United States Patent [19]

Thompson

[11] **3,800,968**

[45] **Apr. 2, 1974**

[54] **WATER REACTING MEANS FACILITATING LOADING OF BOAT TRAILERS**

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[21] Appl. No.: **277,619**

[52] **U.S. Cl.** ..... **214/500,** 214/84, 9/1 T, 114/230, 61/1 R

[51] **Int. Cl.** **B60p 3/10**

[58] **Field of Search** ..... 214/500, 505, 506, 84, 214/85.1, 85.5; 280/414 R; 9/1 T; 114/230, 43.5; 61/6, 1 R

[56] **References Cited**

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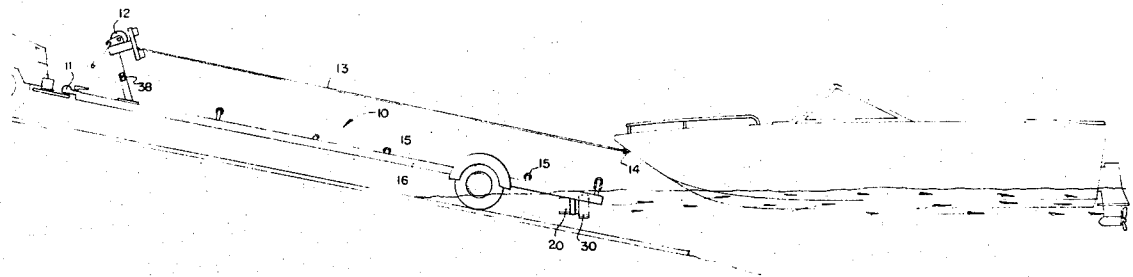
Primary Examiner—Albert J. Makay

Attorney, Agent, or Firm—James D. Givnan, Jr.

[57] **ABSTRACT**

Water reacting means in place on a small boat trailer generating a water flow rearwardly therefrom for alignment of a boat hull tethered to the trailer against the influence of a crosswind or crosscurrent which otherwise would misalign the boat to hamper boat launching and retrieving operations.

