United States Patent

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[54] **TOW HANDLE FOR WATER SKIING AND THE LIKE**

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[52] **U.S. Cl.** **115/6.1**

[51] **Int. Cl.** **B63b 21/56**

[58] **Field of Search** ..... 115/6.1; 114/235 WS; 16/110 R, 16/126

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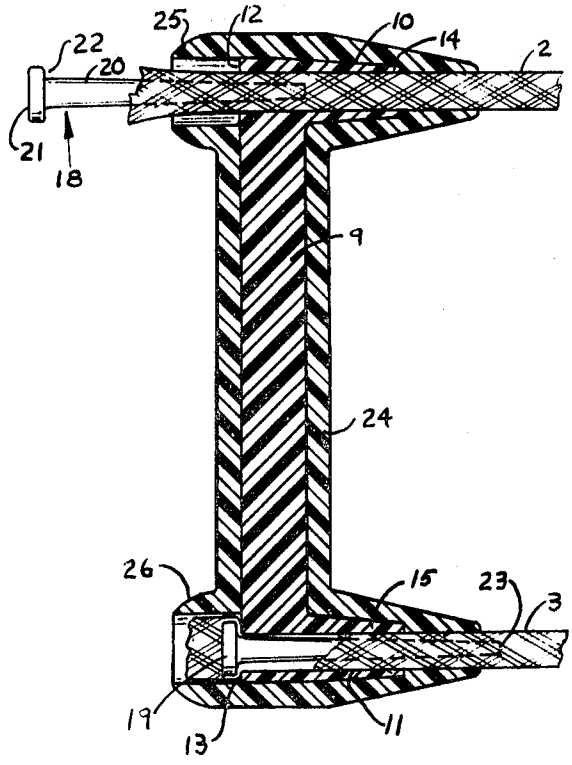
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[57] **ABSTRACT**

A shock-absorbing water ski tow handle that floats and has a hard springy thermoplastic spine with a hole near each end. These holes receive hollow braided tow ropes held to the spine by knots or tapered wedge pins fitting inside the hollow ropes. Formed around the hard springy spine is a soft thermoplastic casing presenting an outer surface of the tow handle that is tacky and slip resistant regardless of whether the tow handle is wet or dry. A skier can grasp the tow handle between the tow ropes, and the encased spine is capable of substantially flexing and unflexing in this area without collapsing on the skier's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to the skier.

