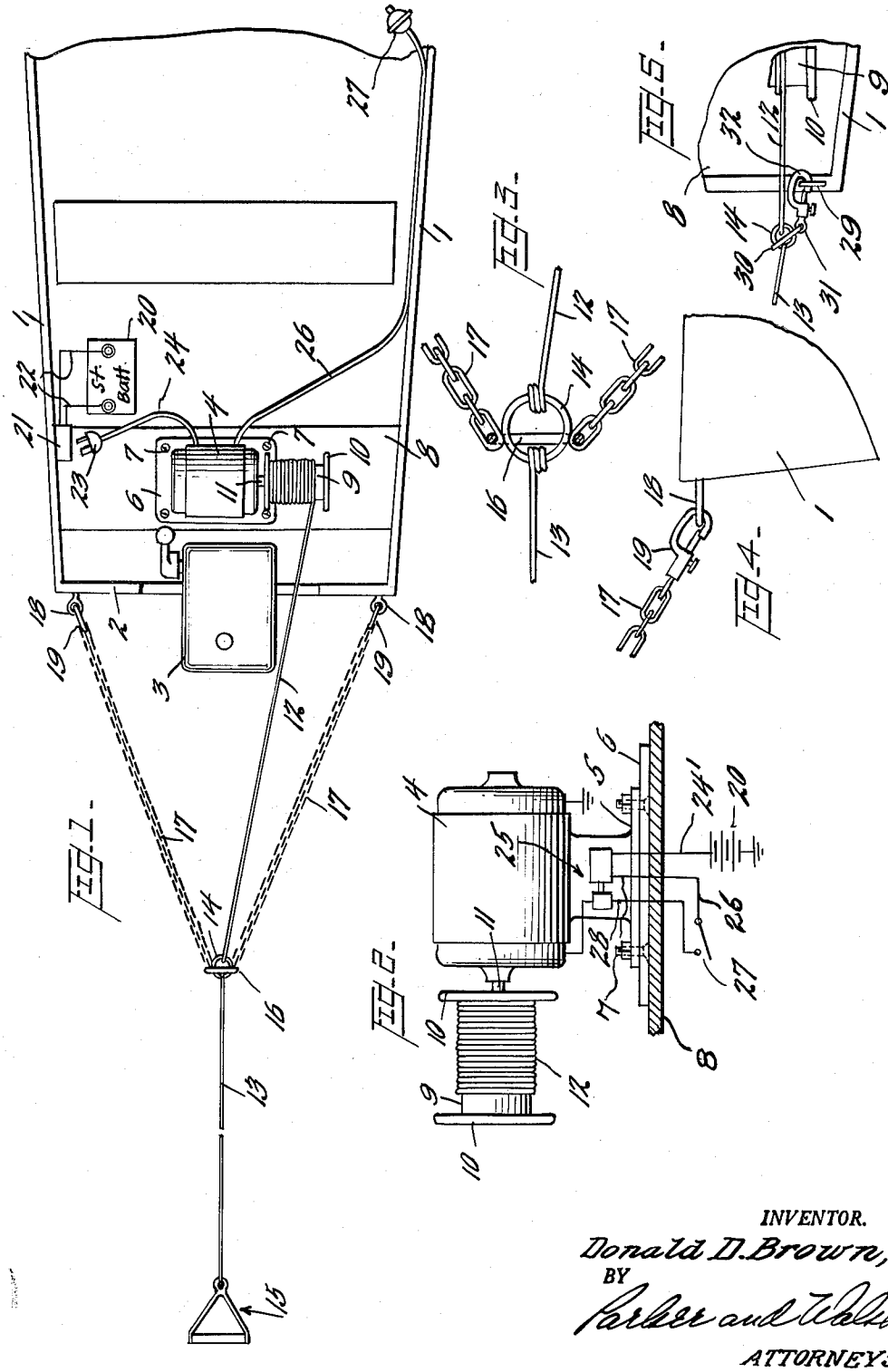
July 23, 1963 D. D. BROWN 3,098,463

WATER SKI TOWLINE RETRIEVER

Filed Dec. 23, 1959



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United States Patent Office 3,098,463 Patented July 23, 1963

3,098,463

WATER SKI TOWLINE RETRIEVER

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Filed Dec. 23, 1959, Ser. No. 861,685
6 Claims. (Cl. 114—235)

This invention relates to water skiing and like sports, and in particular to the towing elements involved in such sports.

