May 18, 1943 B. A. SINK 2,319,640

PROPELLER GUARD

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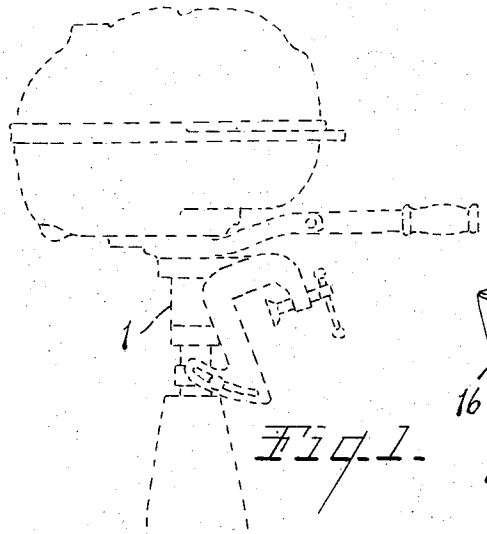


Fig. 1.

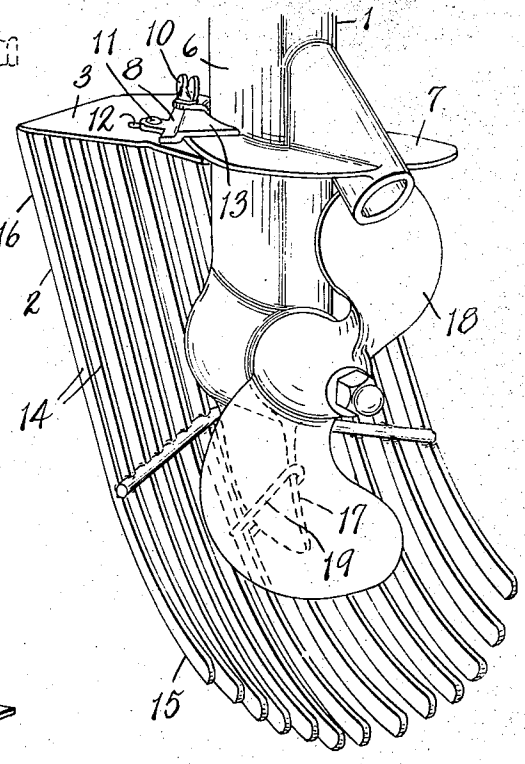


Fig. 2.

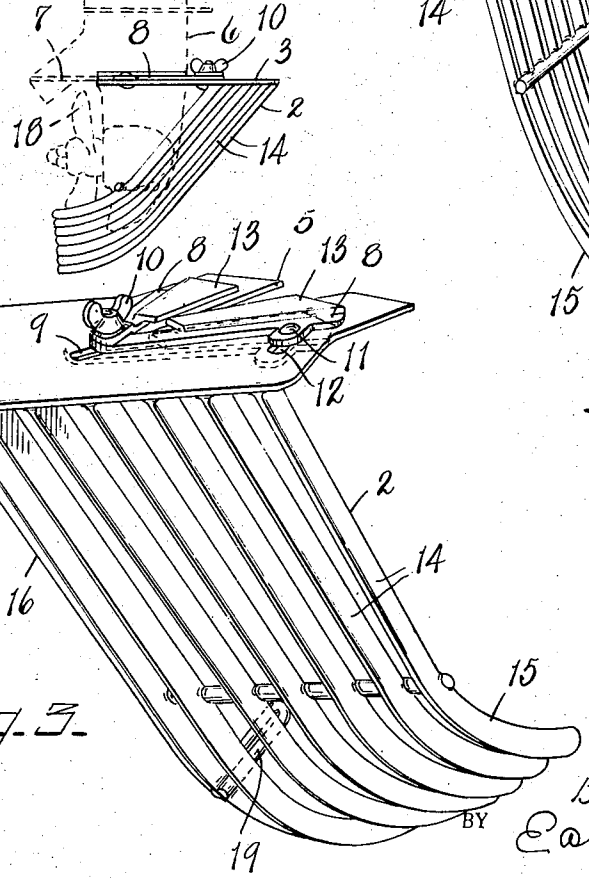


Fig. 3.