4 Claims, 8 Drawing Figures



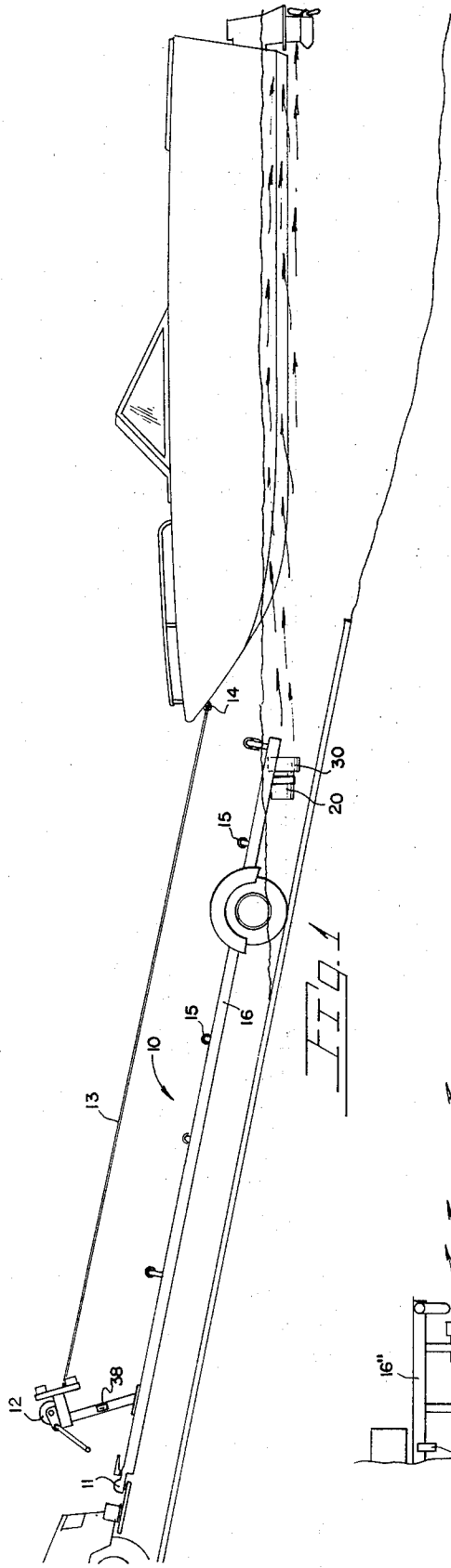


FIG. 1

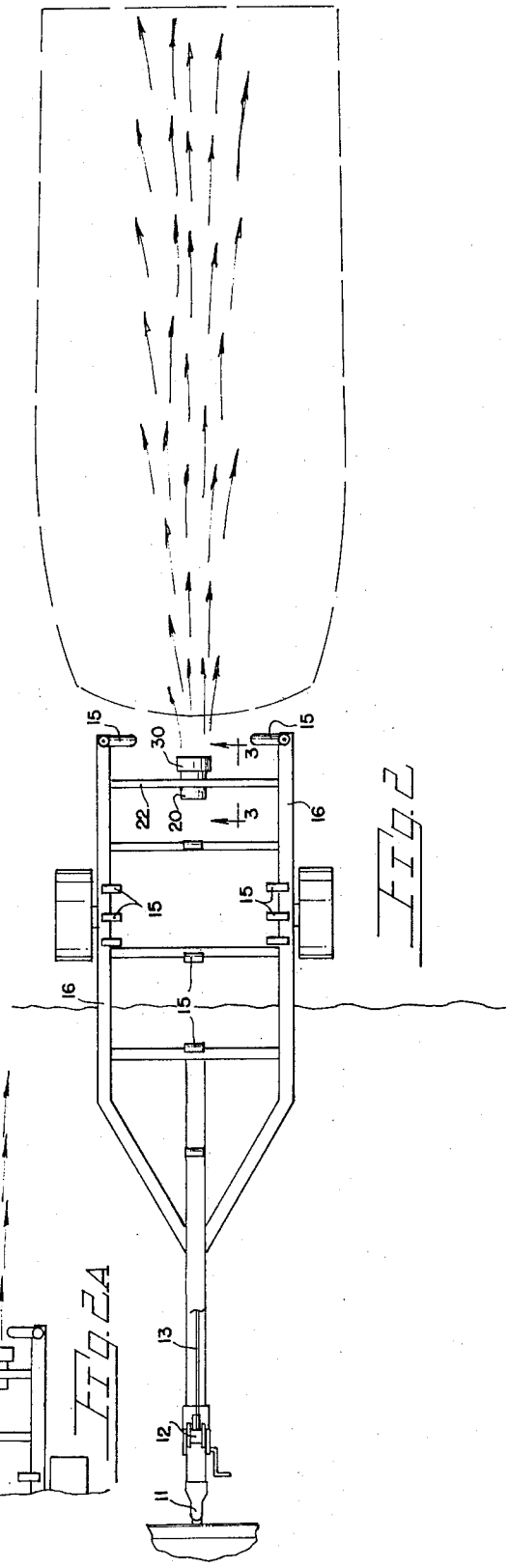


FIG. 2

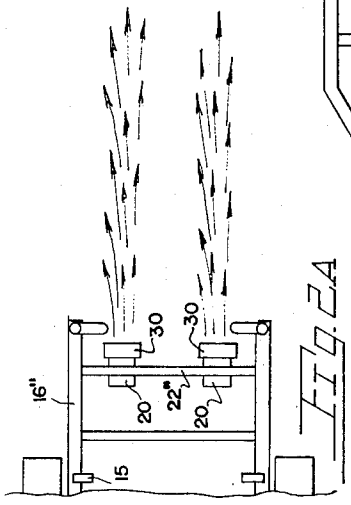