11 Claims, 7 Drawing Figures



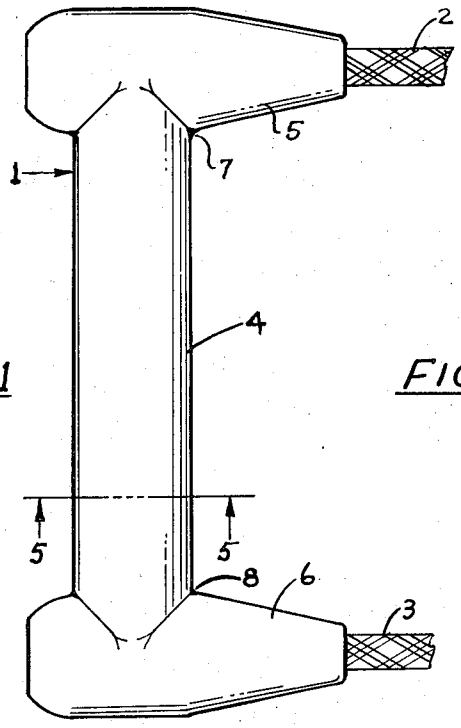


FIG. 1

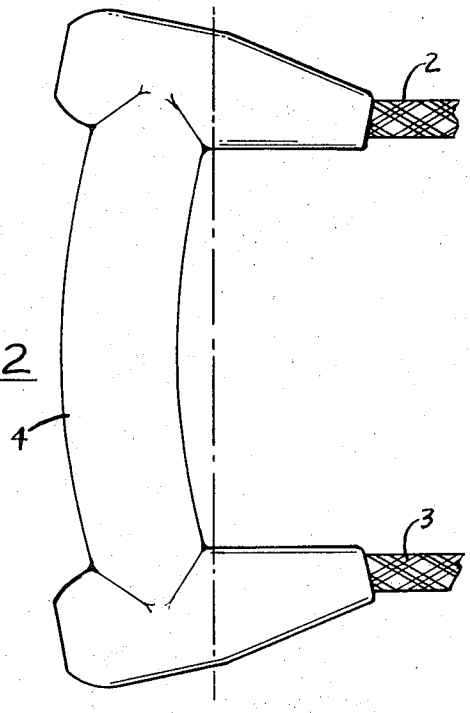


FIG 2

