This invention relates to internal combustion engines, and in particular to outboard motors such as are used for propelling boats.

One object of this invention is to provide an outboard motor having, in addition to its usual engine-cooling pump, an auxiliary service pump which can be used for pumping out the bilge water from the hull of the boat; supplying water for summer camps by immersing it in a stream or lake and piping the water to the camp; for fire fighting, or other purposes where a power-driven pump is needed and is not always available.

Another object is to provide an outboard motor, as set forth in the preceding object, wherein the auxiliary service pump is mounted upon a frame or bracket structure which is attachable to a conventional outboard engine and driven therefrom.

Another object is to provide an outboard motor, as set forth in the preceding objects, wherein the auxiliary service pump is mounted at the top of the engine and driven from a power takeoff device which is attached to the upper part of the engine drive shaft.

In the drawings:

Figure 1 is a side elevation, partly in section, of an outboard motor with an auxiliary service pump according to a preferred form of the invention;

Figure 2 is a top-plan view of the outboard motor and auxiliary service pump shown in Figure 1; and

Figure 3 is a fragmentary front elevation of the upper portion of the outboard motor and auxiliary service pump shown in Figures 1 and 2.

Herebyto, the owners of boats equipped with outboard motors have constantly faced the need for a power-driven pump which would be independent of a source of electricity and which would always be available for use. In the ordinary boat which is not moored in a boat house or under shelter, the rain, as well as leaks in the hull, cause the hull to acquire bilge water in the bilges thereof. Water also accumulates in the bilges while the boat is underway, particularly in sailing craft where the water comes over the bow and into various deck openings for rigging or spars, and also sparts up through the center-board trunk, particularly while sailing in a choppy sea. The ordinary hand bilge pump is not conveniently used under such circumstances, as the operator of the boat is too busy sailing the boat to operate such a pump. Hand bailing is also laborious and impractical for the same reason. As a consequence, before the owner of a boat can get underway, he is usually faced with the necessity of bailing out his boat, an operation which is tedious and time-consuming.

Moreover, there are frequent occasions when a power-driven pump is also desired or is urgently necessary, such as when it breaks out either on the boat itself, in a summer cottage or in the woods surrounding such a cottage or camp. Here again hand-operated pumps are inadequate and tiring. The supplying of fresh water to a summer camp is also a laborious task because such water is ordinarily carried in buckets a considerable distance from the lake or stream to the place where it is to be used.

The present invention eliminates these disadvantages and solves these problems by providing an outboard motor with an auxiliary service pump driven from the engine and capable of pumping out the bilges of the boat or of supplying water from the lake or stream to the boat or to a location adjacent the lake or stream without the need for manual labor on the part of the operator.

The auxiliary service pump is provided in addition to the usual engine cooling pump, the latter of which is inadequate for any other purpose than cooling, and is inconveniently located for any other purpose. Thus, by operating the motor, either from the usual position on the stern of the boat or secured to the deck while immersed in the body of water, the owner can obtain a powerful stream of water under pressure for use in fire fighting, water supply, cleaning or other purposes; or he can reverse the action of the auxiliary service pump and employ it for pumping out the bilges of the boat. In this manner the operator of the boat does not need to bail out his boat before getting underway, particularly if there is a smooth sea running and the flooding is not excessive. All that he needs to do is to connect a hose to the suction side of the auxiliary service pump, immerse it in the bilge water, start the engine and the hull will be pumped out in a short time. The same procedure is followed, but reversed, if a supply of water under pressure is desired, the hose being connected to the pressure side of the auxiliary service pump.

Referring to the drawings in detail, Figure 1 shows an outboard motor, generally designated 10, with an auxiliary service pump, generally designated 11, mounted thereon for the purposes set forth above. The outboard engine 10 is of any conventional type and its details form no part of the present invention except as they concern the attachment of the auxiliary service pump 11.
The outboard motor 10, being conventional, is shown only diagrammatically, and may take various forms, according to the variations in design of conventional motors. The form shown, which is typical of such motors, consists of an engine 12 having cylinders 13 connected to crank case 14 which in turn is bolted to a hull or drive shaft housing 15 extending downward from the engine 12. Bolted to the lower end of the shaft housing 15 is a propeller shaft housing 16 containing a recess 17 in which the impeller 18 of an engine cooling pump 19 is mounted. The impeller 18 is keyed or otherwise secured to the drive shaft 20 extending from the engine 12 through the drive shaft housing 15 and propeller shaft housing 16. An arm 21 extends outward from the drive shaft housing 15 and has pivoted thereto, as at 22, an attachment bracket 23 of U-shaped form with clamping screws (one only being shown) 24, threaded through a portion thereof. The opposite arm of the bracket 23 is provided with a quadrant portion 25 having adjustment holes 26 through which an adjustment screw 27 is inserted and threaded into a boss 28. By adjusting the boss 28 the length of the lever 29 is varied, to the stern of the boat of the particular hull is adjusted.

