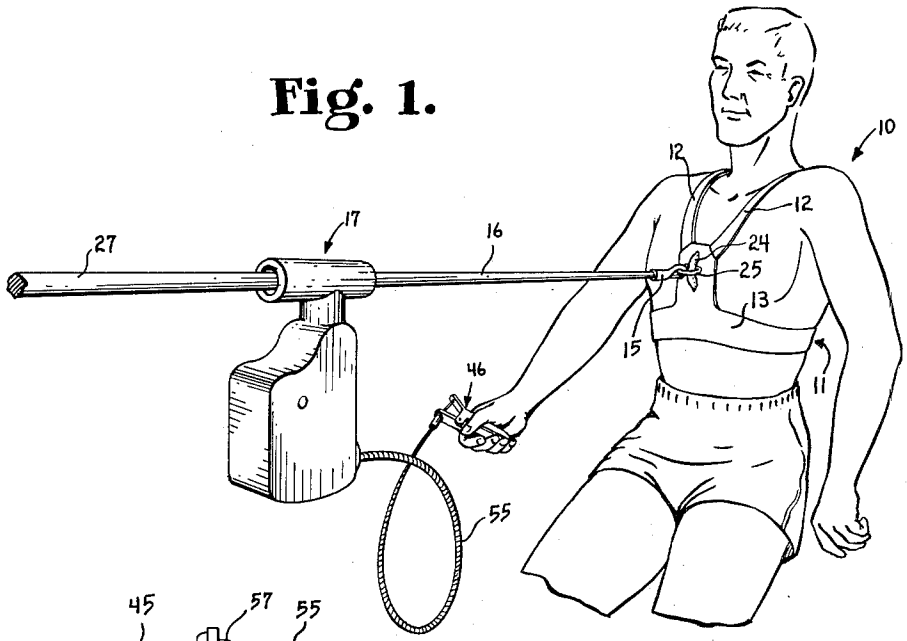
Jan. 1, 1963 C. L. NICHOLSON ETAL 3,071,100

SKI ROPE HOLDER

Filed Jan. 23, 1961

Fig. 1.



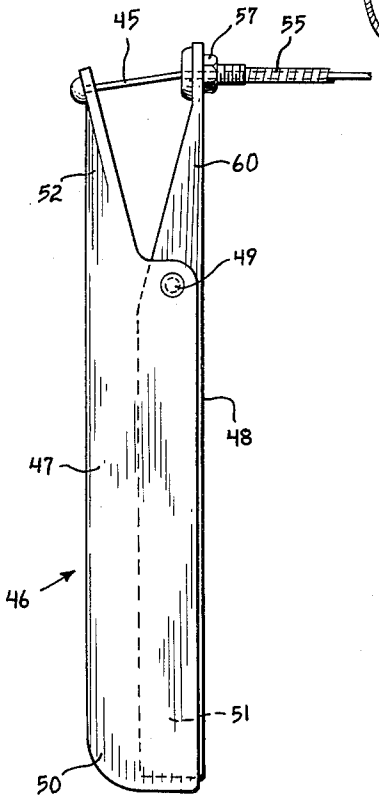


Fig. 3.

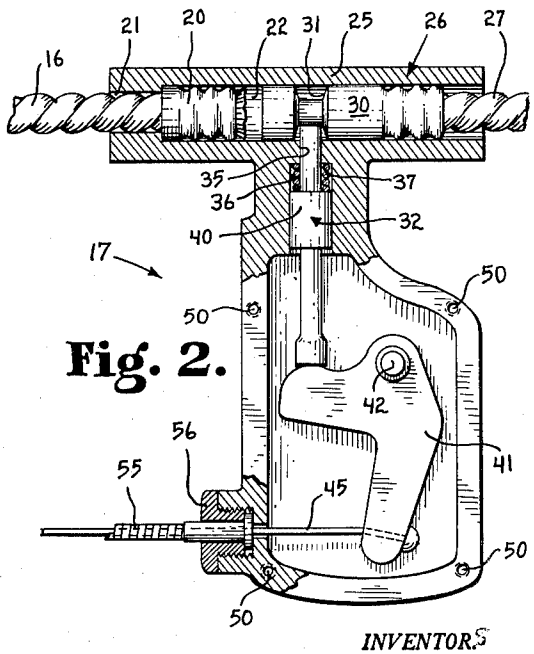


Fig. 2.

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SKI ROPE HOLDER

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The present invention relates to an attachment device and more particularly to a device for attaching a person to a line such as, for example, attaching a water skier to a tow rope.