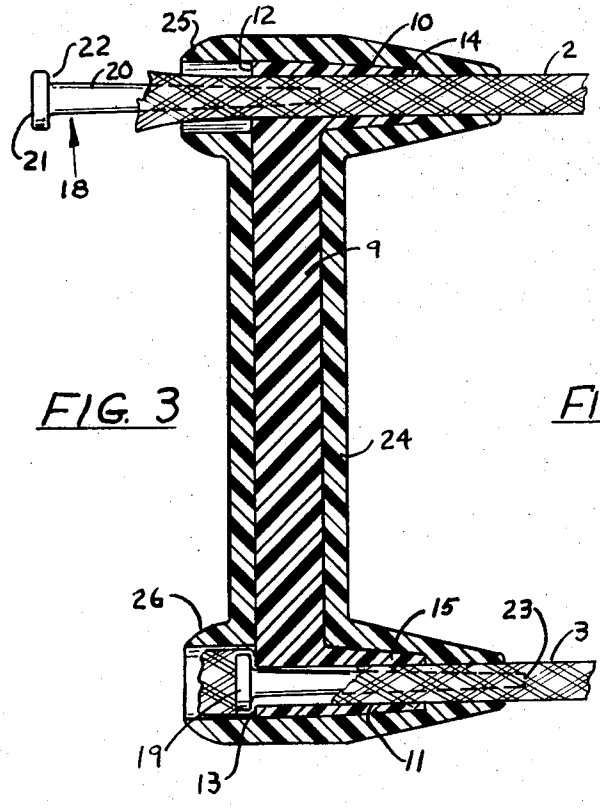


FIG. 3

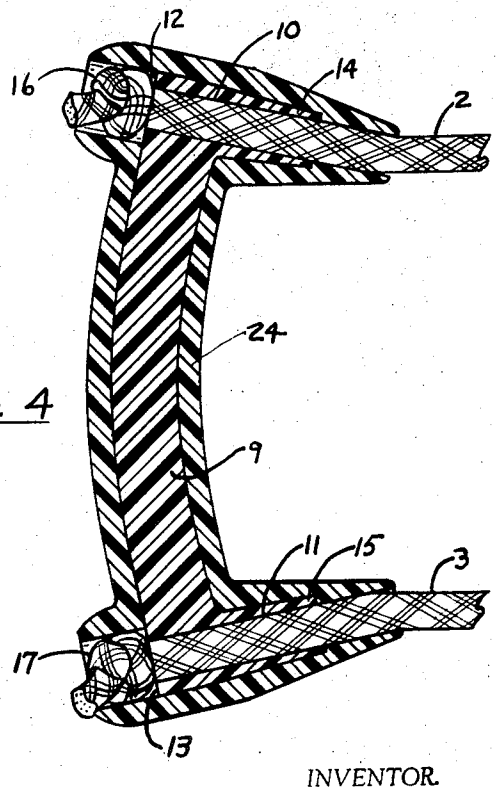
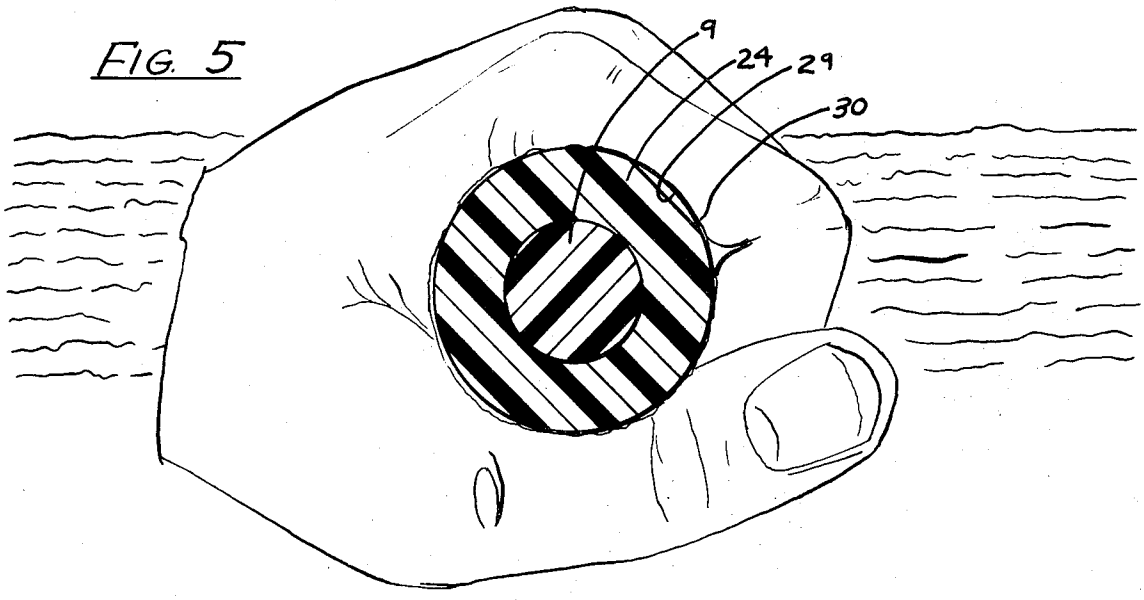


