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COMBINED OUTBOARD MOTOR AND SNOWPLOW

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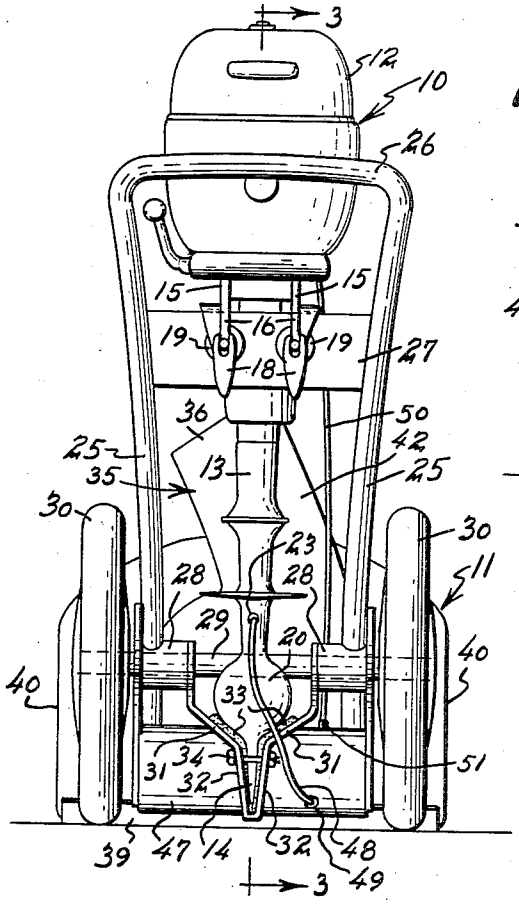