INVENTOR.
Burton A. Sink
BY Earl D. Chappell
ATTORNEYS.

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PROPELLER GUARD

Burson A. Sink, Benton Harbor, Mich.

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15 Claims. (Cl. 115—42)

This invention relates to improvements in a propeller guard.

The main objects of this invention are:

First, to provide an improved and highly effective shield for the propeller of an outboard motor for the purpose of preventing snagging of the propeller in weeds or being damaged by striking submerged objects; and for improving the efficiency of the propeller by minimizing currents and turbulence adjacent the same and thereby add to the efficiency thereof.

Second, to provide a shield of the foregoing character which is extremely simple and inexpensive in its parts and may be readily and quickly applied to types of outboard motors now in extensive use for the foregoing purposes.

Third, to provide a combined weed guard or shield for a propeller for water craft which functions effectively to prevent undue turbulence adjacent the propeller and which coacts with the cavitation plate of the motor in greatly increasing the efficiency of operation of the propeller.

Fourth, to provide a guard or shield of the type described having exceedingly simple provisions for removably securing the same on conventional types of outboard motors.

Further objects relating to details and economies of my invention will appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a view in side elevation illustrating the guard or shield of my invention in operative relation to an outboard motor shown in dotted lines.

Fig. 2 is a fragmentary view in rear perspective further illustrating the relation of the shield to the motor propeller and rudder in operative mounted position, and

Fig. 3 is a front perspective view showing the guard of my invention removed from the motor and indicating the manner in which the motor engaging clamps are manipulated in clamping the guard to the motor.

This invention relates to a guard or shield for outboard motors adapted to be removably attached with ease and speed to various extensively used types of motors, which functions to prevent damage to the propeller or rudder due to snagging weeds, striking submerged or floating articles, and the like. Attending these functions, however, I have found that the guard of my invention has the further and extremely important capability of minimizing or preventing excessive turbulence in the water adjacent and forwardly of the rudder and propeller, which turbulence tends to be created by the operation of the propeller at high speed. The present guard, in eliminating or greatly minimizing such turbulence, thus functions to the same general end as the cavitation plate and coacts therewith to obtain more efficient functioning of the propeller. I regard the dual action of the present propeller guard as being of great importance.

Referring to the drawing, reference numeral 1 designates an outboard motor of a well known type adapted to be removably attached to small water craft. However, it will be appreciated as the description proceeds that the structure of my invention is likewise well suited for application to any marine engine, outboard or permanently installed, hence I desire that the invention be not regarded as unduly limited in this respect.

The reference numeral 2 generally indicates the guard or shield of my invention. This consists of a top body plate 3 having a forwardly converged front edge 4 and provided with a slot or recess 5 of substantial size at its rear and adapted to engage the forward edge and sides of the propeller shaft housing 6 of the motor. Referring to Figs. 1 and 2, it will be noted that in operative position plate 3 is disposed substantially coplanar with, though immediately underneath, the cavitation plate 7 of the motor.

I provide a pair of pivotally inner-connected clamping members 8 on the top of plate 3 of the guard, these members being pivotally articulated by a clamp screw or bolt extending through a forward extension 9 of the slot 5, with the head of the screw or a suitable washer thereon engaging the bottom of the plate 3 in a manner which will be readily understood. The bolt or screw is provided with a wing nut 10, which is manually actuated to lock the clamps 8 in any desired angular position relative to one another, and in desired position longitudinally of the extension 9 of slot 5. The clamps 8 are individually guided in the swinging adjustment thereof by pins, rivets or the like 11 extending through angularly disposed slots 12 at either side of the center slot 5.