FIG. 4

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FIG. 5



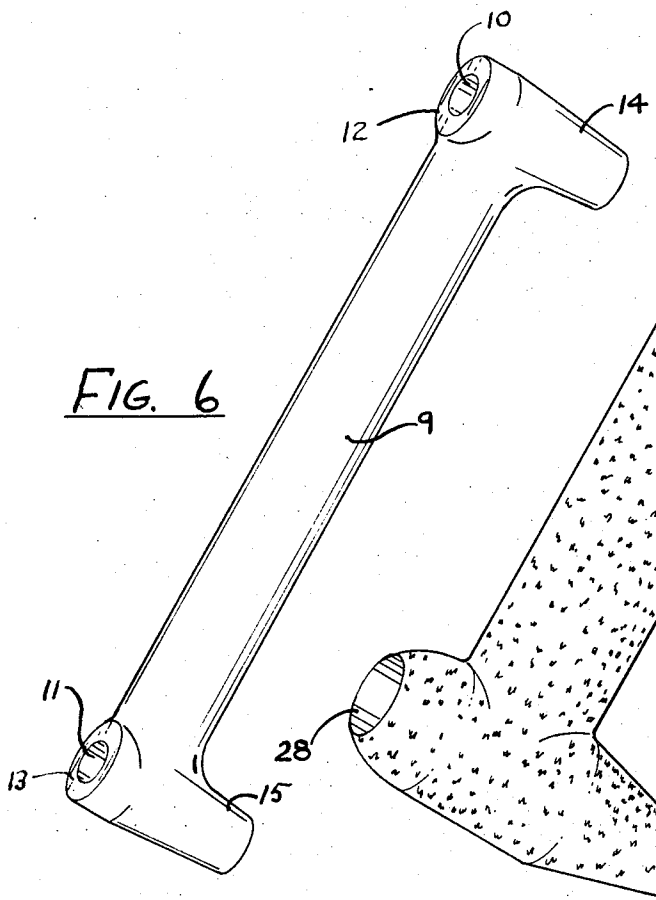


FIG. 6

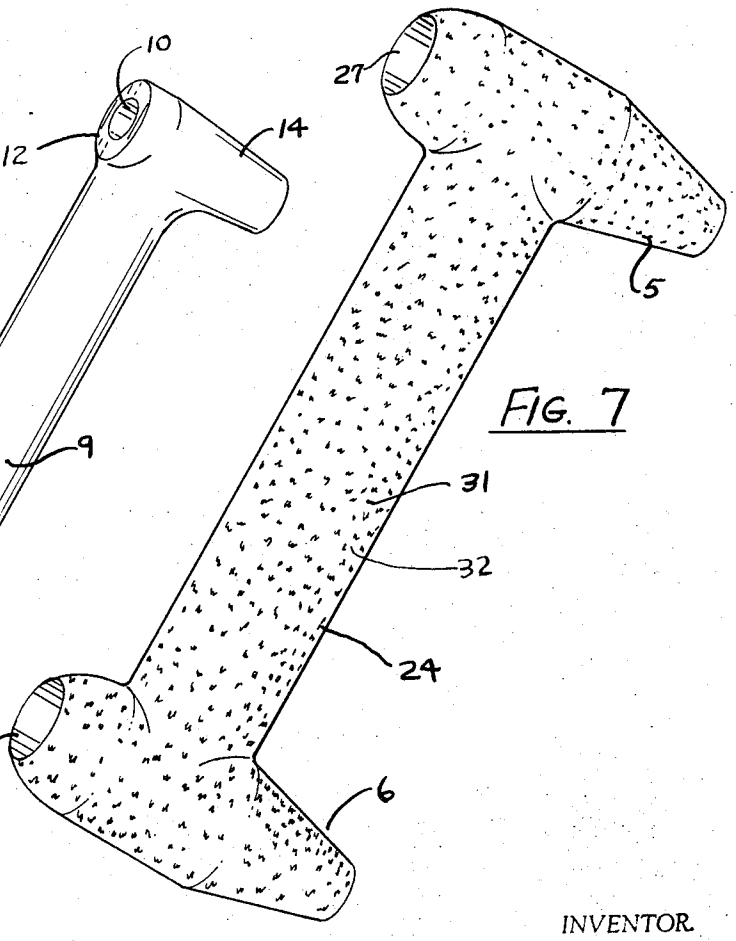


FIG. 7

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TOW HANDLE FOR WATER SKIING AND THE LIKE

This invention relates to a tow handle such as is attached to tow ropes behind a motor boat for pulling a skier across the water's surface. My invention was made with the water skier in mind and is intended to make the sport more enjoyable to him.

Water skiing is a particularly strenuous sport and often a skier will complain of aching shoulder and arm muscles. This is because these muscles are under strain as the skier is pulled across the water by a powerful, high-speed boat. If the water surface is not smooth and has light choppy waves, the boat will bounce and jolt as it speeds over the water, causing shock to be transferred to the skier along the tow ropes. There is also a large shock or jolt to the skier when he initially takes off from either down in the water or from a low dock near the water's edge. Both when starting off and when skimming along the water's surface, the skier needs a firm grip on the handle.

In the past, water ski tow handles have been very rigid and formed of short lengths of metal pipes, wooden shafts, etc. Some of them had an outer layer of foam rubber or cork to help cut down on blisters a skier often got on his hands during a session of water skiing. With these rigid handles, the skier still felt much of the jolt and shock in his arm and shoulder muscles. When these rigid handles become wet, they often became more slippery and harder to hold.

Some suggestions have been made to ease the strain on the skier. These include such things as putting a device similar to an automobile shock absorber in the tow line between the boat and skier, or making the tow lines of elastic rubber. These suggestions would not be very practical and would be expensive. With elastic rubber tow lines, the skier would lose much of the control he has when using the ropes to maneuver his position relative to the boat as he speeds over the water.

I have overcome many of the problems with my improved tow handle. My tow handle can absorb shock normally transferred to the skier from the motor boat and has a hard, springy thermoplastic spine with a hole at each end for attaching to tow ropes. It has a soft outer casing of ethylene-vinyl-acetate thermoplastic, which I unexpectedly discovered provides a tacky slip-resistant outer surface regardless of whether this outer surface is wet or dry. There are a pair of guide sleeves around each hole of the spine. These guide sleeves are integral with the handle and extend beyond a central grasping area a distance sufficient to keep the skier's hand from being pinched between the grasping area and the tow lines. Tow lines of hollow braided plastic rope fit through the guide sleeves where they are held to the spine by tapered wedge pins fitting inside these hollow ropes. If dropped in the water, the thermoplastic tow handle will float and the skier can readily pick it up.

