BERGUM 3,136,280

OUTBOARD MOTOR ATTACHMENT

Filed March 5, 1962

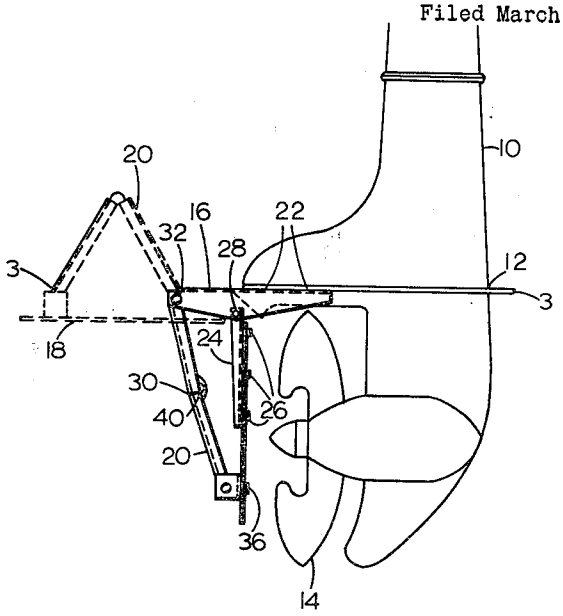


FIG. 1

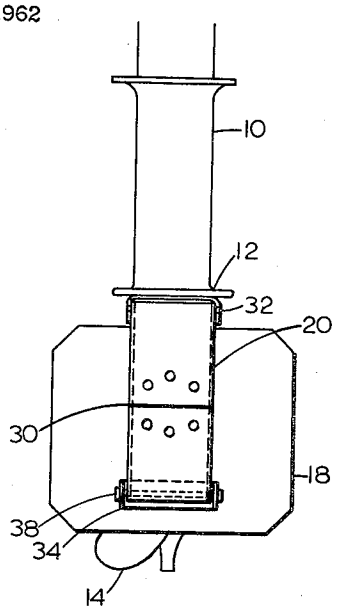


FIG. 2

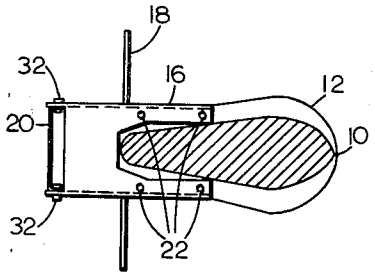


FIG. 3

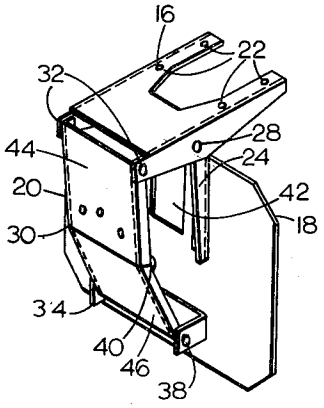


FIG. 4

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OUTBOARD MOTOR ATTACHMENT

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1 Claim. (Cl. 115—17)

This invention relates in general to an outboard motor and has more particular reference to an attachment for an outboard motor which is connectible to the cavitation plate of an outboard motor which is automatic in its action, and acts to reduce the efficiency of the outboard motor's propeller and retard the speed of the boat on which the outboard motor is mounted to an extent sufficient to permit trolling.

It is well appreciated among fishermen that when one is trolling, it is desirable to travel at a very low speed. Although an outboard motor may be operated at different speeds to propel a boat correspondingly, it is often desirable to operate the boat at a lower rate of speed than is possible to throttle down an outboard motor; particularly an outboard motor of a larger horsepower rating. It is the principal object of the present invention to provide a simple and inexpensive device which is attached to the outboard motor for operating it and a boat to which it is attached at a very low rate of speed, yet, permitting its operator to resume full power and speed simply increasing the throttle setting of the outboard motor.

I am aware that a trolling plate attachment for outboard motors, used for the purpose of reducing the speed of boat movement to an extent sufficient to allow trolling, is not new per se. I am further aware that the present invention is not the first invention to employ as an object an attachment of the character referred to which will act automatically, by moving into an operative speed reducing position when the motor is throttled down below a predetermined throttle setting, and to move into an inoperative position when the motor is being operated at or above said settings. However it is a more particular object of the present invention, to provide an attachment which consists in part of a device that automatically moves the trolling plate into operative position when the motor is throttled down below a predetermined throttle setting, locking the trolling plate into that operative position until the throttle setting of the motor is increased sufficiently to release the automatic locking device by exhaust and propeller wash pressure channelled through the trolling plate and against a point on the automatic locking device; the propeller wash then automatically moving the trolling plate to an inoperative position.

Another object is to provide a trolling plate attachment of a type which can be manufactured at a reasonable cost, is of simple and durable construction, and can remain attached to the outboard motor as an integrated part thereof without interference with the normal operations of the same.

Other objects will appear from the following description, the claim contained herein, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

FIGURE 1 is a side elevation view of the present invention, a motor on which the attachment is mounted being illustrated fragmentarily, the full lines showing an operative position of the plate members of the device, the broken lines showing an inoperative position of the plate member;

FIGURE 2 is a rear elevation view of the attachment taken from the left of FIGURE 1;

FIGURE 3 is a transverse sectional view through the motor taken substantially on line 3—3 of FIGURE 1, the attachment constituting the present invention being shown in top plan; and

FIGURE 4 is a perspective view of the present invention not attached to an outboard motor.