FIG. 2A

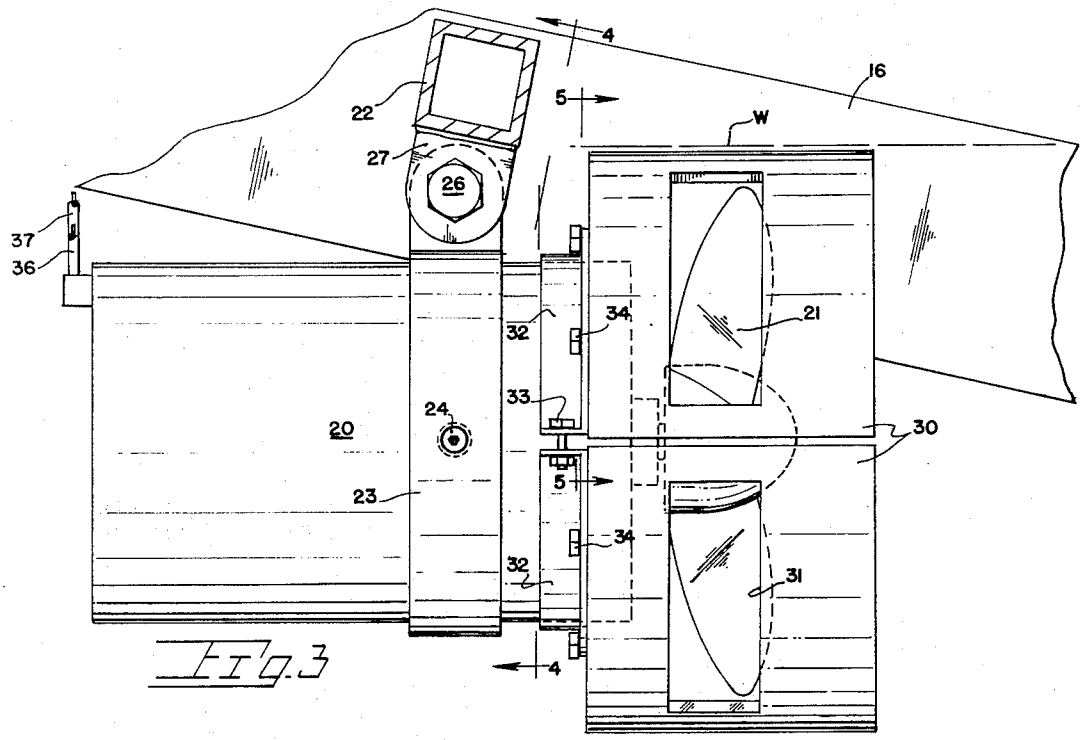


Fig. 3

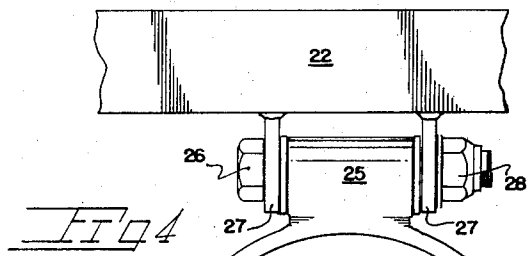
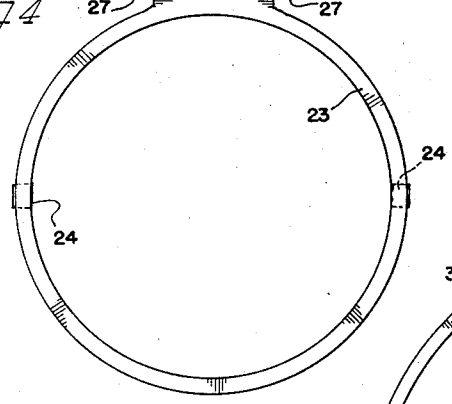


