W. F. JOHNSTONE.

TOWING POST.

APPLICATION FILED MAR. 26, 1909.

928,766. Patented July 20, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

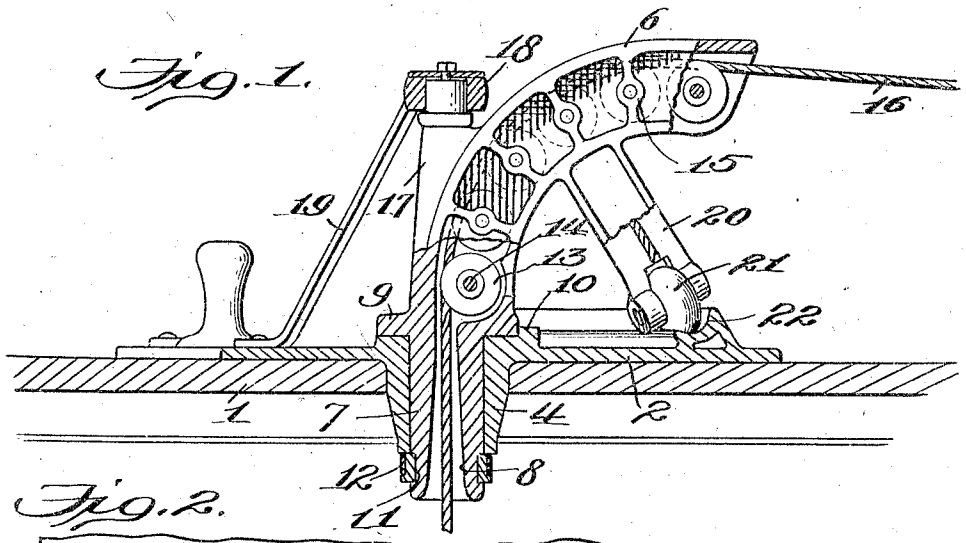
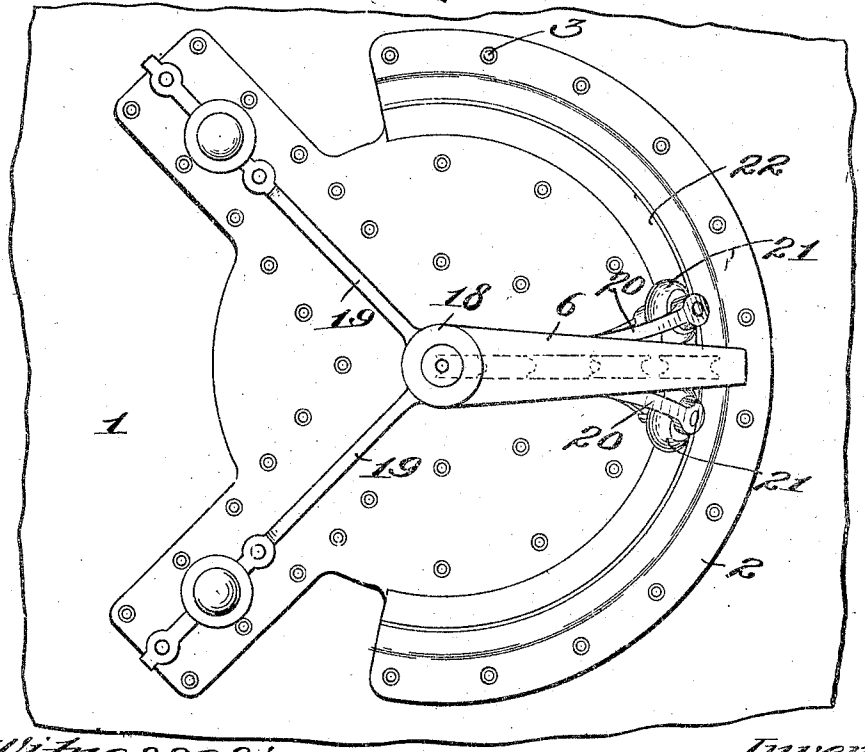


Fig. 2.



