July 3, 1962 E. E. ROBERTS 3,041,996

WATER SKI TOWING GEAR

Filed April 9, 1959

FIG. 1

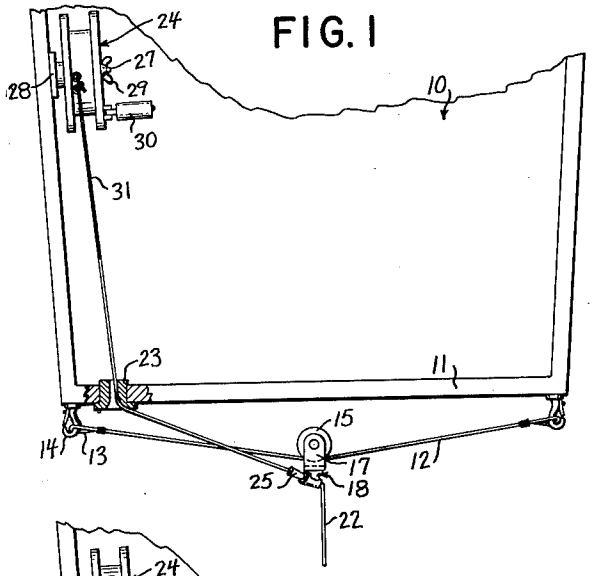


FIG. 4

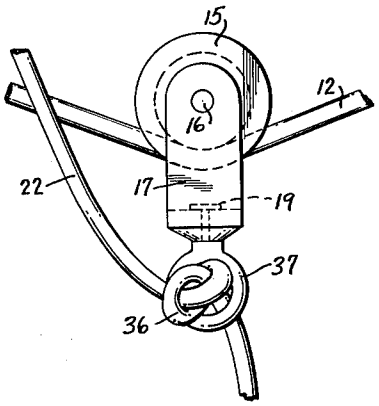


FIG. 2

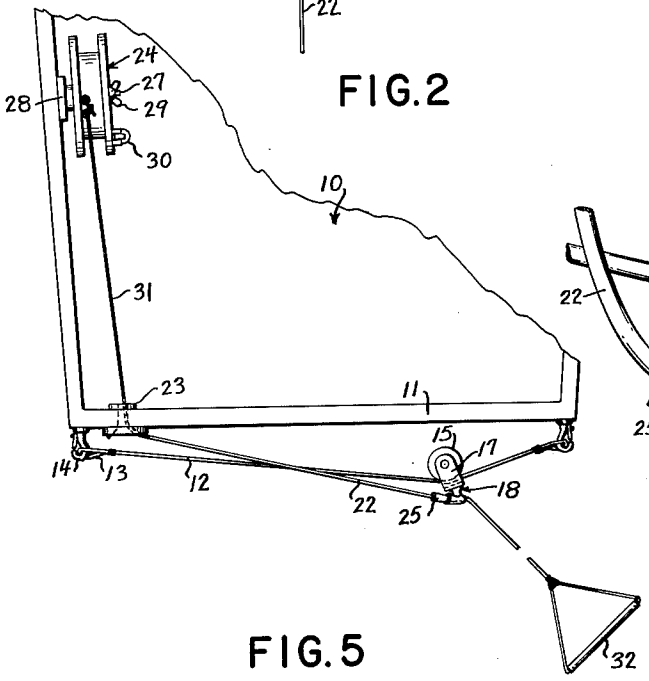


FIG. 3

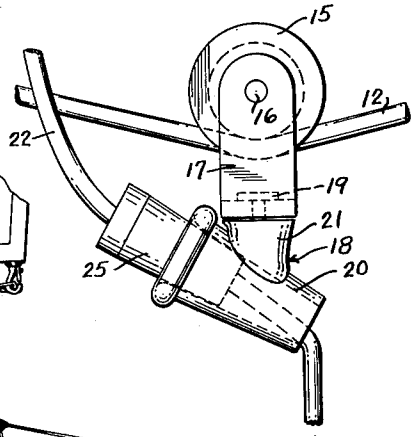


FIG. 5

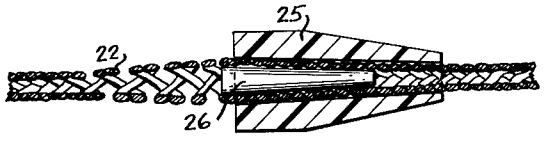
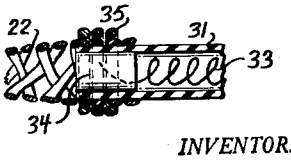


FIG. 6



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WATER SKI TOWING GEAR

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1 Claim. (Cl. 114—235)

The present invention relates to improved gear for dragging and retrieving a water ski tow line.

It has been common practice in the water ski towing art to transfer the load from the tow line to the boat via a sheave working on a bridle which is mounted at the stern. The sheave travels back and forth on the bridle as the skier traverses the wake of the boat and thus smoothly shifts the tow load accordingly. This towing gear has heretofore had the disadvantage that the tow line was retrieved to the boat by hand and often became tangled while being stored or played out.

The present invention aims to provide improved gear whereby a reel can be conveniently used with bridle-and-sheave tackle for storing, retrieving and playing out a water ski tow line.

Furthermore, the invention aims to provide such improved tow line gear in which the reel is relieved of the towing strain and there is virtually no possibility of the tow line becoming tangled or fouling the bridle.

Other more particular objects and advantages will, together with these general objects, appear and be understood in the course of the following description and claim, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIG. 1 is a fragmentary top plan view of a boat with the improved water ski towing gear of the present invention in operation.

FIG. 2 corresponds to FIG. 1 and shows the gear when the skier has swung to starboard.