FIG. 1

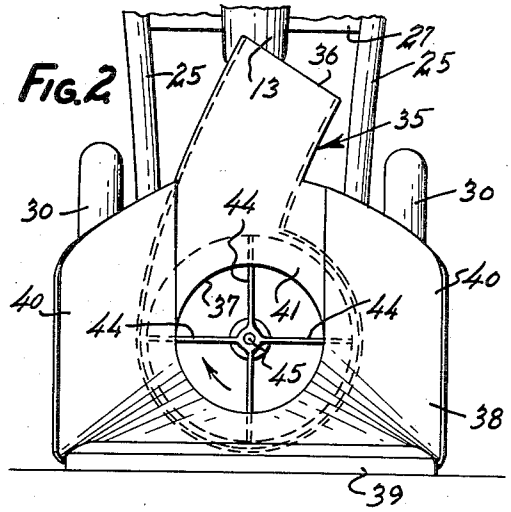


FIG. 2

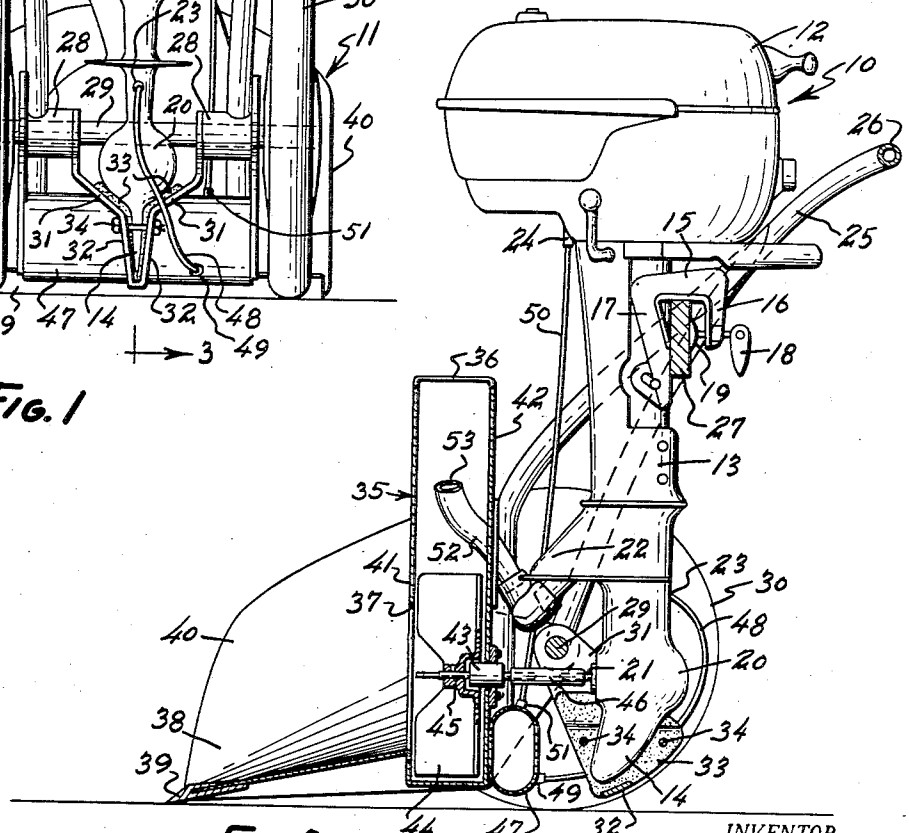


FIG. 3

INVENTOR.
WESLEY G. HYDE
BY Williamson, Schroeder, Adams & Meyers
ATTYS.

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COMBINED OUTBOARD MOTOR AND SNOWPLOW

Wesley G. Hyde, Minneapolis, Minn.

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5 Claims. (Cl. 37—43)

This invention relates to a combined outboard motor and sidewalk snowplow.

It is an important object of this invention to utilize an outboard motor, which is conventionally idle during winter months in those regions having snow and ice, so as to provide a convenient and cheap power source for a small snowplow.

It is another object of the invention to provide an outboard motor and snowplow combination wherein a portion of the outboard motor is removed and the remainder is mounted and connected in novel manner to the snowplow frame and rotor.

It is a further object of the invention to utilize an exhaust structure of an outboard motor in a snowplow combination unit wherein the exhaust gases will be somewhat muffled and, at the same time, will assist in ejecting snow from the unit.

It is a still further object of the invention to provide a cooperative cooling system in a combination of the class described wherein heat may be transferred from the engine coolant to snow as it is ejected from the apparatus.

These and other objects and advantages of my invention will more fully appear from the following description, made in connection with the accompanying drawings, wherein like reference characters refer to the same parts throughout the several views and in which:

Figure 1 is a rear elevation of my combined outboard motor and snowplow;

Figure 2 is an enlarged front elevation of the lower portion of my combined unit, showing the rotor and snow-gathering mechanism; and

Figure 3 is a vertical section of my combined unit taken on the line 3—3 of Figure 1, all of the outboard motor elements being shown in full line.

With continued reference to the drawing, my invention contemplates the combination of a conventional outboard motor indicated generally at **10** and so conditioned as to be capable of uniting and combining with a small snowplow **11**.

The outboard motor **10** is of ordinary construction having an internal combustion engine **12** at the upper end thereof which, in turn, is provided with a drive shaft housing **13** depending therefrom and terminating in a thin rudder **14** at its lower end. The outboard motor **10** is further provided with clamping means **15**, usually comprising a pair of brackets **16** in opposed relation to a clamping jaw **17**, as shown in Figs. 1 and 3. Threaded screw clamps **18** are threadably mounted in bracket **16** and are provided with respective jaw members **19** opposed to the jaw **17**. The drive shaft housing **13** also has a propeller shaft housing **20** from which propeller shaft **21** extends rearwardly and laterally.

A propeller (not shown) is ordinarily secured to propeller shaft **21** and so pitched and directed as to push water rearwardly of the housing **13** when the outboard motor is used for its conventional purpose. The outboard motor **10** is also provided with an exhaust port **22** for underwater discharge of combustion gases. A cooling

system of ordinary construction is associated with the internal combustion engine, details of which are well understood in the art and are not illustrated herewith. The conventional outboard motor **10**, however, has a cooling water inlet **23** and an outlet **24** for discharging cooling water after it has picked up heat from the internal combustion engine.

