WATER SKIER LAUNCHER AND RETRIEVING APPARATUS

INVENTOR.

WELDON R. CORRELL

ATTORNEYS
This invention relates generally to launching apparatus and is more particularly concerned with a novel water skier launching and retrieving apparatus from different types of water craft.

The launching of a water skier or retrieving of the same on moving water craft is relatively hazardous and awkward, tending to reduce the popularity of the sport. Some water craft are under powered making it rather difficult to start a water skier from a stand still position on the bank of a body of water, for example. It is generally desirable to launch a water skier while the water craft is moving.

A primary object of invention is to provide novel water skier launching and retrieving apparatus including means whereby a skier may be readily launched and retrieved with a minimum amount of effort and maximum efficiency and expediency.

A further object of invention in conformance with that set forth is to provide novel water skier launching and retrieving apparatus which includes a support member having means for mounting the same on the stern portion of a boat, said support member having pivotally secured for vertical pivotal movement toward and away from the surface of a body of water a launching platform, power means for pivoting the launching platform, winch means for incorporating a tow line thereon, and support means for the tow line disposed in overlying pivotal relationship relative to the launching platform being simultaneously pivotal on the support member with the launching platform wherein the trailing end of the tow line incorporating a handle, if desired, will be disposed in an optimum position for engagement by a water skier, and upon lowering the trailing end of the launching platform toward the surface of the body of water the water skier's skis are automatically launched to the desired position for skiing.

And yet another object of invention in conformance with that set forth resides in specific details of construction of the various portions of the novel apparatus which combine to perform the desirable functions heretofore set forth.

And a still further object of invention in conformance with that set forth is to provide novel water skier launching and retrieving apparatus which is readily and economically manufactured, easily installed and maintained, and highly satisfactory, safe and practical for the purpose intended.

These together with other objects and advantages which will subsequently become apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevation view of the novel launching and retrieving apparatus secured on a fragmentary rear portion of a boat, showing in solid lines the position of the apparatus prior to launching a water skier, and shown in phantom lines the position assumed by the apparatus when a water skier is launched, portions being broken away and shown in section for clarity.

Figure 2 is a top plan view of the novel apparatus.

Figure 3 is a rear elevational view of the novel apparatus, the handle for the trailing end of the tow line being removed for purposes of clarity.

Figure 4 is an enlarged fragmentary perspective view of a portion of the apparatus, showing a casing portion for an adjustable residual-drag assembly for the tow line of the apparatus.

Figure 5 is a sectional view taken substantially on line 5--5 of Figure 4; and

Figure 6 is a sectional view taken substantially on line 6--6 of Figure 5.

Referring to the drawing in detail, indicated at 10 is a fragmentary aft portion of a boat for towing a water skier, said boat including a rear vertically extending transverse stern portion 12 which may have a central transverse notch portion 14 opening into its upper edge.

The water skier launching and retrieving apparatus is indicated generally at 16 and includes a support member 18, a ski launching platform 20, power means 22 for vertically pivoting the launching platform as subsequently will be described in detail, a winch assembly 24, said winch assembly including a tow line 26 having a suitable handle 28 secured on the trailing end for engagement by a skier, and tow line support means indicated generally at 30, the support member incorporating therein an adjustable residual-drag assembly indicated generally at 32 for engagement with an intermediate portion of the tow line 26.

The support member 18 includes transverse channel shaped base member 34 which is received over the upper edge of the stern 12 of the boat within the notch portion 14, said base member 34 having depending from a central portion a suitably secured support plate 36 juxtaposable on the outer surface of the stern 12 of the boat, said plate 36 including on its lower edge a suitably secured transverse journal portion 38 for a purpose to subsequently become apparent. Extending vertically in spaced relationship from the upper surface of the base member 34 are suitably secured support arms 40 and 42 which include rearwardly extending upper end portions 44 and 46, respectively. Extending transversely between opposite interior surface portions of the support arms 40 and 42 is a transverse brace rod 48 which has suitably secured on a central portion thereof a tubular end portion 50 of a forwardly extending brace plate 52, the other end of the brace plate 52 being suitably secured as seen at 54 to a transverse brace member 56 secured at opposite ends in any suitable manner to oppositely disposed portions of the gunwales of the boat upon which the apparatus is mounted.