FIG. 3 is an enlarged plan view of the sheave and related socket and tow line assemblies.

FIG. 4 is a view corresponding to FIG. 3 and showing a modified embodiment; and

FIG. 5 is a longitudinal sectional view of the stop assembly of the first embodiment together with a portion of the tow line.

FIG. 6 is a detail of the elastic takeup means.

Referring to the drawings, the invention is shown in opeartive position on a boat **10** which may be either inboard or outboard powered. A conventional bridle **12** formed with terminal eyes **13** is mounted on the boat's transom **11** as by J-bolts **14** and has a sheave **15** working thereon. This sheave is journaled on the cross-pin **16** of a clevis **17** which in turn is swivel-connected at its web to a socket fitting **18** by a headed pin **19**. This fitting has an internally tapered through-socket **20** with its longitudinal axis at cross-angles to an integral prolongation **21** which fixedly receives the shank of the pin **19**. The ski tow line, denoted **22**, threads through the socket **20** and passes therefrom forwardly through a tubular guide insert **23** in the transom for connection to a reel **24**. This guide has its opening purposely larger in diameter than the minimum internal diameter of the socket **20**.

To limit playout of the tow line without strain on the reel I provide a tow line with a stop which can pass through the insert **23** but not through the socket **20**. This stop may take the form of a tapered plug **25** locked on the tow line and adapted to seat in the socket **20** as best shown in FIG. 3. The tow line is commonly of hollow braided nylon construction in which case I introduce a rigid tapered core **26** therein by inserting it between strands. This can be readily accomplished by longitudinally compressing the line such that the strands

thereof bulge outwardly and thereby spread further apart as represented at the left of the core in FIG. 5. When in operation the plug wedges over the core and radially compresses the tow line so that the plug and core are locked against lengthwise movement relative thereto.

The reel **24** for the ski tow line has its spool journaled in a shaft **27** which cantilevers from a mounting bracket **28** and has a wing nut **29** for adjustably friction tensioning the spool. The bracket is screwed or otherwise secured to the side or a rib of the boat in a position to give convenient use of the folding-type handle **30** of the reel and far enough forward to permit functioning between the reel and guide **23** of a length **31** of rubber tubing or some other suitable elastic material for slack takeup of that portion of the two line between the sheave **15** and the reel. The takeup means **31** is tied or otherwise secured at its ends to the spool and tow line and is represented by a single heavy line in FIGS. 1–2 to clearly distinguish it from the tow line.

In the operation of the gear to play out the tow line for the skier it is only necessary to loosen the wing nut **29** so that the spool of the reel is free to unwind and thread through the guide **23** and socket **20** responsive to the skier's pull on the terminal handle **32** of the line. This is usually done at low boat speed with the skier dead in the water or seated on a dock. Then, just as the stop **25** is observed approaching the socket **20** the boat engine is usually immediately opened up to skiing speed. By this time the stop **25** is seated in the socket **20** and takes the full pull of the skier on the tow line, thereby relieving the reel. As before mentioned, the purpose of the elastic member **31** is to constantly take up slack between the socket **20** and the reel so that the bridle **12** cannot be fouled thereby. The maximum stretch of the takeup means occurs when the sheave **15** has traveled to the end of the bridle opposite from the reel side of the boat as shown in FIG. 2, and the takeup means can be substantially relaxed when the sheave occupies a position at the other end of the bridle. Thus the member **31** has to have a stretch capacity corresponding to the travel range of the sheave. Actually, therefore, the stop **25** does not seat at the end of the line play out when the sheave is centered (FIG. 1) until the takeup means is partially stretched.

When it is desired to retrieve the tow line as when the skier has fallen, the boat operator merely turns the handle **30** to rewind the line on the spool. The elastic member **31** is made strong enough to resist the slight pull of the tow line and its handle **32** in the water during the initial part of the reeling operation, or a coiled stretch limit cord **33** is provided within the elastic tube as shown in FIG. 6. This cord **33** is anchored at its ends in terminal plugs **34**. The tow line end of the member **31** can be inserted into the hollow tow line and secured by tape or winding **35**. It is preferred to have the outer end of the bore of the guide **23** flared so that the stop **25** can readily pass therethrough and so that the tow line will not be subjected to a sharp edge. At the close of skiing the tow line can be reeled in to the point that the tow line handle engages the socket **20** and pulls the sheave **15** along the bridle **12** until it is pulled against the mouth of the guide **23**. The thumb nut **29** is then tightened to lock the reel whereupon the tow line is not only compactly stored, but the sheave and its related assembly together with the tow line handle are held against the transom so that they cannot flop around.

In FIG. 4 I have shown a modified embodiment wherein the tow line stop is provided by knotting the tow line at **36** and the socket therefor is provided by an eye **37** swiveled by the pin **19**. This eye has its opening large enough to pass the tow line but smaller than the stop knot **36**.

The advantages of the invention, it is thought, will have been clearly understood from the foregoing detailed description of the illustrated prefered embodiment. Minor changes will suggest themselves and may be resorted to without departing from the spirit of the invention, wherefore it is my intention that no limitation be implied and that the hereto annexed claim be given a scope fully commensurate with the broadest interpretation to which the employed language admits.

What I claim is:

Water ski towing gear comprising, a bridle adapted to be mounted at the stern of a boat, a sheave working on said bridle, a through-socket defining member carried by said sheave, a water ski tow line threaded through said socket, an elastic member connected by one of its ends to said line, line reeling means operatively connected to the other end of said elastic member, and a stop on said line between said socket and said elastic member for seating in said socket while said line is towing a water skier whereby said reeling means is relieved of ski towing strain on said line, said elastic member taking up any slack in said line between said stop and said reeling means.

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