In water skiing in particular, despite the general high level of skill of the participants, spills are nevertheless of frequent occurrence, and the riderless towlines tend to run wild with resultant hazard to humans who might be in their path, and also to the gear of the towing craft, especially screw propellers and outboard motor parts. Manual retrieving is not only slow and uncertain but requires an operator in addition to the pilot of the towing craft. These difficulties remain even in the case of a hand-powered winch for the towline. The latter device which has been suggested and employed in prior art practice has also suffered from the defect that the towing load is applied directly on the winch, requiring elaborate brake means.

It is, therefore, an object of the present invention to provide a retriever for towlines in skiing operations which is rapid in response and dependable in action.

A further object is to provide a towline system involving a retriever in which the towing load is assumed by means apart from the retriever proper.

Further objects are to provide a towline system with retriever which is simple and rugged of construction, low in cost, easily mounted and demounted in all types of towing craft, and which is simple, dependable, and easily controlled by a single occupant of the towing craft.

The foregoing objects are attained by a simple winch mounted on a motor with a push-button control and plug-in connection to a battery, and a towline on the winch and threaded through a detachable bridle or other means anchored on the boat, with the towline carrying stop means to limit outward passage through the bridle and to transfer the load-carrying function to the bridle.

For a more detailed description of the invention reference is made to the specification to follow, as illustrated in the single sheet of drawing, in which:

FIGURE 1 is a top plan view of the rear portion of a boat with the towline threaded through the bridle;

FIGURE 2 is a front elevational view of the motor and winch of FIGURE 1, enlarged, and showing the wiring circuit schematically;

FIGURE 3 is an enlarged, detail view of the towline limiting system at the middle of the towing bridle;

FIGURE 4 is an enlarged detail in side elevation, of the right, rear corner of the boat of FIGURE 1; and

FIGURE 5 is a fragmentary, top plan view of the right, rear corner of a boat showing a different arrangement of the towline guide.

Referring to the drawings by characters of reference, there is shown in FIGURE 1 a boat hull **1** with transom **2** mounting an outboard motor **3**. A motor **4** of suitable rating as to voltage, ampere-hours, power and speed is bolted through its base **5** to a more extensive base plate **6** which is readily secured as by screws **7** to the rear seat **8** or other superstructure rearwardly of the boat. A winch spool **9** with end flanges **10** is attached to shaft **11** of motor **4** by a key or setscrew for rotation therewith, and has wound on its central portion a tow cable **12**. The latter is in two parts, the rearward segment **13** being coupled to the forward segment **12** through a ring **14** to which the respective segments are suitably attached, as by twisting (FIGURE 3).

The rearward tow cable segment **13**, which carries a

gripping handle **15** for the skier, is threaded through a ring **16** forming the central link of a chain bridle **17**. The latter is arranged for easy attachment to eye-bolts **18** in transom **2** by means of snap hooks **19** carried at its extremities. Bridle **17** will have just enough slack to avoid interference with the outboard motor system or propeller and to allow retraction of the tow handle **15** without such interference. Ring link **16** of the bridle has a smaller inner diameter than the outer diameter of the connector ring **14** of the towline, with the result that when the towline has been payed out to the extent that the rings come into contact, the bridle **17** becomes directly engaged by the towing load thus relieving all load on the winch. This permits of a motor-winch system of the utmost simplicity.

A battery **20** conveniently of 6 or 12 volt rating, suitably carried in the rear of the boat, as on platform or seat **8**, furnishes power for the motor **4**. Consistent with the demountable character of the winch system, a female plug unit **21** is mounted on the boat and receives the ends of leads **22** on the terminals of the battery. With this arrangement a male plug **23** on cord **24** forms a permanent appendage on the motor. The plug **23** is preferably of a form assuring proper polarity. One of the conductors in cable **24**, indicated as **24'** in the wiring diagram of FIGURE 2 includes, serially, a solenoid switch, indicated generally by the numeral **25** in FIGURE 2. A cord **26** (FIGURE 1) of suitable length to reach to the driver's or pilot's seat and including a push button **27** at its forward end, encloses the starting leads **28** across the solenoid which actuates the main switch in line **24'**. Alternatively, the push button may be mounted on the dashboard or instrument panel of the boat, with a cable leading to the rear and adapted to plug into the solenoid switch unit. It is also possible, and may be desirable in some cases, to mount the entire wiring and control system, including, the solenoid switch, permanently in the boat, in which case it will only be necessary to plug a single connection from the motor into the solenoid unit.