The snowplow portion **11** of my combination unit has a frame structure **25** which terminates upwardly and rearwardly in a hand grip **26**, as shown in Figs. 1 and 3. A cross plate **27** is rigidly secured across frame **25** and provides means for engaging the mounting clamp **15** of the outboard motor **10**. When mounted as shown in Figs. 1 and 3, the outboard motor will be substantially vertical in position. At the lower end of frame **25** are secured a pair of bearings **28** in axially aligned relation for receiving a wheel shaft **29**. Ground contacting wheels **30** are secured at each end respectively of shaft **29** to permit pivotal rocking of the entire unit and wheeled support during use of the snowplow combination. A clamping cradle **31** is secured to the lower end of frame **25** and comprises a pair of converging plates **32** which are adapted to surround the rudder **14** of outboard motor **10** and may be lined with a resilient sheet at each side such as the rubber sheet **33** so as to prevent scratching and marring of the rudder **14**. A pair of clamping bolt members **34** pass through the pair of plates **32**, one forwardly of the rudder **14** and the other rearwardly thereof so as to pull the plates **32** together in clamping engagement when the clamping bolts are tightened. The clamping cradle **31** has sufficient resilience to removably engage and hold the aforesaid rudder **14** when the clamping bolts **34** are tightened.

Forwardly of the frame **25** at a lower position is rigidly secured a blower housing **35**. The housing is preferably cylindrical in shape for its lower portion and terminates upwardly in a discharge **36** as shown in Fig. 2. The housing has a circular opening **37** which faces forwardly of the unit and a snow scoop **38** is secured thereabout. The scoop **38** terminates forwardly in an edge **39** and in side boards **40** at the respective sides of the blower housing **35** and secured to the front wall **41** thereof. The rear wall **42** of blower housing **35** contains a bearing **43** which is secured rigidly in axial alignment with propeller shaft **21** with the outboard motor **10** in mounted position. A blower fan **44** is secured to a shaft **45** which is rotatably mounted in bearing **43** and may be rotatably secured to propeller shaft **21** by means of the axial coupling **46**.

In heat transferring relation with the blower housing **35**, is a fluid-tight tank **47** as shown in Fig. 3. A fluid line **48** interconnects the cooling water inlet **23** of the outboard motor **10** with the outlet **49** of tank **47**. Another fluid line **50** interconnects the discharge **24** of the cooling system with the inlet **51** of tank **47**. A closed circulating system for cooling water is thus constructed with the heat exchange occurring principally at the juncture of the tank **47** with the rear wall **42** of the blower housing **35**.

An exhaust extension **52** is mounted in fluid communication with the exhaust port **22** and passes through rear wall **42** of housing **35** with the terminus **53** directed in the same general direction as the blower outlet **36**.

The use and operation of my combined unit will be obvious from the foregoing description. The outboard motor **10** is started so as to rotate the blower fan **44**. Warm circulating water will pass from the outlet **24** through conduit or fluid line **50** to the heat exchanging tank **47** from which heat is picked up by the rear wall **42** and transferred to snow within the blower housing **35**. The chilled cooling fluid then passes through the outlet **49** and into the connecting line or tube **48** from which it passes into the motor cooling inlet **23**. Exhaust gases pass outwardly through port **22** and into the exhaust ex-

tension 52 from which these gases are ultimately discharged in an upward direction from the outlet end 53. Noise of the exhaust will be muffled and the force of ejection of these gases will assist in ejecting snow from the blower outlet 36. The unit is propelled by means of frame handle 26 and the edge 39 is caused to scoop up snow into the opening 37 in blower housing 35. The positioning of wheels 30 and shaft 29 is such that the composite parts of the combination are well balanced and yet function with maximum efficiency.

When it is desired to dismantle the plow and use the outboard motor in its normal function, the outboard motor clamp 15 and the cradle clamp 31 are loosened for removal of the outboard motor 10 and the propeller assembly can again be secured to shaft 21.

It will, of course, be understood that various changes may be made in the form, details, arrangements and proportion of the parts without departing from the scope of my invention as set forth in the appended claims.