Fig. 4



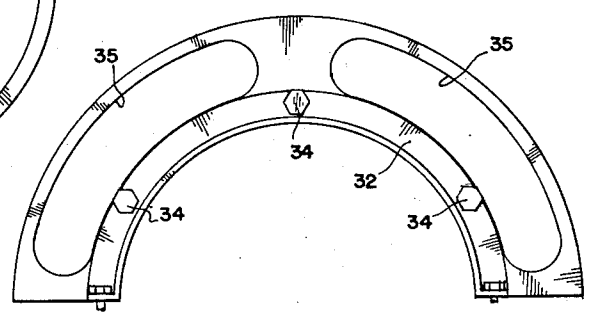


Fig. 5

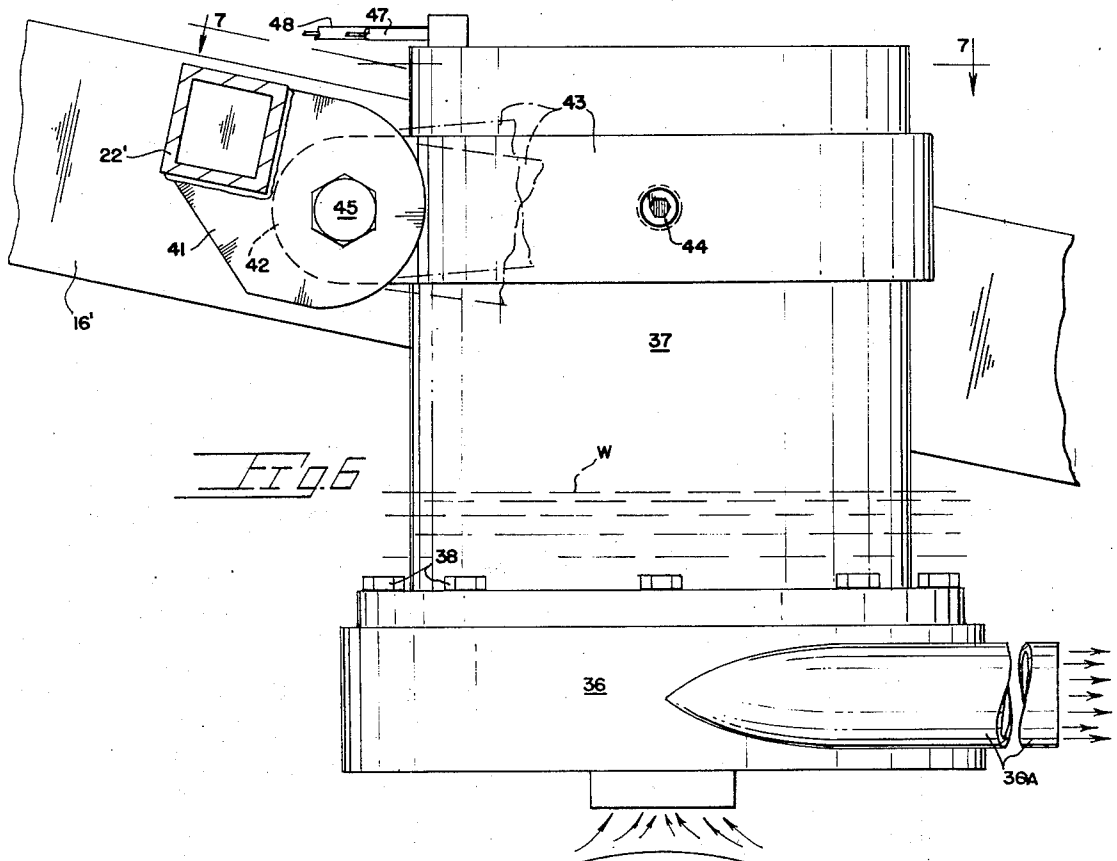

7
48
47
7
43
22'
45
44
41
42
16'
37
W
38
36
36A

Fig. 6

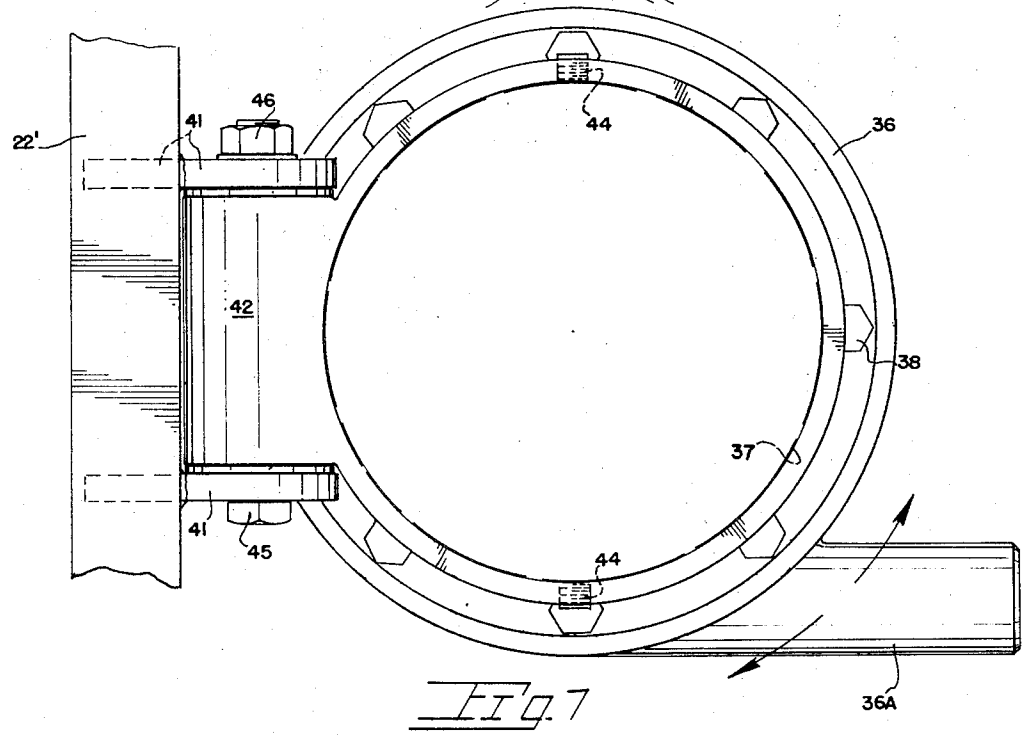

22'
41
46
44
36
42
38
37
41
45
44
36A

Fig. 7

WATER REACTING MEANS FACILITATING LOADING OF BOAT TRAILERS

BACKGROUND OF THE INVENTION

The present invention relates generally to boat trailers and more particularly to water reacting means in combination with a boat trailer from which the boat is launched and retrieved longitudinally of the inclined trailer frame. Such trailers are commonly used for outboard and stern drive powered boats normally ranging up to 20 feet or so in length.

A problem exists in the launching and retrieving of boats from a boat trailer which, during such operations, is normally located on a ramp extending into the water. Such trailers include either powered winches or manual winches depending on the size of the boat carried along with hull and keel supporting rollers which serve dually to guide and support the boat. A rope is entrained about a winch on the trailer and terminates oppositely in attachment with an eye on the boat prow.

Important to successful launching and retrieving operations is the matter of maintaining the centerlines of the boat and trailer in alignment. In a no wind, no current water condition, the alignment of same constitutes no problem. Most commonly, however, a boat launching or retrieving operation is conducted in the presence of either a water current or a crosswind condition either of which will displace the boat hull from the desired aligned relationship with the trailer. Not uncommonly the