The conventional method of towing a water skier involves the grasping by the skier of a handle secured to the distal end of a tow rope which may be attached to a speed boat or the like. Such a method is advantageous in one respect in that should the skier lose his balance, he can immediately let go of the handle to prevent his being injured. This conventional method, however, does have the disadvantage in that the skier's hands become fatigued from constant gripping upon the handle. It is, therefore, desirable that a means be provided for attaching a skier to the end of the tow rope, said means being constructed in such a manner as to relieve the great force upon the skier's hands but to also automatically and quickly release the attachment whenever the skier loses his footing.

Accordingly, one object of the present invention is to provide an improved device for attaching a skier to a tow rope.

Still another object of the present invention is to provide an improved attachment device.

A further object of the present invention is to provide a device for attaching a skier to a tow rope which relieves stress upon the skier's hands and incorporates automatic means for releasing the skier from the tow rope upon the losing of balance by the skier.

Related objects and advantages will become apparent as the description proceeds.

One embodiment of the present invention comprises a device for attaching a skier to a tow rope and includes a housing and a harness, the housing being connected to the harness by a rope or the like. Received within the housing is a device for retaining the end of the tow rope in the housing. There is also provided a manually operable means which is carried by the water skier and is arranged to operate said retaining means by the exertion of a relatively small amount of force. The manually operable means also functions to permit actuation of the retaining device to automatically release the tow rope upon the release of said manually operable means.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

FIG. 1 is a perspective view of the attachment device of the present invention showing it as securing a water skier to the end of a tow rope.

FIG. 2 is a view of a portion of the device illustrated in FIG. 1 showing it partially in plan and partially in section.

FIG. 3 is a side elevation of an actuating means which forms a further portion of the attachment device of FIG. 1.

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawing and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Referring now more particularly to the drawings, there is illustrated a water skier 10 who is wearing a harness 11 which may assume various forms only one of which is illustrated. The illustrated embodiment of the harness includes straps 12 passing over the shoulders and across the back and a strap 13 secured thereto which passes over the forward portion of the torso of the skier. Detachably secured to the central forward torso portion of the strap 13 by means of a snap fastener 15 is a rope 16 which in turn is connected to a housing 17. The rope 16 has a length of approximately one to two feet and has an enlargement or enlarged element 20 fixed or clamped to its one end. The rope 16 is passed through a bore 21 and counterbore 22 in the housing in order to secure the rope to the housing, the enlargement being sufficiently large so that it will not pass through the bore 21. As mentioned, the other end of the rope is provided with a snap fastener 15. This snap fastener is detachably received upon a ring 25 received on loop 24 fixed to and forming a part of the harness.

The bore and counterbore 22 are formed within an elongated, cylindrically shaped portion 25 located at one end of the housing 17. The counterbore 22 also functions to receive the end 26 of the tow rope 27, the tow rope being releasably retained within the cylindrical portion 25 in a manner to be described. It should be noted that, when the device is in operation, the rope 16 is in alignment with the tow rope 27 and that, when the ropes 16 and 27 are under tension from the boat or otherwise, the pull is transmitted in a straight line to the central forward torso portion of the skier.

Secured to the end 26 of the tow rope 27 is a generally cylindrical element 30 having an annular indentation 31 in its periphery. A piston 32 is reciprocably mounted within the housing for movement within a bore 35 and a coaxial counterbore 36. The bore 35 intersects the counterbore 22 in such a manner that the piston may be projected into the counterbore 22 and into the annular indentation 31 in the element 30 to lock the end of the tow rope 27 in the housing. A spring 37 is received within the counterbore 36 and acts between the enlarged portion 40 of the piston and the housing to yieldably urge the piston 32 out of the indentation 31 and out of the counterbore 22. A lever 41 is pivoted upon a post 42 fixed to the housing and may be actuated by means of a flexible line 45 to force against the piston and to project it into the counterbore 22.

The skier normally carries in his hand an actuating device 46 which includes a pair of levers 47 and 48 pivoted to one another at 49. The longer moment arm 50 of the lever 47 receives the longer moment arm 51 of the lever 48 in the manner of a knife blade. In other words, the lever 47 acts as the handle of the knife and receives the lever 48 similarly to folding a pocket knife. The portion 51 is, however, pivotal outwardly of the portion 50 when it is not held therein by the skier's hand in a manner to be described below.

The flexible line 45 is fixed at one end to the lever 41 and is fixed at its other end to the shorter moment arm 52 of the lever 47. The line 45 has a flexible casing 55 which is fixed by a nut 56 to the housing 17 and by a nut 57 to the shorter moment arm 60 of the lever 48. It can be appreciated that the constant length of the casing 55 plus the fact that it is fixed to the lever 48 and housing 17 makes possible use of the levers 47 and 48 to pivot the lever 41 in a clockwise direction as viewed and shown in FIG. 2. When the skier holds the levers 47 and 48 in the position of FIG. 3, the lever 41 and piston 32 will be in the position of FIG. 2.