The clamps 8 are provided with the upwardly offset and inwardly extending flared clamping wings 13 and, when the plate 3 of the guard is disposed beneath the cavitation plate 7, with the guard in operative position relative to the engine housing 6, the clamping wings 13 are swung inwardly over the cavitation plate in the manner clearly shown in Fig. 2 for wedging clamping

engagement therewith. Further structure for completing the mounting of the guard on the motor will be hereinafter described.

Attached to the plate 3, preferably integrally as by a welded connection, I provide a plurality of spaced downwardly and rearwardly extending, blade-like guard fingers 14 each terminating in rearwardly curved ends 15. The degree of curvature of each of these ends is the same and the members 14 differ only in the length of the main downwardly extending portion 16 thereof, which decreases uniformly from the center to the sides. The blades or members are arranged in spaced parallel relation along the inclined or rearwardly diverging front edges 14 of the plate 3, the disposition of the blades thus diverging rearwardly and outwardly so as to result in a pocket of rearwardly concave, basket-like or scoop-like outline for receiving and shielding the rudder 17 and propeller 18.

Referring to Figs. 2 and 3 it will be noted that the center guard blade has secured thereto an elongated loop-like bight or seat 19 which may be formed of a suitable gauge of rod stock bent upon itself and welded to the centermost guard blade 14. This seat extends rearwardly and is adapted to receive and supportingly engage the rudder 17 in the manner clearly illustrated in Fig. 2, thereby cooperating with clamps 8 in securing the guard or shield in operative relation to the propeller and rudder.

The guard members or blades 14 are held rigidly in the spaced, parallel operative relation thereof by means of a fairly heavy piece or cross-bar of bar or rod stock 19 welded to the rear edges thereof.

It will be appreciated that in operation the relatively narrow spaced blade-like members 14, when arranged in the convex propeller and rudder shielding relation shown in the drawing, serve to effectively prevent tangling of the propeller in the weeds and the like, and prevent damage to the propeller and rudder by striking submerged objects, without, however, a serious attendant increase in the load on the engine due to water friction.

I have observed in operation that the performance of the motor is greatly improved due to the fact that the blades of the guard which are of substantial width effect a practically complete elimination of undesirable turbulence forwardly of the propeller in operation, hence in this manner the guard augments and supplements the action of the cavitation plate in greatly improving the efficiency of the motor propeller.

It should be particularly noted that due to the substantial rearward inclination of the blades 14 the front edge of the top plate 3 actually engages weeds prior to the blades, separating the weeds for the most part as the guard is advanced. Thus plate 3 has this further function in addition to its function of supporting the blades. Moreover, the plate, projecting as it does in a substantial area forwardly of and above the propeller, serves to augment the action of the cavitation plate in assuring entrance of the water to the propeller in a direction axially of the propeller. This supplemental action of both the blades and the body plate 3 in improving the efficiency of the propeller operation I regard as of distinct importance in the present invention.

Obviously the structure of my invention serves to prevent damage to the rudder and propeller in beaching a craft and it is sufficiently light in weight that it may be readily swung upwardly with the propeller to inoperative position when desired. It is attached to and removed from the motor with ease and speed, it being only necessary to slip the rudder into the loop-like seat 18, engage the engine housing in the slot 5 of the guard top plate 3 and swing the clamping wings 13 into engagement with the cavitation plate as shown.