effect of such an assymmetrical force is to cause the boat hull and, more importantly, the keel thereof to miss or roll off the trailer's supporting rollers with resulting scarring of the hull and necessitating restarting of the operation. Further efforts to launch or retrieve the boat in such conditions may necessitate attaching a line adjacent the stern of the boat to hold the same against the misaligning influence of the current and/or crosswind. In such an event, the loading and unloading becomes a troublesome, time consuming task requiring the efforts of, at least, two or three people.

This problem has been recognized for some time with various attempts made to alleviate same. To the extent known, such attempts have not met with wide acceptance. Generally speaking, the solutions tried fall within two distinct categories; boat trailers with pivotable boat cradles enabling launching and retrieving to be more nearly aligned with the prevailing wind or current and mechanical guides affixed on the trailer to engage the gunwales of the boat to support the hull against assymmetrical forces. For one reason or another neither approach has been widely received and at present the majority of boat trailers manufactured and sold do not include means for maintaining trailer-boat alignment. Some examples of the art within the two categories above mentioned are the following U. S. Pat: R. G. Easley, No. 2,828,029; R. D. Lewis, No. 3,058,608; V. E. Beckham, No. 3,127,042; J. J. Railey, No. 3,458,074; and additional U. S. Patents: C. H. Backus, No. 2,827,304; J. J. Barrett et al, No. 3,067,892; C. E. West, No. 3,447,815; and K. J. King, No. 3,603,465.