Perhaps the invention can be better understood with reference to the drawings, in which:

FIG. 1 is a side elevational view of the tow handle showing it in its normal unflexed condition;

FIG. 2 is a side elevational view of the tow handle showing how the central grasping area can flex to absorb shock;

FIG. 3 is a cross-sectional view of the tow handle of FIG. 1, showing a hollow braided tow rope being attached to the spine by a tapered wedge pin;

FIG. 4 is a cross-sectional view of the tow handle of FIG. 2, showing the flexing of the hard springy spine, and in this view the tow ropes are held to the spine by knots in the ropes;

FIG. 5 is an enlarged cross-sectional view taken along line 5—5 of FIG. 1, showing a skier gripping the tow handle's tacky slip-resistant outer surface after it has become wet;

FIG. 6 is a perspective view of the spine alone; and

FIG. 7 is a perspective view of the spine and casing combined.

Turning now in detail to these drawings, we have in FIG. 1 the tow handle 1 attached to tow ropes 2 and 3 and ready for use by the skier. The entire length of each tow rope and how it hitches to the rear of a motor boat has not been shown, because this is conventional. Applicant's invention relates to the tow handle itself and how it attaches to ends of the tow ropes. In use, the skier grasps the handle in a grasping area 4, and above and below this grasping area are two guide sleeves 5 and 6 which are more rigid than the tow ropes. The guide sleeves extend out in front of the tow handle's grasping area a sufficient distance to keep the skier's hand from being pinched in the corners 7 and 8 when the handle is cocked relative to the tow lines, as could happen if the tow handle was simply a single cylindrical member.

As the boat lunges forward to get the skier up on the surface of the water, starting either from a squatting position down in the water or from a low dock near the water's edge, there is a shock or jolt to the skier holding onto the grasping area of the tow handle. FIG. 2 shows the handle's grasping area flexing or bending between its ends to absorb this shock from the lunge of the motor boat. When the skier is up on the water surface, the tow handle will unflex somewhat. This helps cushion the shock and tiring effect on the skier's arm and shoulder muscles. The springy flexure of the handle also helps to absorb shock as the skier performs maneuvers on the water surface, such as skiing over a wake left by a boat, going over ski jumps, etc. It also tends to cushion the shock or vibrations of the boat bouncing over low, choppy waves in the water. As shown in the drawings, the tow handle can substantially flex in the grasping area and one can actually feel the handle flex by picking it up and pushing on a central portion of the grasping area with his thumbs while holding ends of the tow handle in the palms of his hands. The flexing of the spine that takes place in actual use is substantial, but is not so great as to cause the handle to collapse on the skier's hand, such as a flexible rope noose might do.

The unique structure providing this shock-absorbing feature of the tow handle is best shown in FIGS. 3 and 4. Here is shown the hard springy spine 9 of thermoplastic material. I have found that polypropylene thermoplastic is an excellent material and is tough and durable. It has a specific gravity less than 1.0, and unlike metal pipes does not need air-filled bouyant chambers to keep it afloat. Adjacent each end, the spine has holes 10 and 11. At a rear of the spine are shoulder areas 12 and 13 which can abut knots at the ends of the

tow ropes, as shown in FIG. 4. Near each end of the spine are guide sleeves 14 and 15 surrounding the tow ropes and extending forwardly. These guide sleeves are more rigid than the tow ropes and help to keep a skier from getting his hands pinched between the tow ropes and the grasping area of the tow handle.

Tow ropes 2 and 3 used in water skiing are often hollow braided thermoplastic ropes. While knots 16 and 17 at ends of these ropes usually hold the ropes firmly to the tow handles, occasionally under extreme loads the knots will draw down tight and shrink in size sufficiently to be pulled out of holes 10 and 11. In my tow handle, the preferred way of attaching the tow handle to the tow ropes is with wedge pins 18 and 19 of rigid thermoplastic. Wedge pin 18 is shown being inserted into the hollow braided rope. The wedge pin has a tapered shank 20 and an enlarged head 21 with a shoulder surface 22 adapted to abut against the rear shoulder surface 12 of the spine. Here, the hollow braided thermoplastic rope acts somewhat like a toy called a "Chinese noose." A Chinese noose is a hollow braided sleeve, usually of a straw-like material. A child puts a finger into each end of the sleeve, and the harder he pulls on his fingers the tighter the grip of the braided sleeve. To release the toy, the child pushes in on his fingers to expand the sleeve. The same principle applies to the tapered wedge pin in my tow handle. The harder the hollow braided tow rope is pulled, the tighter the tow rope is wedged between shank 20 of wedge pin 18 and the spine surrounding the hole 10. Although usually the wedge pin will wedgingly hold the hollow braided tow rope to the spine without the enlarged head 21 coming in contact with the shoulder 12 of the spine, the enlarged head 21 does act as a stop to keep the wedge pin from being pulled out under extreme loads, as shown at the bottom of FIG. 3. Preferably, in normal use the small end 23 of the wedge pin 19 extends beyond both guide sleeve 15 of the spine and its soft casing, which together form the complete guide sleeve 6 of the tow handle. This is so the tow handle can be easily disengaged from the tow ropes by sharply rapping the protruding small end 23 of the wedge pin 19 against a hard surface to disconnect rope 3 from the spine.