An embodiment of the invention which incorporates principles of the invention in a highly desirable manner has been illustrated and described. It should be understood that the foregoing terminology is used descriptively rather than in a limiting sense, and with full intention to include equivalents of the features shown and described, within the scope of the following claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination with a marine motor having a cavitation plate and a rudder and propeller disposed therebeneath, a weed guard provided with a horizontal top plate engageable with said cavitation plate beneath the same, said top plate having swingable wings pivoted thereon for adjustment into clamping engagement with the top of said cavitation plate to secure the guard thereon, said plate having a plurality of elongated, relatively thin, flat guard blades of substantial width depending therefrom in parallel laterally spaced relation, the order of securement of said blades to said plate diverging rearwardly on either side of the center of the plate, said blades having main body portions of unequal length decreasing uniformly from the innermost to the outermost thereof and terminating in similar rearwardly curved extremities whereby to constitute a concave pocket rearwardly of said blades for the shielding reception of the propeller and rudder, the centermost guard blade having a rearwardly extending elongated loop-like seating member secured thereto which is engageable by the rudder to maintain the guard in operative position in conjunction with said clamping members, said guard being positioned sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

2. In combination with a marine motor having a cavitation plate and a rudder and propeller disposed therebeneath, a weed guard provided with a horizontal top plate engageable with said cavitation plate, said top plate having swingable wings pivoted thereon for adjustment into clamping engagement with said cavitation plate to secure the guard thereon, said plate having a plurality of elongated, relatively thin, flat guard blades of substantial width depending therefrom in parallel laterally spaced relation, the order of securement of said blades to said plate diverging rearwardly on either side of the center of the plate, said blades having main body portions of unequal length decreasing uniformly from the innermost to the outermost thereof and terminating in similar rearwardly curved extremities whereby to constitute a concave pocket rearwardly of said blades for the shielding reception of the propeller and rudder, said guard having means engageable by the rudder to maintain the guard in operative position in conjunction with said clamping members, said guard being positioned sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

3. In combination with a marine motor, a

weed guard provided with a horizontal top plate having a plurality of elongated, relatively thin, flat guard blades of substantial width depending therefrom in parallel laterally spaced relation, the order of securement of said blades to said plate diverging rearwardly on either side of the center of the plate, said blades having main body portions of unequal length decreasing uniformly from the innermost to the outermost thereof and terminating in similar rearwardly curved extremities thereby to constitute a concave pocket rearwardly of said blades for the shielding reception of the propeller and rudder, said guard having means engageable with the motor to maintain the guard in operative position thereon sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

4. In combination with a marine motor having a cavitation plate, a weed guard provided with a horizontal top plate having swingable wings pivoted thereon for clamping engagement with said cavitation plate to secure the guard on the motor, said plate having a plurality of elongated depending guard members arranged thereon in parallel laterally spaced relation, the lateral order of said members diverging rearwardly from the innermost to the outermost thereof, said members having main body portions of lengths decreasing from the innermost to the outermost thereof and terminating in similar rearwardly curved bottom extremities whereby to constitute a concave pocket rearwardly of said members for the shielding reception of the propeller of the motor, said guard being positioned sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

5. In combination with a marine motor having a cavitation plate, a weed guard provided with a horizontal top plate having means for clamping engagement with said cavitation plate to secure the guard on the motor, said plate having a plurality of elongated depending guard members arranged thereon in parallel laterally spaced relation, the lateral order of said members diverging rearwardly from the innermost to the outermost thereof, said members terminating in rearwardly curved bottom extremities whereby to constitute a concave pocket rearwardly of said members for the shielding reception of the propeller of the motor, said guard being positioned sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

6. In combination with a marine motor, a weed guard provided with a horizontal top plate having means for clamping engagement with said motor to secure the guard thereon, said plate having a plurality of elongated depending guard members arranged thereon in parallel laterally spaced relation, said members terminating in rearwardly curved bottom extremities whereby to constitute a concave pocket rearwardly of said members for the shielding reception of the propeller of the motor, said guard being positioned sufficiently closely adjacent the propeller to minimize turbulence forwardly of the latter.