SUMMARY OF THE PRESENT INVENTION

The present invention concerns the combination of water reacting means and a boat trailer of the class described to assist in maintaining an aligned relationship between trailer and boat during launching and retrieving.

The invention comprehends the combination of water reacting means with a boat trailer for the purpose of generating a directional flow of water to act on the boat hull. One form of the invention includes a motor carried by the trailer and driving a propeller to direct a flow of water past the boat hull. The hull, tethered at its forward end, in response to the flow will streamline into alignment with the trailer and remain so until launching or loading is completed regardless of moderate crosswinds or water current. A winch carried rope is attached in the normal manner to the boat prow.

Depending upon hull configuration it may be desirable to provide multiple water currents passing along opposite sides of the hull centerline. To accomplish this the water reacting means may be mounted in a dual, spaced apart manner on the trailer. Further, it may be desirable to channel the water flow for the purpose of directionalizing the current produced. Additionally, adjustable mounting means are provided to enable the resulting water current to be varied relative to the trailer.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a side elevational view of a boat trailer and boat with water reacting means in place on the trailer,

FIG. 2 is a plan view of the trailer shown in FIG. 1 with the boat shown in phantom lines for purposes of illustration,

FIG. 2A is a view similar to FIG. 2 showing a dual installation,

FIG. 3 is a side elevational view of one form of water reacting means taken along line 3—3 of FIG. 2,

FIG. 4 is an elevational view of adjustable mounting means taken along line 4—4 of FIG. 3,

FIG. 5 is a view of a propeller housing taken approximately along line 5—5 of FIG. 3,

FIG. 6 is a view similar to FIG. 3 showing a second form of water reacting means embodied within a motor and pump arrangement, and

FIG. 7 is a plan view of FIG. 6 with the motor shown in phantom lines.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

With continuing reference to the accompanying drawings wherein applied reference numerals indicate parts similarly identified in the following specification, the reference numeral **10** indicates generally a typical small boat trailer used for the transport of boats up to twenty feet or so in length. Typically such trailers are towed by passenger vehicles or small trucks by means of a trailer hitch **11**. The launching and retrieving of the trailered boat is normally accomplished with the rear end of the trailer at least partially submerged. A winch at **12** may be manually or electrically powered with its rope or cable **13** attached to a prow mounted eye **14**. The trailer **10** additionally includes a series of boat-supporting rollers **15**, some of which support the boat

keel while other rollers support laterally spaced areas of the hull. The foregoing is intended to describe a conventional small boat trailer used for the transport of both powered and unpowered boats launched and retrieved onto the trailer located adjacent the water's edge.

As earlier mentioned, the maintenance of trailer and boat alignment during loading and unloading is essential. In situations where no crosswind or crosscurrent is present such alignment constitutes no problem. In many instances, however, unloading and loading must be accomplished with a wind or water force acting on the boat causing same to slew into a canted position to one side or the other of a projected trailer centerline. In such cases lines must be attached to the boat to reposition and hold same against the wind or water current. The following described water reacting means obviates the use of such lines or boat centering devices.

Affixed to the rearward portion of the trailer **10** is one form of water reacting means comprising an electric motor **20** powering a propeller **21.** A crossmember **22** of the trailer extends intermediate the trailer frame members **16** and is provided adjacent its center with a pair of weldments **22A** between which a motor mounting ring **23** is pivotally suspended. Ring **23** has an inside diameter corresponding to the housing of motor **20** to permit set screws at **24** to bear against the motor housing locking same within the ring. An enlargement **23A** on the ring is apertured to receive a bolt member **26** which also extends through weldments **22A.** A self-locking nut **28** provides suitable locking means for ring **23.** Accordingly the motor is mounted in a manner permitting it to be inclined in either direction from a horizontal plane about the axis of bolt **26** for the optimum generation of a water current rearwardly from the trailer.