The cooling pump 19 draws in water through the intake duct 29 leading downward to the intake portion 30 below the water level and on the forward side of the propeller shaft housing 16. The water taken in by the cooling pump 19 is discharged through the vertical supply conduit 31 into the cooling jackets (not shown) of the engine cylinders 13, from whence it is returned through the return conduit 32 which discharges into the discharge duct 33 and out through the discharge port 34. The cooling pump 19 with its impeller 18 is also conventional and is adequate only for its intended purpose of cooling the engine cylinders 13.

The drive shaft 20 continues downward into the propeller shaft housing 16 and is connected through bevel gearing (not shown) to the propeller shaft 35 upon which the propeller 36 is mounted. Mounted on the upper end of the drive shaft 20 is the usual fly wheel 36 above which is the pulley or drum 46 for the attachment of the starting cable or rope by which the engine 12 is cranked for starting purposes. A handle or tiller 38 is provided for rotating the motor 10 and its attached part relatively to the bracket 21 so as to steer the boat. For such purposes the arm 21 and boss 28 are mounted upon a sleeve 21a in which the shaft housing 15 is journaled. When the handle 38 is swung to one side or the other, it rotates the shaft housing 15 in the sleeve 21a and swings the entire motor 10 around this vertical axis with the exception of the sleeves 21a and the parts between it and a mounting bracket or brackets 23.

A gasoline tank 39 is bolted as at 40 and 41 to the crank case 14 and is connected as usual to the carburetor (not shown). Bolted, as at 42, to the gasoline tank 39, or any other suitable fixed part of the motor 10, is a frame structure or mounting 43 for supporting the auxiliary service pump 11. Drivingly connected to the upper end of the drive shaft 20 of the engine 12 adjacent the frame structure 43 is a cup shaped pulley or drum 44, the actual connection being made by the arm 29 threaded into holes in the pulley 37. The drum 45 is provided with an external driving surface 46 for driving the auxiliary service pump 11, as explained below.

The frame structure 43 is provided with a pivot stud 47 upon which is pivotally mounted a swinging support 48 in the form of an elongated bar (Figures 2 and 3), the swinging of which is limited by a pin 49 secured to the frame structure 43 and extending into an arcuate slot 50 in the end of the arm 29. A hand 51 enables the support 48 to be swung toward and away from the auxiliary service pump driving drum 44. The same swinging action is also accomplished automatically by a wedge-shaped or V-shaped projection 52 (Figure 1) on the end of the support 48 opposite the handle 51 engaged by a yieldingly urged plunger 53 with a corresponding wedge-shaped or V-shaped end 54. The plunger 53 is mounted in a cylinder 55 which is bolted to the frame structure 43 and which contains a coil spring 56 yieldingly urging the plunger 53 against the V-shaped projection 52. Thus, when the V-shaped portions 52 and 54 are in the position shown in Figure 2, the handle end of the support 48 will be swung toward the drum 46 by the action of the coil spring 56. When, however, the handle 51 is swung manually so as to cause the projections 52 and 54 to be in relative opposition, the corresponding portion 54, the plunger 53 will then urge the handle end of the support 48 away from the drum 46.

Bolted to the support 48 is the base 57 upon which the auxiliary service pump 11 is mounted (Figure 3). The latter is of any suitable type, such as the gear type illustrated in Figure 2 being one such type. A single impeller centrifugal pump may also be substituted for the gear pump 11.

The auxiliary service pump 11 is provided with a casing 58 having end plates 59 and 60 in which the impeller shafts 61 and 62 are journaled. The impeller shafts 61 and 62 carry the pumping gears 63 and 64, the shaft 62 being extended downward to carry a drive pulley 65 provided with a friction band 66 engageable with the friction surface 67 of the drive drum 44. The pumping casing 58 on its opposite sides is provided with inlet and outlet connections 67 and 68 to which suction and discharge pipes 69 and 70 are connected (Figure 2). In the operation of the invention, the outboard motor 10 is attached to any suitable support, such as the stern of a boat by means of the bracket 23 and clamping screws 24. If, however, the auxiliary service pump 11 is to be used for pumping water ashore or adjacent a dock, the motor 10 may be mounted on a suitable support attached to the dock so that pumping intake 30 (Figure 1) is below the water level. The engine 12 is then started in the usual way, such as by applying a starting cable to the pulley 37 to rotate the engine drive shaft or crankshaft 20. It is assumed, of course, that the engine 12 is provided with the usual governor, spark plugs, carburetor and other conventional equipment necessary for such an engine.