The spring 37 is of sufficient strength so that when the

lever 48 is not held or pressed into the lever 47, the piston will be retracted out of the counterbore 22 by the spring. As mentioned, the skier can, by depressing the lever 48 into the lever 47, project the piston into the annular indentation 31. The lever 41 and the actuating device 46 are provided with such a mechanical advantage in the various moment arms that it takes only slight pressure on the device 46 to maintain the piston in a projected position. At such time as the water skier loses his balance, he will automatically let go of the handle 46 and the piston 32 will be automatically retracted by the spring 37 whereby the tow line is automatically released from the housing 17, the rope 16 and the harness 11.

A suitable cover (not shown) is secured to the housing 17 by use of threaded apertures 50 to protect the lever 41 and piston 40 therein.

From the above description, it can be appreciated that the present invention provides an improved means for securing a water skier to a tow rope. It can be appreciated that the present invention permits the skier to remain securely attached to the tow line without the exertion of a great amount of gripping force upon a handle, yet permits automatic and fast release of the skier upon his loss of balance.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention and the scope of the claims are also desired to be protected.

The invention claimed is:

1. A device for attaching a person to a line comprising a housing, a harness including straps adapted to be received about the person's shoulders and to extend over the forward portion of the person's torso, a rope connecting said housing and the harness centrally of the forward torso portion thereof, said housing having a bore therein in alignment with the rope, an element fixed to the end of said line and having an annular indentation therein, a piston reciprocably mounted in said housing for projection into said indentation for locking said element in said bore, a spring acting against said housing and piston to urge said piston out of said indentation and bore, a lever pivoted in said housing and bearing against said piston for urging it into said bore and indentation, and a remote manually operated actuator for said lever, said actuator incorporating levers providing a mechanical advantage making the force necessary to project said piston relatively small.

2. A device for attaching a person to a line comprising a housing, a harness for the person's body, said harness being connected to said housing, said housing having a bore therein adapted to receive the end of said line, an element fixed to the end of said line and having an aperture therein, a piston reciprocably mounted in said housing for movement into said aperture for locking said element in said bore, a spring acting against said housing and piston to urge said piston out of said aperture and bore, a first lever pivoted in said housing and bearing against said piston for urging it into said bore and aperture, a pair of manually operated levers pivotally connected and including shorter moment arms and longer manually squeezable moment arms, a flexible cable connecting the shorter moment arm of one of said pair of levers with said first lever for actuation thereof, and a casing for said flexible cable secured to said housing and the shorter moment arm of the other of said pair of levers.

3. A device for attaching a person to a line comprising a housing, a harness including straps adapted to be received about the person's shoulders and to extend over the forward portion of the person's torso, a rope connecting said housing and the harness centrally of the forward torso portion thereof, said housing having a bore therein in alignment with the rope, an element fixed to the end of said line and having an annular indentation therein, a piston reciprocably mounted in said housing for movement into said indentation for locking said element in said bore, a spring acting against said housing and piston to urge said piston out of said indentation and bore, a lever pivoted in said housing and bearing against said piston for urging it into said bore and indentation, and a remote manually operated actuator for said lever.

4. A device for attaching a person to a line comprising a housing, a harness adapted to extend over the forward portion of the person's torso, a rope connecting said housing and the harness centrally of the forward torso portion thereof, an element fixed to the end of said line and having an aperture therein, a piston reciprocably mounted in said housing for movement into said aperture for locking said element to said housing, a spring acting against said housing and piston to urge said piston out of said aperture, a lever pivoted in said housing and bearing against said piston for urging it into said aperture, and a remote manually operated actuator for said lever.

5. A device for attaching a person to a line comprising a housing, a harness adapted to be worn by the person, a rope connecting said housing and the harness, said housing having a bore therein, an element fixed to the end of said line and having an aperture therein, a piston reciprocably mounted in said housing for movement into said aperture for locking said element in said bore, a spring acting against said housing and piston to urge said piston out of said aperture and bore, and a remote manually actuated means for projecting said piston into said bore and aperture.

6. A device for attaching a skier to a tow rope comprising a housing, means for securing the housing to the skier, said housing having a bore therein, an element fixed to the end of said tow rope, a piston reciprocably mounted in said housing for locking said element in said bore, a spring acting against said housing and piston to urge said piston out to said bore, and remote manually actuated means for projecting said piston into said bore to lock said element therein.

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