Dec. 12, 1950 R. F. SYMONDS ET AL 2,533,972

TOWING DEVICE

Filed Aug. 10, 1946 2 Sheets-Sheet 1

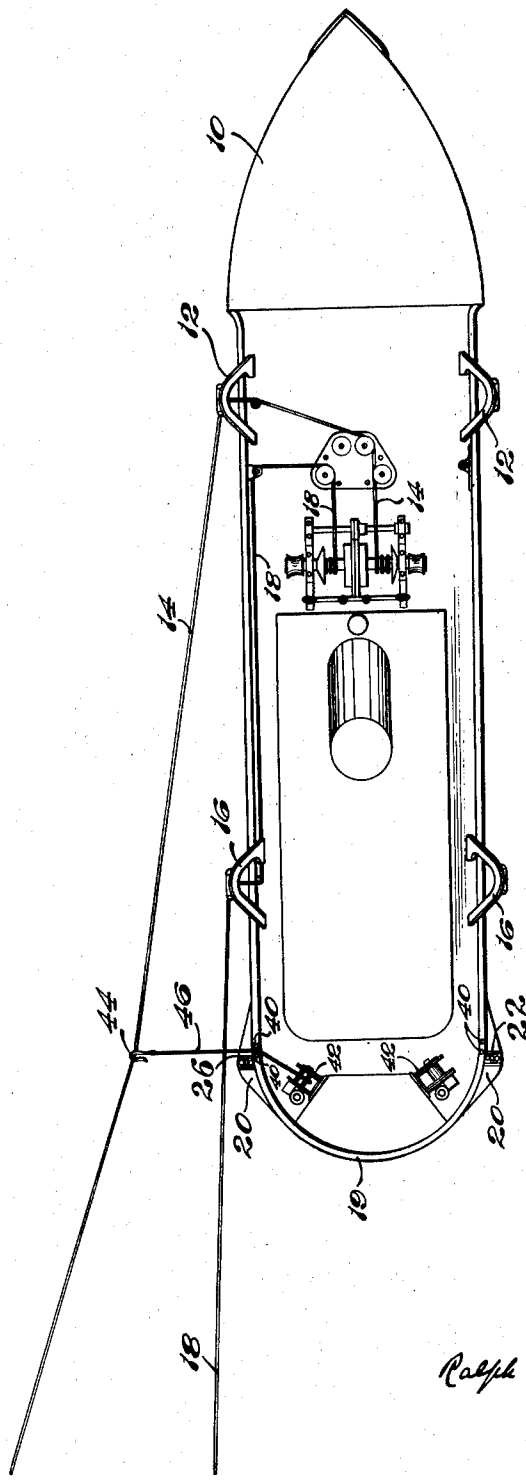


Fig. 1

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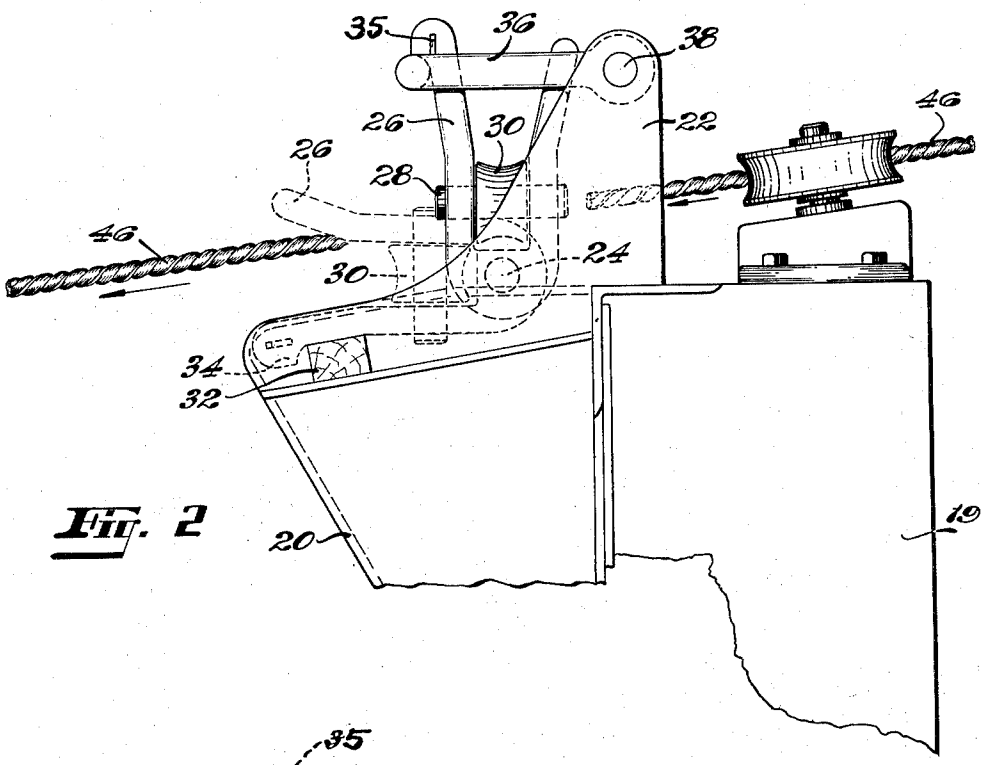