Surrounding the hard springy spine is a thermoplastic casing 24, substantially softer than the springy spine. This casing is preferably injection molded around the spine 9 to give a definite outer shape to this casing. It is noted in the drawings that the soft casing has guide sleeve portions that extend slightly beyond forward ends of the spine's guide sleeves 14 and 15. The casing also has rear sleeve portions 25 and 26 that have internal cavities of larger diameter than the holes through the spine. This structure provides a housing for the knotted ends of the tow ropes and for the heads of the tapered wedge pins. As can be seen from these FIGS. 3 and 4, the soft thermoplastic outer casing 24 completely encloses the entire hard springy spine 9 and also the fastening structure holding the tow ropes to the spine. This construction has a particular advantage because the entire tow handle has a soft outer casing and there are no exposed relatively hard parts of the handle. In the sport of water skiing, a skier will spend a considerable sum of money for skis, and these skis are often fiberglass which may chip and crack if hit with a hard object. If my tow handle is dropped and strikes a fiberglass ski, it will always hit with the soft thermoplastic casing and not damage the ski.

The soft casing that is formed around the hard spine, including its guide sleeves, has additional advantages. The encased guide sleeves of the tow handle keep the tow handle oriented relative to the tow ropes when the tow handle is floating on the water. The encased guide sleeves 14 and 15 also create an interlocking relationship between the spine and the casing, which keeps the casing 24 from twisting on spine 9.

This soft outer thermoplastic casing 24 is preferably of ethylene-vinyl-acetate thermoplastic. This material, I have found, makes a soft cushion for the skier's hand and holds well to the hard springy polypropylene spine. It has a specific gravity of less than 1.0, so the combined thermoplastic spine 9 and casing 24 can float. I have also found that after molding a handle of the polypropylene spine and the ethylene-vinyl-acetate casing, the handle exhibited an unusual and unexpected property. One would normally expect a plastic material to become more slippery when wet. The polypropylene spine when dipped in water does become more slippery. Yet, the ethylene-vinyl-acetate casing 24 of the tow handle presented an outer surface 29 that was tacky and slip resistant regardless of whether wet or dry. It would be expected that a thin water layer 30 of the wet ethylene-vinyl-acetate casing would make the handle slippery, but it does not. A particularly good ethylene-vinyl-acetate thermoplastic for the tow handle is one marketed by Union Carbide under No. DQDA3269.

As mentioned before, the tow handle with its hard polypropylene spine and its soft ethylene-vinyl-acetate casing floats on water. In addition, it is preferred to make the soft thermoplastic casing in a bright color, such as gold or orange, to contrast with the color of the water, and to include imbedded aluminum metal flakes, shown in the drawings as 31 and 32, in the molding resin of the casing to make the tow handle glisten on the water's surface. Thus, a water skier or a boat driver can easily spot the tow handle.

The tow handle shown in the drawings has a spine of approximately ⅝ inch diameter and has the holes 10 and 11 spaced about 5¼ inches apart to make the handle a convenient size to grasp in one hand. With the soft casing on the spine, a grasping area 4 is about 1 inch in diameter. The tow handle I have shown in the drawings is suitable to be used in pairs — one for each hand. However, the scope of this invention is intended to include a tow handle that is nearly twice as long so that a single handle has room for grasping with both hands.

In the foregoing specification, I have used specific examples to describe my invention. However, it is understood that persons skilled in the art can make certain modifications to these examples without departing from the spirit and scope of the invention.