Extending transversely between lower intermediate portions of the support arms 40 and 42 is a suitably journaled support shaft 58 defining a horizontal pivot axis for the ski launching platform 20. The ski launching platform 20 comprises a pair of parallel track-ways 60 and 62 comprised of elongated parallel structural members 64 and 66, and 68 and 70, which have an L-shaped cross section, side flanges thereof being disposed in vertically extending relationship for receiving side edge portions of water skis 72 and 74 therebetween. The structural elements 64 and 66 have extending transversely between opposite forward end portions thereof a bracket element 76 which may be longitudinally adjusted relative to the track-ways by means of a plurality of transverse aperture portions 78 in the structural members 64 and 66, as seen Figure 1, said bracket elements 76 including vertically disposed downwardly directed hook end portion 80 which is engageable over the forward upper edge of a water ski.
also clearly seen in Figure 1. The structural members 68 and 70 have extending transversely across the opposed forward end portions a similar bracket element 76, see Figure 2. When the launching platform 20 is lowered into the position shown by the phantom lines of Figure 1, the rear or trailing ends of the skis 72 and 74 upon engaging the surface S of the body of water onto which the skier is to be launched will be caused to raise slightly tilting the skis from under the hook end portions 80 of the bracket elements 76 and thus as the tow line 26 is paid out the skis will be disposed on the surface of the water in a substantially angular position off the launching platform which is that position desirable when being towed through the water while participating in this sport.

The track-ways 60 and 62 have extending transversely below an intermediate portion of the structural elements 64 through 70 a suitably secured brace rod 82 which has journaled about an intermediate portion thereof of a sleeve member 84 integral with the upper end of a fluid cylinder 86 constituting a part of the power means 22 which consists of an extensible fluid motor. The cylinder 86 has extending therefrom a piston rod 88 connected to a suitable piston member disposed within the cylinder 86 (not shown), the lower end of the piston rod 88 terminating in a transverse shaft portion 90 received in the journal sleeve portion 84 previously described. The cylinder 86 is in communication with a suitable flexible pressure line 92, see Figure 1, which may be connected to a suitable pressure control source such as a manually operable pump assembly indicated generally at 94 which will include suitable valve means 96 for relieving the pressure developed thereby, thus by actuating the pump assembly 94 the piston rod may be extended as shown by the solid lines in Figure 1 wherein the launching platform 20 will be disposed in a substantially horizontal position, this position being that assumed by a skier prior to being launched upon the surface of a body of water. Upon actuation of the control valve assembly 96, the piston rod 88 will extend into the cylinder 86 whereas the weight of a skier will cause the launching platform 20 to be disposed in the angular position shown by the phantom lines of Figure 1 whereafter the skier will be launched as previously described.

The support arms 40 and 42 have extending transversely therebetween a suitably journaled support shaft 100 which has secured on an intermediate portion thereof of the winch assembly 24 which comprises a suitable reel member 102 about which the tow line 26 is convolutely disposed, one of the end portions of the shaft 100 having suitably secured thereon an actuating crank 104 for dispensing and retrieving the tow line 26.

The upper end portions 44 and 46 of the support arms 40 and 42, respectively, have extending transversely through rear end portions thereof aligned aperture portions which have journaled therethrough suitably secured trunnion portions 106 and 108 of parallel leg portions 110 and 112, respectively, of a U-shaped ball member 114 of the tow line support means 30. The bight portion 116 of the ball member 114 has depending from a central intermediate portion thereof of a suitably secured pulley assembly 118 through which the tow line 26 is entrained for facilitating the paying out of the same from the winch assembly. Pivotingally connected at their upper ends by means of suitable transverse pivot elements 120 are rigid connecting links 122 and 124 respectively connected at their upper ends to an intermediate portion of the legs 110 and 112, respectively, of the ball member, the lower ends of the links 122 and 124 being pivotally connected to suitably secured laterally extending stub shaft elements 126 and 128, respectively, secured on a lower surface portion of structural elements 70 and 64 of the trackways, see Figure 3.

Extending transversely between the upper ends 44 and 46 of the support arms 40 and 42 is a suitably secured transverse support element 130 which has depending therefrom a suitably secured housing member 132 of the adjustable residual-drag assembly 32. The housing member 132 has extending transversely opposite side wall portions aligned aperture portions 134 and 136 through which an intermediate portion of the tow line 26 is disposed, see Figure 6. Reciprocally disposed within the housing member 132 are a pair of U-shaped yoke elements 138 and 140 which open toward each other from opposite sides of the intermediate portion of the tow line 26, said yoke elements 138 and 140 having journaled therein friction wheels 142 and 144, respectively, which are in peripheral engagement on opposite sides of the tow line 26, the outer surfaces of the friction wheels being comprised of a suitable resilient friction increasing material 146.

Yoke element 138 includes on its upper portion boss portion 148 which rotateably receives therein the cylindrical end portion 150 of an externally threaded adjusting screw 152, said adjusting screw being received in the threaded bore portion in the support member 130, see Figure 5, the upper end portion of the adjusting screw 152 extending through the support member 130 and having secured thereon an integral handle 154. Rotation of the handle 154 will accordingly dispose the yoke elements toward or away from the clamping engagement of the friction wheels 142 and 144 with respect to opposite sides of the tow line 26. This expedient is utilized for applying a residual drag on the tow line when the same is being paid out by the winch assembly, or when the tow line is being retrieved.