In operation the skier grasps the handle **15** and, due to resistance of the water to his forward progress, the cable **13** is payed out through the ring **16**, either with the winch free-wheeling, or with the motor energized to prevent over-running and snarling of the line. When the line has payed out to the extent that ring **14** of the towline contacts ring **16** of the bridle, the entire towing load is taken over by the bridle **17**, with no load on the winch. It is at this stage that energization of the motor is particularly useful in preventing over-running of the idle portion **12** of the tow cable. While the power rating of the motor need not be more than enough for retraction of the towline alone, it may have sufficient power to bring in the skier along with the towline, for while this entails transferring the load to the winch, the load conditions, generally speaking, will be much less severe in this case than during maneuvers. The preferred use of the device, however, is in retraction of the towline alone, and to this end, in the event the ski run is suddenly terminated, by accident or design with release of the tow handle by the skier, the driver of the boat need only press the push button **27**, energizing the motor and rewinding the towline on the spool. The natural friction of the rope in the water provides enough pull so that the towline is smoothly and efficiently rewound upon the winch bringing the towing handle back into the neighborhood of the boat in readiness for a new run, or for storage on the boat, as the case may be, and this retracting process takes place with the usual, attendant hazards minimized.

The invention also contemplates a series of towlines either mounted on the single winch, or on separate winches.

It may be desirable to drag the towline from a point other than that shown in FIGURE 1, and in this case the

bridle may be dispensed with. Thus, in FIGURE 5 there is shown a portion of a winch spool 9 mounted on a rear platform 8 of a boat, as in FIGURE 1, but with towline 13 threaded through a system detachably secured to an eye-bolt 29 screwed into the gunwale of the boat. For this purpose, a stop ring 30 functioning in the same manner as ring 16 of FIGURE 1 is carried by an eye 31 of a snaphook 32 which serves to engage the fixed eye-bolt 29. With this arrangement operation of the system is the same as in the case of FIGURE 1, with the additional advantages that the system is simplified by omission of the bridle, the chance of tangling the towlines with the propeller is lessened, and plural towlines may more conveniently be employed, with suitable eye-bolts at spaced points to avoid tangling of the towlines.

The electric wind-up system can be modified to suit any boat or electrical system in use. It can be mounted at any place in the boat and the essential parts are self-contained, with the result that it may be conveniently removed for storage, in the boat or elsewhere, or for mounting on another boat.

Obviously the stop ring 14 of the towline need not have the ring form shown, but may be of any size or shape which will fail to pass through the ring 16 or equivalent guide.

While certain preferred embodiments of the invention have been shown and described, the invention is not to be deemed as limited thereby since various modifications lying within the spirit and scope of the appended claims will suggest themselves to those skilled in the art to which the invention pertains.

I claim:

1. Means for connecting a towline to a boat having a propeller at the stern thereof, whereby the towline may be trailed from the stern, free from entanglement with the propeller, comprising: a winding spool mounted inboard of said boat, a towline to be wound thereupon secured at its inner end to said spool, guide and support means including a constricted portion through which the towline passes, an enlarged portion located on the towline between said spool and said guide and support means, said enlargement being of such size as will prevent its passage through the guide and support means, suspension means flexibly secured adjacent the stern of the boat, securing and suspending the guide and support means, said suspension means acting, when the enlargement engages the guide and support means, to transmit the towing function through the support means and the suspension means to the boat and, when the towline is slack, to hold the towline out of entanglement with the propeller.

2. The combination of claim 1 wherein the suspension means is a bridle.

3. The combination of claim 2 wherein the arms of the bridle are connected by a ring and wherein the ring serves as the guide and support means.

4. The combination of claim 3 wherein the towline is in two segments, the segments being joined by a second ring, said second ring being larger than the first ring and constituting the enlargement of the towline.

5. The combination of claim 4, the bridle being formed of chain and connected to the stern of the boat by means of snaphooks.

6. In a combination as in claim 5, an electric motor connected in driving relationship to said spool, and having leads with plug-in means for a battery, and leads with a remote starter switch.

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