When the engine 12 starts, the rotation of the shaft 20 and the consequent rotation of the cooling pump impeller 19 draws in water through the suction port 30 and pumps it upwardly through the conduit 31 (Figure 1). The water is circulated throughout the cooling system of the engine 12 and passes downward through the conduit 32 and out through the discharge port 34. To operate the auxiliary service pump 11, such as for pumping the bilge water or the bilges of the boat, the operator submerges the end of the intake conduit 69 below the water level in the bilges and positions the conduit 70 so that it dis-
charges over the side of the boat. The conduits 69 and 70 are preferably flexible conduits, such as rubber hose. If the pump support 48 is not already in the position shown in Figure 2, the operator places it in this position by grasping the handle 61 and swinging it toward the drum 44. This action swings the V-shaped projection 52 in the opposite direction, causing it to pass to the opposite side of the plunger 53, forcing the latter inward as it does so. The collar spring 55 urges the plunger 53 outward after the projection 52 passes over the ridge of the projection 54. The inner action of the inclined surfaces of the V-shaped portions 52 and 54 causes the end of the support 48 adjacent the plunger 53 to be swung outward or to the left (Figure 2), causing the opposite end of the support 48 to be swung inward around the pivot stud 47.

When this occurs, the plunger 43, by swinging the handle end of the support 48 toward the driving drum 46, urges the friction band 66 of the pump drive pulley 65 into driving engagement with the friction surface 46 of the driving drum 44. As the driving drum 44 is now being rotated by the operation of the engine 12, the pump impellers 63 and 64 will likewise be rotated, causing the auxiliary service pump 11 to operate. The operation of the auxiliary service pump 11 draws in water through the suction conduit or hose 69 and discharges it through the pressure or discharge conduit or hose 70, pumping out the bilges of the boat.

Thus, the owner or operator of a boat can pump out his boat by means of his outboard motor after he gets underway, instead of submitting to the delay otherwise necessary in manually pumping out the boat prior to getting underway. The ordinary outboard motor usually has ample reserve power to operate the auxiliary service pump 11 for this purpose. When the pumping has been completed, the operator merely grasps the handle 51 and swings it in a direction away from the driving drum 44, causing the projection 52 to snap over the projection 54 on the plunger 53 to the opposite side thereof. This action disconnects the pump driving pulley 65 from the driving drum 44, and the disconnection is maintained by the action of the plunger 53 against the opposite side of the projection 52 from that shown in Figure 2. Thus, the auxiliary service pump 11 does not consume any power except when it is actually in use.

If the auxiliary service pump 11 is to be used for pumping water from a body of water to a place of use, such as for fighting fire, washing down decks or docks, or pumping water for other purposes, the pump suction hose 69 is immersed in the body of water and the pressure or dis-charge hose 70 is directed to the place where the water is to be utilized. The engine 12 is then started as before, and the support 48 shifted so that the driving drum 44 and driving pulley 65 are in driving contact (Figure 1). The operation of the auxiliary service pump 11 then withdraws water from the body of water, such as a lake or stream, through the suction hose 69 and discharges it under pressure through the pressure or discharge hose 70, providing a powerful stream of water for any purpose for which it is desired.

What I claim is:

1. In combination with an outboard boat motor having a water-jacketed engine with a vertically-disposed propeller shaft drivingly connected thereto and an engine cooling pump drivingly connected to said shaft and having a cooling water discharge conduit connected to the water jacket of said engine and a suction conduit; a bilge pump drivingly connected to said shaft independently of said cooling pump and having bilge water suction and discharge conduits disposed independently of and free from connection with said cooling water suction and discharge conduits.

2. In combination with an outboard boat motor having a water-jacketed engine with a vertically disposed propeller shaft drivingly connected thereto and an engine cooling pump drivingly connected to said shaft below said engine and having a cooling water discharge conduit connected to the water jacket of said engine and a suction conduit; a bilge pump drivingly connected to said shaft above said engine independently of said cooling pump and having bilge water suction and discharge conduits disposed independently of and free from connection with said cooling water suction and discharge conduits.

HAROLD E. SCHEVAVAR.

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