I claim:

1. For water skiing and the like, a tow handle comprising: an elongated hard spine with a hole adjacent each end and two guide sleeves integral with the spine and extending outwardly therefrom, said sleeves having bores communicating with said spine holes; a tow line received in each hole and sleeve bore and held securely to the spine; a substantially softer casing molded

around and secured to the spine; said casing having a guide sleeve casing molded around each guide sleeve, which guide sleeves and guide sleeve casings extend laterally beyond the grasping area a sufficient distance to keep a user's hand from being pinched between a tow line and the grasping area when the handle is cocked relative to the tow lines, and said casing being held from rotating about the spine by the interrelationship of the guide sleeves and guide sleeve casings.

2. A tow handle as set forth in claim 1, wherein the hard springy spine is polypropylene.

3. A tow handle as set forth in claim 1, wherein the soft casing is thermoplastic.

4. A tow handle as set forth in claim 3, wherein the soft casing has a tacky slip-resistant outer surface regardless of whether this outer surface is wet or dry.

5. A tow handle as set forth in claim 4, wherein the soft casing is ethylene-vinyl-acetate.

6. A tow handle as set forth in claim 3, wherein the soft thermoplastic casing has embedded metal flakes.

7. A tow handle as set forth in claim 1, wherein the tow handle has a specific gravity of less than 1.0, and can thereby float on water.

8. For water skiing and the like, the combination of: a tow handle that has an elongated hard springy manually bendable thermoplastic spine with a hole adjacent each end; a hollow braided tow rope received in each hole and held to the spine; a wedge pin fitting inside each hollow rope wedgingly holding it to the spine; said wedge pins having diameters that decrease toward forward ends, and said forward ends extend beyond the tow handle so the pins can be knocked out to release the tow ropes from the tow handle; a substantially softer casing fitting around and secured to the spine; and a grasping area between the tow handle's ends, with the encased spine in this grasping area capable of substantial flexing and unflexing during use without collapsing on a user's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to a user.

9. For water skiing and the like, the combination of: a tow handle that has an elongated hard springy manually bendable thermoplastic spine with a hole adjacent each end; a tow line received in each hole and held to the spine; said tow handle having guide sleeves around each tow line, which guide sleeves are more rigid than the tow lines and extend laterally beyond the grasping area a sufficient distance to keep a user's hand from being pinched between a tow line and the grasping area when the handle is cocked relative to the tow lines; a substantially softer casing fitting around and secured to the spine; and a grasping area between the tow handle's ends, with the encased spine in this grasping area capable of substantial flexing and unflexing during use without collapsing on a user's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to a user.

10. For water skiing and the like, the combination of: a tow handle that can float on water and includes an elongated hard springy thermoplastic spine with a hole adjacent each end; a hollow braided tow rope received in each hole; a tapered wedge pin fitting inside each hollow rope wedgingly holding the ropes to the spine, each wedge pin having a wide end with an enlarged head to prevent the pin from being pulled out of the hole under extreme loads and a smaller end that extends beyond the tow handle so that each wedge pin can be knocked out of its hole to disconnect its respective tow rope from the tow handle; a substantially softer thermoplastic casing molded around the spine and secured thereto, said soft casing presenting a tacky slip-resistant outer surface regardless of whether the outer surface is wet or dry; a grasping area between the tow handle's ends with the encased spine in this area capable of substantially flexing and unflexing without collapsing on a user's hand, thereby absorbing shock that would normally be transferred from a towing vehicle to the user; and guide sleeves integral with the tow handle and fitting around each tow rope, which guide sleeves are more rigid than the tow ropes and extend laterally beyond the grasping area a sufficient distance to keep a user's hand from being pinched between a tow rope and the grasping area when the tow handle is cocked relative to the tow ropes.

11. For water skiing and the like, a tow handle comprising: an elongated hard spine with a hole adjacent each end and two guide sleeves integral with the spine and extending outwardly therefrom, said sleeves having bores communicating with said spine holes, each hole and sleeve bore combination extending laterally from the spine and adapted to receive a tow line for firm securement to the spine; a substantially softer casing molded around and secured to the spine; said casing having a guide sleeve casing molded around each guide sleeve, which guide sleeves and guide sleeve casings extend laterally beyond the grasping area a sufficient distance to keep the user's hand from being pinched after tow lines have been connected to the handle and the handle is cocked relative to such tow lines, and said casing being held from rotating about the spine by the interrelationship of the guide sleeves and the guide sleeve casings.

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