What I claim is:

1. The combination with an outboard motor having a mounting clamp, a depending drive shaft housing, and a laterally extending propeller shaft positioned adjacent the lower end of said drive shaft housing, the propeller having been removed therefrom; of a frame structure having means at an upper position thereon for holding said motor in clamped engagement, a blower housing having inlet means for scooping snow thereinto and mounted rigidly to said frame at a lower position, a fan and shaft secured together and journaled in said housing and being aligned with said propeller shaft, and a coupling drivably connecting said propeller shaft and said fan shaft for blowing collected snow outwardly of the blower housing.

2. The combination with an outboard motor having a mounting clamp, a depending drive shaft housing, and a laterally extending propeller shaft positioned adjacent the lower end of said drive shaft housing, the propeller having been removed therefrom; of a frame structure having means at an upper position thereon for cooperatively holding said motor with the mounting clamp, and further having a clamping cradle at a lower position for removably holding the lower end of said depending drive shaft housing, a blower housing having inlet means for scooping snow thereinto and mounted rigidly to said frame at a lower position forwardly of said clamping cradle, a fan and shaft secured together and journaled in said blower housing in axial alignment with said propeller shaft, and a coupling drivably connecting said propeller shaft and said fan shaft for blowing collected snow outwardly of the blower housing.

3. The combination with an outboard motor having a mounting clamp, a depending drive shaft housing, a cooling system terminating externally in an inlet passageway and an outlet passageway, and a laterally extending propeller shaft positioned adjacent the lower end of said drive shaft housing, the propeller having been removed therefrom; of a frame structure having means at said upper position for holding said motor in clamped engagement thereon, a blower housing having inlet means for scooping snow thereinto and mounted rigidly to said frame at a lower position, a fluid-tight heat exchanger mounted in contact with the rear of said blower housing and connected to said inlet and said outlet passageway of the cooling system for transferring heat from coolant to snow as it is ejected from said blower housing, a fan having a shaft axially secured thereto and journaled in said blower housing, said shaft being axially aligned with the propeller shaft, and a coupling drivably connecting said propeller shaft and said fan shaft for blowing collected snow outwardly of the blower housing.

4. The combination with an outboard motor having a mounting clamp, a depending drive shaft housing, and a laterally extending propeller shaft, positioned adjacent the lower end of said drive shaft housing, the propeller having been removed therefrom; of a frame structure having manual handle means extending rearwardly at an upper position thereon, a laterally secured cross plate rigidly secured in said frame structure forwardly of the handle means for engagement by said motor mounting clamp, a clamping cradle at a lower position upon said frame structure for removably clamping the lower terminus of the outboard motor drive shaft housing, a blower housing having forwardly facing inlet means for scooping snow thereinto and mounted rigidly to said frame at a lower and forward position thereon, a fan and shaft assembly rotatably journaled in said blower housing and having driving connection with said propeller shaft, and a supporting wheel assembly having a horizontal shaft mounted laterally to the propeller shaft and intermediate the motor housing and the blower housing whereby to provide rolling contact with a supporting surface and pivotal balance for the entire combination.

5. The combination with an outboard motor having a mounting clamp, a depending drive shaft housing, a laterally extending propeller shaft positioned adjacent the lower end of said drive shaft housing, an exhaust port and a coolant outlet, the propeller having been removed from said propeller shaft; of a frame structure having means at an upper position for holding said motor in clamped engagement with said frame, a blower housing having inlet means for scooping snow thereinto mounted rigidly to said frame at a lower position thereon, and further having an upwardly extending outlet for ejecting snow laterally of the direction of travel, a fan shaft axially aligned with said propeller shaft and journaled through the rear of said blower housing, a blower fan secured to said shaft and rotatably mounted within said blower housing, a coupling drivably connecting said propeller shaft and said fan shaft, a tubular nozzle terminating within the blower housing in the same general direction as the blower housing outlet, a fluid-tight container mounted in heat-transferring relation to the outer rear surface of said blower housing and in opposed relation with said blower fan, said tubular nozzle and said fluid-tight container respectively communicating with the conventional exhaust port and coolant outlet of said outboard motor whereby snow will be prevented from building up and accumulating on the inner surface of said blower housing.

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