The reference numeral **10** has been applied generally in the drawings, to designate a conventional outboard motor, said motor having the usual cavitation plate **12** and the propeller **14**.

The present invention consists of the mounting frame **16**; the speed reducing plate **18**, and an adjustable automatic locking device **20**.

The mounting frame **16** attaches to the cavitation plate **12** of the motor **10** by means of four bolts at **22**.

The speed reducing plate **18** is attached to two arms **24** by means of rivets **26**; and arms **24** are secured to the mounting frame **16** by a removable pin **28** which forms a horizontal axis at the point of attachment **28** which allows the speed reducing plate to swing freely from the operating position as indicated by the solid lines in FIGURE 1 to the inoperative position as indicated by the broken lines in FIGURE 1, and vice versa.

The speed reducing plate **18** is provided with a slot at **42** to permit the escape of the motor's exhaust and to provide a channel for the passage of propeller wash to cause the release of the adjustable automatic locking device **20**.

The adjustable automatic locking device consists of an upper member **44** and a lower member **46** which are joined together at **30** by an adjustable-tension spring hinge **40**; said spring hinge is obtained from a manufacturer, is produced for a variety of industrial and domestic uses and its construction is not claimed as a part of the present invention. The upper member **44** and the lower member **46** are mitered so that their greatest angle to each other, as indicated by the solid lines of FIGURE 1 is less than 180 degrees. The adjustable tension spring hinge is arranged so that its tension is applied to maintain the greatest angle between the upper member **44** and the lower member **46**; so that the tension on the spring hinge is greatest when the device is in an inoperative position as indicated by FIGURE 1; however, due to the leverage arrangement, the plate in this inoperative position has little downward pressure.

The upper member **44** is attached to the mounting frame **16**, by a removable pin **32** which forms a horizontal axis at the point of attachment which allows the upper member **44** to move freely from the operative position as indicated by the solid lines in FIGURE 1 to the inoperative position as indicated by the broken lines in FIGURE 1; the point of attachment **32** being above the horizontal center line of the point of attachment **28**.

The lower member **46** is attached to the speed reducing plate **18** by means of a bracket **34** which is riveted to said plate **18** at **36**; said lower member **46** being attached to said bracket **34** by means of a removable pin **38**.

The pin **28** and the pin **32** are removable in order to allow the speed reducing plate **18** and the adjustable automatic locking device **20** to be quickly and easily removed from the mounting frame **16**, leaving only the mounting frame **16** attached to the outboard motor during such occasions when the operator desires maximum speed and efficiency, such as racing, water skiing, and running about, and permits quick re-attachment of the device during such occasions when the operator washes to utilize it.

The pin **38** is removable in order to allow said lower member **46** to be disengaged from the speed reducing plate **18** to permit easy access to the adjustable tension spring hinge **40** for the purpose of adjustment.

The removable pin **38** forms a horizontal point of axis which is to the rear of the vertical center line of the point of axis **28** and which is above a line passing through the centers of the point of axis **32** and the point of axis of the spring hinge **40**. The purpose of this linkage is to create certain advantages of leverage for a purpose to be made presently apparent.

In trolling, the outboard motor would be throttled down to a low setting. When the motor is operated at said low setting, the propeller's force would not be sufficient to overcome the tension on the spring hinge 40; as a result, the adjustable locking device 20 will assume its operating position as indicated by the solid lines in FIGURE 1, bringing the speed reducing plate 18 into the path of the propeller wash to have the effect of slowing the speed of movement of the boat on which the motor is mounted, to an extent sufficient to permit trolling. At the operating position, the automatic locking device 20 becomes set or locked. The greatest advantage of the points of leverage being achieved, holding the speed reducing plate 18 in a rigid position.

If, however, the speed of the motor is increased above a predetermined throttle setting, the propeller's force and increased exhaust pressure will be channelled through the slot 42 in the speed reducing plate 18 and against the face of the upper member 44 with sufficient pressure to release the locking effect above described; when this release is achieved, the propeller's force can easily overcome the tension of the spring hinge and move the mechanism into an inoperative position as indicated by the broken lines of FIGURE 1.

The throttle setting at which the speed reducing plate 18 will be automatically made operative or inoperative by the automatic locking device 20 can be governed by adjusting the tension of the spring hinge to suit the size and power of the individual motor and desires of its operator.

The foregoing is considered as illustrative only of the principles of the invention. It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of my claim.

My claim is as follows:

A mechanism comprising a mounting frame, a speed reducing plate pivoted to said frame on a first horizontal axis, an arrangement of two members hinged together by the use of a spring hinge; one member being attached at one end to said mounting frame on a second horizontal axis located to the rear of and parallel to said first horizontal axis; the other member being attached at its opposite end to said speed reducing plate by means of a horizontal pin parallel to the second horizontal pin; said members being joined together in such a manner so as to provide that the spring hinge will motivate said members to assume a position toward each other which is slightly less than 180 degrees to each other, the purpose of said mechanism being to form a brace or support for said speed reducing plate; said support being made rigid by the nearly dead center position of the members; said members being further arranged so that increased amount of the propeller wash will exert a pressure on said members through a slot provided in the speed reducing plate and will move said members from their near dead center positions, allowing said speed reducing plate to yield to the pressure of the propeller's wash and to swing into a horizontal position automatically when the throttle setting of the outboard motor is increased; said arrangement of members being made so that the spring hinge will create a force sufficient to automatically return the speed reducing plate to a vertical position and restore the near dead-center support and brace effect at such time as the throttle setting of the outboard motor is reduced and the wash of the propeller diminished.

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