Disposed about propeller **21** is a segmented housing structure **30** of cylindrical shape with arcuately extending openings. **31** spaced thereabout. Housing **30** may be of two-piece construction with semi-circular halves being retained on the motor **20** by means of interconnecting clamps **32** bolted at **33.** Other attachment means for the housing structure **30** may prove entirely suitable. The housing segments **30** and clamps **32** may be of cast construction with bolts **34** securing one to another.

As viewed in FIG. **5** each half of the segmented housing defines inlet openings **35** which, in addition to the earlier mentioned arcuate openings **31,** provide for an inlet flow of water to propeller **21** while adequately shielding the propeller. The segmented housing **30** projects rearwardly past the propeller to provide a shroud for the propeller which, in addition to the function of shielding the propeller, serves to circumferentially confine propeller discharge. Wires at **36–37** are in circuit with a power source such as the towing vehicle's battery via a switch **38** located adjacent winch **12.**

With attention to FIGS. **6** and **7,** a second form of water reacting means is disclosed in the form of a pump **36** which is shown as being of the centrifugal type having a tangential outlet **36A.** An electric motor **37** is in driving engagement with the pump, the motor housing being joined to the pump housing by fasteners **38.** In similarity to the first described form of the invention, a crossmember **22'** is secured intermediate trailer frame members **16'** and carries a pair of weldments **41.** Disposed between the weldments **41** is an enlargement **42** integral with a motor mounting ring **43.** As was the case earlier, the motor mounting ring **43** has an inside diameter corresponding to the external diameter of the housing of motor **37** to permit a close fit therebetween. Loosening of set screws **44** permits both vertical and rotational adjustments of the motor and pump as indicated by applied arrows to best suit the trailer-boat combination. Further, adjustment of the pump discharge is achieved by loosening bolt member **45** and locking nut **46** to allow positioning movement of the motor and pump about the axis of bolt **45** as viewed in broken and dashed lines of FIG. **6.** Electrical conduits **47–48** serving the motor **37** are in circuit with a source of electrical power via a switch located adjacent the winch **12** facilitating simultaneous operator control of the motor and winch during a loading or unloading operation.

In one embodiment of the invention the electric motor may be of the type including an internal reduction drive to reduce the rotational speed of the motor output shaft and hence the R.P.M. of propeller **21.**

In operation the water reacting means generates a water current flowing rearwardly from the trailer along or parallel to a projected trailer centerline. A boat hull tethered by the winch rope **13** and within the current flow will streamline or orientate itself into alignment with the flow regardless of crosswind or crosscurrent conditions. Obviously, the boat profile, the wind and water conditions will determine to what degree the water reacting means will be effective to overcome adverse conditions. Further, in some instances it may be necessary to initially locate the boat in the water current flow by restricting lateral movement of the winch line **13** adjacent the prow of the boat. In FIG. **2A** a water flow is produced by a pair of water reacting means in place on a trailer crossmember **22''.**

While I have shown and described but a few embodiments of the invention it will be apparent to those skilled in the art that the invention may be embodied still otherwise without departing from the spirit and scope of the invention.

Having thus described the invention what is desired to be secured under a Letters Patent is:

1. In combination,

a boat trailer of the type partially submerged during both boat launching and retrieval operations, a winch having an entrained rope attached to the boat prow tethering same prior to winching of the boat onto the trailer,

pump means located in place on said trailer and discharging a water flow rearwardly from the trailer whereby the tethered boat is urged by the water flow toward alignment with the trailer centerline to facilitate loading of the boat.

2. The combination claimed in claim **1** wherein said pump means is of the centrifugal type including a tangential outlet.

3. The combination claimed in claim **1** wherein said pump means includes independently powered centrifugal type pumps offset oppositely from the trailer centerline.

4. The combination claimed in claim **2** additionally including means adjustably mounting said pump means to the trailer to permit adjustment of the pump and hence variation in the direction of the water flow.

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