Fig. 2

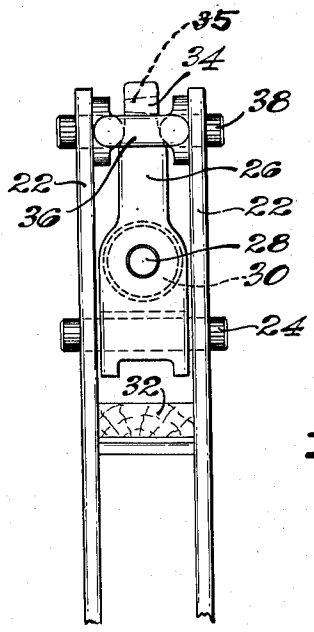


Fig. 3

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UNITED STATES PATENT OFFICE

2,533,972

TOWING DEVICE

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4 Claims. (Cl. 114—235)

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Our invention relates to towing devices for ships and has particular application to trawl gear.

It is customary for trawlers to tow a net having an open mouth leading to a deep pocket, the net being maintained at a considerable distance astern and at the bottom of the ocean. Various devices, with which we are not here concerned, are employed to keep the net open. Ordinarily the net is towed by two lines, one leading to each side of the mouth or to otter boards secured to the sides of the mouth of the net. The operation of "shooting the gear" includes launching the net from amidships on one side of the vessel; one tow line leads aft from a gallows frame forward, while the other line leads aft from a gallows frame just forward of the quarter on the same side. A vessel could not tow a net held by lines so arranged and still be maneuverable. That is to say, the pull on the forward gallows frame would make is practically impossible to control the ship with the rudder. Consequently it has been the custom to reeve the two lines together through a hook-up block chained over the rail at a point off the quarter, an operation which involves sending a messenger hook along the forward line and leading it aft by a messenger line leading through a quarter block to a winch. The winch is then used to pull the forward line toward the quarter until the two lines are in close juxtaposition, at which time a seaman secures them together in the hook-up block.

The operation of hooking-up the lines involves two men, one to work the block and the other to operate the winch controlling the messenger line. The man operating the block must lean over the rail to do his work, thereby encountering dangers in rough weather that can be better imagined than described.

The most important object of our invention is to lessen the dangers attendant on setting and hauling trawls or in towing any object requiring a pair of tow lines.

Another object of our invention is to facilitate the handling of trawl gear and reduce the number of men required to perform the necessary functions involved in shooting and hauling trawls.

The most important feature of our invention resides in a pivotally mounted yoke outboard on the quarter of a ship and provided with a diverging mouth into which the messenger line may pull the tow lines. The yoke is so mounted that the pull of the messenger line on the tow lines tends to swing the yoke to an upright position adjacent a bail which is slipped over the yoke to close the mouth and hold the yoke upright.

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Another feature of the invention consists in the combination of the yoke described above with a winch controlled by an electrical push button on the rail, the elements being so arranged that a man at the rail may single handedly winch in the messenger line and reeve the tow lines through the yoke.

These and other objects and features of the invention will be more readily understood and appreciated from the following detailed description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawings, in which:

Fig. 1 is a schematic deck plan of a trawler equipped with the device comprising the invention,

Fig. 2 is a view in end elevation of the yoke and blister, and

Fig. 3 is a view in side elevation.

