ABSTRACT

Submarine towline rigging apparatus comprising a permanent pendant secured at one end at the base of the sail and removably attached at the top of the sail. When a towboat is nearby, a man on the sail can attach the removable end of the pendant to a chafing pendant to which a towline is affixed. The towline is then tossed overboard. The towboat picks it up and moves across the sub’s hull at a safe distance, causing the towline to sweep over the hull. A split chock is located at the bow end of the hull. Each half of the chock can be independently elevated above the hull from its normal, under-the-hull position. Depending on the direction of sweep of the towline, one of the chock halves can be elevated to catch the line and then the other can be elevated to close the chock loop.

5 Claims, 5 Drawing Figures
MEANS FOR INDEPENDENTLY ELEVATING CHOCK SECTIONS

FIG. 3A.

FIG. 3B.

FIG. 3C.
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SUBMARINE EMERGENCY TOWING RIGGING SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to the towing of submarines and especially to towing apparatus which can be rigged without the necessity for having a man on the subma-

rine deck.

A typical towing installation for a submarine comprises a towing padeye, a pelican hook, a chafing pen-
dant, a closed chock on the bow and a nylon towing hawser. The padeye is usually located at the base of the sail where it can be foundationed to the bridge trunk ring stiffeners. The pelican hook is employed to give the capacity for quick release of the towline in case of emergency. A towing pendant of wire or chain is used to prevent excessive wear of that portion of the towline that contacts the hull of the submarine. The bow chock provides means for making the tow point as far forward on the hull as possible and permits the towline to pull from any direction. A towline of double-braided nylon is provided to ensure nonrotation of the hawser under load, shock absorption and ease of stowage and handling.

The difficulties that arise with the present towing ar-
rangement are those related to rigging the two gear in a seaway. Since the arrangement of the gear used for towing a submarine is similar to that on a surface ship, difficulties arise in rigging because of the different sea-
keeping qualities of submarines and surface ships. What would be moderate seas aboard a destroyer would be a decks-awash situation aboard a submarine. Men should not be required to venture out on the open deck of a submarine with waves washing over it, much less try to manhandle heavy tow gear in an attempt to rig it.

SUMMARY OF THE INVENTION

The invention comprises means for rigging a towline from the sail of a submarine, tossing the towline over-
board, having a towboat pick up the line and attach it to a split chock on the hull of the sub by moving across the sub's bow at a safe distance. A split chock, each half of which can be elevated separately from inside the sub, captures and secures the towline when it sweeps across the hull.

OBJECTS OF THE INVENTION

An object of the invention is to rig a submarine tow-
line without the necessity of having a man on deck.

Another object is to rig a submarine towline only thru the efforts of man on the sail of the sub and the move-
ment of the towboat.

A further object is to move the tow point for a sub's towline as far forward as mechanically possible without taking into consideration whether it is above or below the waterline.

Other objects, advantages and novel features of the present invention will become apparent from the fol-
lowing detailed description of the invention when con-
sidered in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a pictorial representation in side view of the front section of the hull of a submarine with an embodi-
ment of the invention.

FIG. 2 is a pictorial representation in top view of the front section of the hull of a submarine showing the towline in various stages of the rigging process.

FIGS. 3A-C are pictorial representations of the split chock in various stages of elevation and non-elevation.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows in side view the front section of the hull 10 of a submarine. The means for rigging the towline comprises a permanent pendant 16 which is perma-
nently attached at one end to a pad 14 at the base of the sail 12. In its non-towing position (shown in dashed line), the other end is removably secured at the top of the sail where it can be handled by a man on the sail.

When a tow is desired and the towboat is nearby, a man on the sail attaches to the removable end of the pendant 16 a wire on the sail attaches to the removable end of the pendant 16 a wire chafing pendant 18 to the other end of which is attached one end of a towline 22, preferably nylon. The man then tossing the towline 22 overboard and the towboat (not shown) picks it up and moves across the bow of the sub to the other side of the hull 10, at a safe distance from the sub, of course.

FIG. 2 shows the position 24 of the towline when it is first thrown over the side. The line is then hauled around (position 26) toward the other side of the hull. As the line comes past the chock 20, it is caught by the chock and held there. The line is in position 28 when the towboat finally arrives at the other side of the hull. If the towboat starts at the other side (upper side in FIG. 2) of the hull, the line positions will be reversed.

FIG. 3A shows the split chock 20 in its normal position below the shell of the hull 10. The chock is divided into two, mirror-image, individually elevatable sections a left section 21 and a right section 21' (left and right as seen in FIG. 3). The left and right sections close at the base and curve around in two arms which again meet to form a closed internal loop 30. If the towboat is on the right side of the hull 10 (as seen in FIG. 3), and will move to the left side with the towline, the left section 21 of the chock is raised above the hull (FIG. 3B) and catches the line as it moves across the hull. The right section 21' of the chock is then elevated to secure the line in the oval loop 30 so that the line can-
not be lost by the chock 20. The towboat can then begin towing the sub.

Of course, although the line 22 is called a towline, it can also be used to secure the forward part of the hull to a ship or a dock.

The means 34 for independently elevating the chock sections 21, 21' may be any one of several well-known devices for performing motive functions through a sub-
marine hull.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. Means for rigging a towline to a submarine, using a man on the sail of the submarine rather than on the deck, comprising, in combination:

a permanent pendant permanently secured at one end to the sail at the bow end of the sail, the other end of the pendant being removably attached to the top of the sail at a position reachable by a man standing at the top of the sail;
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3. A chafing pendant for attachment at one end to the removably attachable end of the permanent pendant; a towline attachable at one end to the other end of said chafing pendant; and a split chock located near the bow end of the deck side of the hull of the submarine, said chock being of the type containing a closed loop within a pair of curved arms, said chock normally being located below the outer shell of the hull, but each section being independently elevatable from a remote location to extend outside the hull, so that each section can capture said towline when it is swept into its part of the loop section.

2. Means as in claim 1, wherein said permanent pendant is secured at the base of said sail.

3. Means for rigging a towline to a submarine, using a man on the sail of the submarine rather than on the deck, comprising in combination: first cable means permanently secured at one end to the sail at its bow end, the other end of said cable means being removably attached to the top of the sail at a position reachable by a man standing at the top of the sail; second cable means resistant to chafing for attachment at one end to the removable end of said first cable means; towline means attachable at one end to the removable end of said second cable means; and chock means located near the bow end of the deck side of the hull, said chock means being vertically split into two mirror-image sections which meet at two points to form an interior closed-loop section, said chock means being normally located below the outer shell of the hull, but each section being elevatable from a remote location to extend outside the hull, so that each section can capture said towline means when it is swept into its part of said loop section.

4. Means as in claim 3, wherein said first cable means is permanently secured at the base of said sail.

5. Means for rigging a towline to a submarine, using a man on the sail of the submarine rather than on the deck, comprising in combination: cable means permanently secured at one end to the sail at its bow end, the other end of said cable means being removably attached to the top of the sail; towline means for attachment at one end to the removable end of said cable means; and chock means located near the bow end of the deck side of the hull, said chock means being vertically split into two mirror-image sections which meet at two points to form an interior closed-loop section, said chock means being normally located below the outer shell of the hull, but each section being elevatable from a remote location to extend outside the hull, so that each section can capture said towline means when the latter is swept into its part of said loop section.

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