The manner of launching a water skier has been previously described, and a water skier may be retrieved by lowering the launching platform 20 utilizing the winch assembly 24 and tow line 26 for drawing the skier's skis upon the track-ways 60 and 62 thereafter the launching platform will be raised to the substantially horizontal position shown in Figure 1 by the support means 30.

It will be noted that the tow line support means 30 is simultaneously raised and lowered by virtue of the connecting links 122 and 124, disposing the handle 28 of the tow line adjacent the hands of the skier, and when a skier is launched onto the surface of a body of water the tow line support means 30 will be angulated downwardly toward the surface of the body of water, this being a desirable position obviating the tendency of a boat to turn over when making turns while towing a water skier.

Various positional directional terms such as "forward," "rear," etc. are utilized herein to have only a relative connotation to aid in describing the invention. It is not intended to require, any particular orientation with respect to any external elements.

The foregoing is considered illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed is:

1. A water skier launching and retrieving apparatus comprising a support member including means for mounting the same in vertically extending relationship on the stern of a boat, a ski launching platform arranged in trailing relationship with respect to said support member and having one end pivotally mounted on said support member for vertical pivotal movement of said platform about a horizontal axis in engagement with the tow line launching platform for pivoting the trailing end of the launching platform toward and away from the surface of a body of water for retrieving and launching water skis, a winch assembly on said support member including a convolutely disposed tow line, tow line support means arranged in spaced overlying relationship with respect to
to said platform and having one end pivotally mounted on said support member for vertical pivotal movement of said tow support means including journal means in engagement with an intermediate portion of the tow line as it is paid out and retracted, and linkage means extending between the said tow line support means and launching platform affording simultaneous vertical pivotal movement thereof, said power means comprising an extensible fluid motor assembly pivotally connected at one end to a horizontal pivot axis portion on the launching platform, means at the opposite end of the fluid motor assembly for pivotal connection to a lower rear portion of a boat stern, and control means for supplying power to said fluid motor assembly.

5. Water skier launching and retrieving apparatus comprising a support member including means for mounting the same in vertically extending relationship on the stern of a boat, a ski launching platform arranged in trailing relationship with respect to said support member and having one end pivotally mounted on said support member for vertical pivotal movement of said tow support means including journal means in engagement with an intermediate portion of the tow line as it is paid out and retracted, and linkage means extending between the said tow line support means and launching platform affording simultaneous vertical pivotal movement thereof, said support member including a pair of spaced support arms, the winch assembly extending transversely between the said support arms, and an adjustable residual-drag assembly on the said support member engageable with an intermediate portion of the tow line as it is paid out and retracted, said tow line support means comprising a U-shaped bail member pivotally connected at end portions thereof to upper ends of the support arms, the journal means comprising a depending pulley assembly over which the tow line is entrained, the linkage means comprising elongated rigid link elements pivotally connected at opposite ends to overlying portions of the bail member and launching platform.

6. Water skier launching and retrieving apparatus comprising a support member including means for mounting the same in vertically extending relationship on the stern of a boat, a ski launching platform arranged in trailing relationship with respect to said support member and having one end pivotally mounted on said support member for vertical pivotal movement of said platform about a horizontal axis, said tow line support means including journal means in engagement with an intermediate portion of the tow line as it is paid out and retracted, and linkage means extending between the said tow line support means and launching platform affording simultaneous vertical pivotal movement thereof, said support member including a pair of spaced support arms, the winch assembly extending transversely between the said support arms, and an adjustable residual-drag assembly on the said support member engageable with an intermediate portion of the tow line as it is paid out and retracted, said tow line support means comprising a U-shaped bail member pivotally connected at end portions thereof to upper ends of the support arms, the journal means comprising a depending pulley assembly over which the tow line is entrained, the linkage means comprising elongated rigid link elements pivotally connected at opposite ends to overlying portions of the bail member and launching platform.
form affording simultaneous vertical pivotal movement thereof, said support member including a pair of spaced support arms, the winch assembly extending transversely between the support arms, and an adjustable residual-drag assembly on the support member engageable with an intermediate portion of the tow line as it is paid out and retracted, said adjustable residual-drag assembly being secured on a transverse support member on the support arms and including an enclosed housing member, an intermediate portion of the tow line extending transversely through opposed aperture portions in the housing member, U-shaped yoke elements reciprocably disposed in the housing member opening toward each other on opposite sides of the tow line, friction wheels journaled in the yoke elements in peripheral engagement with the opposite sides of the tow line, and an adjusting screw extending through the housing member in engagement with one yoke element for urging the yoke elements toward and away from clamping engagement with the tow line as it is paid out and retracted from the winch assembly.

References Cited in the file of this patent

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