Referring specifically to Fig. 1, we mount the apparatus of our invention on a trawler designated generally by the reference character 10. Much of the equipment of the trawler does not appear in the drawing since it is only necessary for the purposes of the present description to show a schematic arrangement. Secured to the deck of the trawler 10 aft of the forecastle is a pair of gallows frames 12. When a trawl has been set, one of the tow lines will lead aft from one of the forward gallows frames. The trawler shown in the drawing is set up for fishing from the port side and a forward tow line 14 is shown tending aft from the port gallows frame 12. Just forward of the quarters there is mounted a pair of after gallows frames 16. An after tow line 18 tends aft from the port gallows frame 16. The winches for the tow lines are not numbered, since we contemplate the employment of conventional equipment for handling the tow lines.

Secured to the rail 19 at the quarters is a pair of blisters or supports 20 each of which carries a pair of identical parallel vertical side plates 22 shown in Fig. 2 and Fig. 3. Mounted in the side plates is a pivot pin 24 upon which is mounted a yoke 26 having an outwardly diverging mouth and carrying a pivot pin 28 upon which a sheave 30 is rotatably mounted. The yoke 26 turns about an axis disposed at an acute angle to the fore-and-aft line of the ship, and the sheave 30 turns on an axis perpendicular to the axis of the yoke. The yoke swings from an upright position shown in full lines in Fig. 2

to a position somewhat below the horizontal shown in broken lines, where it rests upon a wooden or rubber block 32. The outer leg of the yoke is provided with a lip 34 over which a bail 36 may be passed when the yoke is in upright position. The bail 36 is carried on a pivot pin 38 mounted in the upper ends of the side plates 22.

Secured to the deck inboard from the blisters 20, roller chocks 40, and a pair of winches 42 are mounted on the deck at the quarter. The winches 42 are electrically driven and controlled by push buttons either mounted at the rail adjacent each blister 20 or carried at the end of a pendant cord. The arrangement is such that there is one button which, when depressed, causes the winch to haul in but which is also connected to a magnetic brake so that when the button is released, the winch stops and holds the line taut. Another button is provided to reverse the winch when it is desired to slack off.

After the gear has been shot; that is to say, when the net has been launched over the side amidships, the tow lines 14 and 18 are payed out until the net reaches the proper distance astern of the vessel. Then a messenger hook 44 secured to the end of a messenger line 46 is slipped over the forward tow line 14 outboard and near the forward gallows frame. The messenger line 46 leads through the roller chocks 40 to the winch 42. The messenger hook 44 is released and permitted to slide aft and down along the forward tow line 14, slack being taken up by the winch 42. Eventually the messenger hook reaches the position shown in Fig. 1, and the messenger line 46 then leads directly outboard through the roller chocks 40 and is operated on by the winch to haul the line 14 inboard toward the stern of the ship. The messenger line leads over the after tow line 18, and as it travels inboard the messenger hook catches over the after tow line 18. Both tow lines are then hauled close aboard, the lead from the roller chocks 40 being so arranged that the two lines are brought directly into the mouth of the yoke 26 which is, of course, in its horizontal position as shown in broken lines in Fig. 2. Further pull by the winch on the messenger line causes the two lines 14 and 18 to come even closer inboard and simultaneously to rock the yoke 26 to vertical position as shown in full lines in Fig. 2 whereupon both lines rest upon the sheave 30. The man at the rail then slips the bail 36 over the lip 34 on the outboard leg of the yoke 26. This closes the mouth of the yoke and also holds it upright. The messenger hook is then disengaged from the tow lines and the business of fishing is carried out in conventional fashion. The bail 36 is held in place by the lip 34 and by a key driven in a tapered slot 35 in the end of the yoke arm.

When the trawl is to be hauled, the messenger hook can be again slipped over the tow lines and the winch 42 is employed to take a strain on the messenger line so that the yoke may be swung into its outboard position. The man at the rail then slips the bail off the yoke and slacks off on the messenger line to permit the tow lines to assume the positions shown in Fig. 1. Subsequently the tow lines are winched in conventionally and the trawl gear is taken aboard. Alternatively the bail may be pried off by means of a pinch bar in which case the yoke automatically swings outboard.