7. A guard for marine motors having a cavitation plate, said guard comprising a support provided with clamping means adjustable for engagement with said cavitation plate and having a plurality of rearwardly and downwardly extending blade-like guard members secured thereto in laterally spaced arrangement, the front edges of said respective members diverging rearwardly and sidewardly from the innermost to the outermost thereof, said members being of decreasing length progressing laterally from the innermost to the outermost and terminating in rearwardly curved end portions extending rearwardly of the propeller of the motor, whereby to constitute a concave pocket shieldingly receiving the propeller and rudder of the motor, one of said guard members having means thereon for supportingly engaging the rudder and thereby coacting with said clamping means in operatively securing the guard on the motor.

8. A guard for marine motors, comprising a support having a plurality of rearwardly and downwardly extending blade-like guard members secured thereto in laterally spaced arrangement, the front edges of said respective members diverging rearwardly and sidewardly from the innermost to the outermost thereof, said members being of decreasing length progressing laterally from the innermost to the outermost and terminating in rearwardly curved end portions extending rearwardly of the propeller of the motor, and constituting a concave pocket shieldingly receiving the propeller of the motor.

9. A guard for marine motors, comprising a support having a plurality of rearwardly and downwardly extending blade-like guard members secured thereto in laterally spaced arrangement, the front edges of said respective members diverging rearwardly and sidewardly from the innermost to the outermost thereof, said members terminating in rearwardly curved end portions and constituting a concave pocket shieldingly receiving the propeller of the motor.

10. A guard for marine motors, comprising a support having a plurality of rearwardly and downwardly extending blade-like guard members secured thereto in laterally spaced arrangement, said members being of decreasing length progressing laterally from the innermost to the outermost and terminating in rearwardly curved vertically spaced end portions, and constituting a concave pocket shieldingly receiving the propeller of the motor.

11. A guard for marine motors having a cavitation plate, said guard comprising a main body member provided with centrally pivoted clamping wings adjustably engageable with the sides of said cavitation plate and having a plurality of rearwardly and downwardly extending blade-like guard members secured thereto in parallel, laterally spaced arrangement said members terminating in rearwardly curved end portions extending rearwardly of the propeller of the motor whereby to constitute a concave pocket shieldingly receiving the propeller of the motor, one of said guard members having means thereon for supportingly engaging the rudder of the motor and thereby coacting with said clamping wings in operatively securing the guard on the motor.

12. A guard for marine motors having a cavitation plate, said guard comprising a main body member provided with centrally pivoted clamping wings adjustably engageable with the sides of said cavitation plate and having a plurality of guard members secured thereto to constitute a concave pocket shieldingly receiving the propeller of the motor, one of said guard members having means thereon for supportingly engaging the rudder of the motor and thereby coacting with said clamping wings in operatively securing the guard on the motor.

13. The combination with a marine propeller,

of a support therefor provided with a cavitation plate disposed above and in operative relation to said propeller, a weed guard comprising a plate-like support member provided with means at the front thereof for mounting on said cavitation plate, and a plurality of guard bars disposed in spaced parallel relation to depend from said support, said guard bars being rearwardly inclined and having rearwardly curved lower ends extending below the propeller, said bars being of substantial width and spaced and disposed in such relation to the propeller as to constitute a guard therefor and to minimize turbulence in advance of the propeller.

14. The combination with a marine propeller, of a support therefor provided with a cavitation plate disposed above and in operative relation to said propeller, a weed guard comprising a plate-like support member provided with means at the front thereof for mounting on said cavitation plate, and a plurality of guard bars disposed in spaced parallel relation to depend from said support, said bars being of substantial width and spaced and disposed in such relation to the propeller as to constitute a guard therefor and to minimize turbulence in advance of the propeller.

15. A guard for marine motors, comprising a support having a plurality of rearwardly and downwardly extending elongated guard members secured thereto in laterally spaced relation, said members being of decreasing length progressing laterally from the innermost to the outermost and terminating in rearwardly curved, vertically spaced end portions, the front surfaces of said members diverging rearwardly and sidewardly from the innermost to the outermost, whereby said members are arranged to constitute a substantial concave pocket adapted to shieldingly receive the propeller of the motor.

BURSON A. SINK.