The sheave 30 acts to minimize friction on the tow lines, since it will roll to and fro with the movement of the tow lines. However, the sheave is not a necessary element in the construction; the yoke may be provided with a smooth bottom on which the tow lines will slide.

It should be pointed out that ordinarily the hook-up block used to clamp the tow lines together is secured to the rail by a length of chain. In rough weather the hook-up block and tow lines sometimes jump the rail and flail about the deck. This exceedingly dangerous development is entirely obviated by the construction of our invention. Furthermore in ordinary practice one man controls the winch for the messenger line while another man operates the hook-up block at the rail, the men may be twenty feet apart and cannot work together as a team with effectiveness sufficient to eliminate danger to the man at the rail. It will be understood that in rough weather it is not possible to winch in the messenger line in one long sustained pull. As the ship yaws from time to time under the influence of heavy seas, it is occasionally necessary to slack off on the messenger line and, in general, to vary the pull suddenly both to prevent the tow lines from jumping the rail and to prevent undue strain on the equipment.

The construction shown in the drawing and described above represents the best mode known to us for the embodiment of the principles underlying our invention. Those skilled in the art will readily appreciate that there are many variations which could be made in the construction shown without departing from the spirit of the invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In a system for securing a tow line to a ship including a winch controlling a messenger line running through a pair of chocks and carrying a messenger hook for grasping the tow line, the combination of a support secured adjacent the chocks and on the rail of the ship, a yoke mounted on said support for pivotal movement from a position slightly below horizontal and facing outboard to a substantially upright position, and means for securing said yoke in upright position, the support and yoke being so constructed and arranged that the winch may pull said messenger line and messenger hook inboard until the tow line enters the yoke, whereupon a further pull upon the messenger line by the winch will automatically cause the tow line to rock the yoke to vertical position.

2. In a system for securing a tow line to a ship including a winch controlling a messenger line running through a pair of chocks and carrying a messenger hook for grasping the tow line, the combination of a support secured adjacent the chocks and on the rail of the ship, a yoke mounted on said support for pivotal movement from a position slightly below horizontal and facing outboard to a substantially upright position, and means for securing said yoke in upright position, the support and yoke being so constructed and arranged that the winch may pull said messenger line and messenger hook inboard until the tow line enters the yoke, whereupon a further pull upon the messenger line by the winch will automatically cause the tow line to rock the yoke to vertical position, and a sheave rotatably mounted in said yoke, the axis of the sheave being perpendicular to the axis of the yoke.

3. In a system for securing a tow line to a ship including a winch controlling a messenger line running through a pair of chocks and carrying a

messenger hook for grasping the tow line, the combination of supporting plates secured adjacent the chocks and on the rail of the ship, a substantially U-shaped yoke with an outwardly diverging mouth pivotally mounted on said plates and arranged to rotate between a position approximately horizontal and facing outboard to a substantially upright position, the supporting plates and yoke being so constructed and arranged that the winch may pull said messenger line and messenger hook inboard until the tow line enters the yoke, whereupon a further pull upon the messenger line by the winch will automatically cause the tow line to rock the yoke to vertical position, a sheave mounted in said yoke for rotation about an axis perpendicular to the axis of the yoke, a stop mounted on said support to prevent said yoke from swinging past the predetermined position approximately horizontal, a bail pivotally mounted on said support for releasably clamping said yoke in a substantially vertical position, and a key insertible in said yoke to prevent the bail from lifting out of engagement with the yoke.

4. A towing device for a ship equipped with a winch, comprising a support adapted to be secured to the ship, a substantially U-shaped yoke with an outwardly divergent mouth pivotally mounted on said support and arranged to rotate

from a substantially vertical position to an inclined position with the mouth of the yoke disposed outboard of the ship, chocks disposed adjacent said support whereby a hook affixed to the end of a line on the winch roven through said chocks and directed outboard of the ship may grasp a tow line paralleling the ship and pull said tow line into the mouth of said yoke in its horizontal position and then rock said yoke into a vertical position, and a bail attached to said support for releasably clamping said yoke in a substantially vertical position.

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MAGNUS MAGNUSSON.

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