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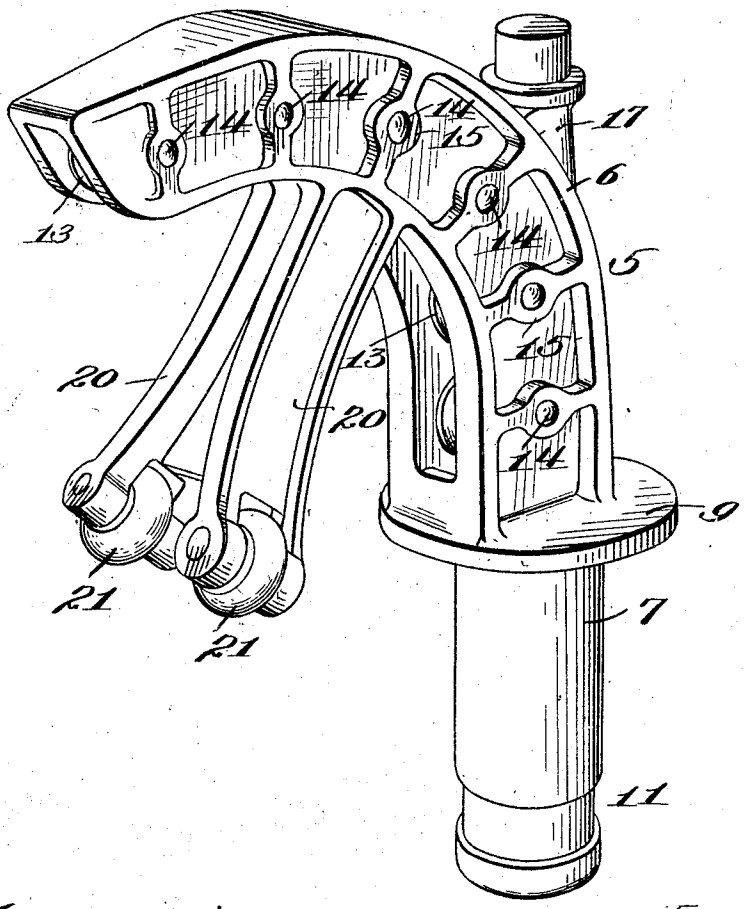
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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TOWING-POST.

No. 928,766. Specification of Letters Patent. Patented July 20, 1909.

Application filed March 26, 1909. Serial No. 485,922.

To all whom it may concern:

Be it known that I, WILSON F. JOHNSTONE, a citizen of the United States, residing at Honolulu, Territory of Hawaii, have invented new and useful Improvements in Towing-Posts, of which the following is a specification.

This invention relates to new and useful improvements in towing posts especially constructed for use in harbors and intricate channels where the turns are short and sudden but applicable also to deep sea towing with great advantage.

In order that the novel features of construction and their attendant advantages may be more readily appreciated I will briefly review conditions as they exist at the present time in the towing art and will then set forth wherein my invention overcomes the defects and inadequacies of the devices ordinarily employed.

Towing machines are at present located on the deck of the tug or in the hold, the tow line passing through a chock, hawse hole or similar device on the taffrail of the tug, this arrangement being necessary for a fair lead to the towing machine. The tow line being thus held in chocks aft, it is impossible to accurately handle the tug and the tow in intricate channels requiring short and sudden turns. For this reason the arrangement wherein the towing machine is on deck and the chock aft, can not be used for harbor towing but only for deep sea towing. In order to allow of the tug and her tow being readily handled it is essential that the towing post be located somewhat abaft and comparatively near the center of the tug so that the drag of the tow may not interfere with the steerageway of the tug. It is also essential to the full control of the tow and to the life of the tow line that the buckling and abrasions to which the tow line is subjected in fair leaders and similar devices as ordinarily constructed, be eliminated as far as possible.

Recognizing the above defects the present invention was designed for the purpose of overcoming the same and for other purposes as will be hereinafter explained.

It will be seen from the foregoing that the towing post should be located somewhat abaft and near the center of the vessel and that free play of the towing line should be allowed. The first object is accomplished by locating the towing machine in the hold of the vessel and by positioning the towing post on the deck abaft and near the center of the tug. The second object is accomplished by providing a towing post which is self-adjusting in accordance with the relative positions of the tug and the tow. Accordingly, the towing post is mounted for horizontal swinging movement and is capable of efficiently turning through an arc of 180 degrees. The present invention eliminates the necessity of placing chocks or similar devices on the taffrail and consequently the taffrail is perfectly clear so as not to interfere with the movement of the tow line through the necessary angle. Incidental to this arrangement the straight portion of the towing post is located coaxially with the tow line in the position which the latter assumes when being wound upon or unwound from the reel.

Having conceived a means whereby the above objects could be obtained and the defects and inadequacies of the devices ordinarily employed, eliminated, numerous difficulties presented themselves which had to be obviated before an arrangement along the lines generally set forth could be practically used. In order that buckling of the tow line may be prevented and that the bending moments may be as easy as possible, it is essential that tow lines over an inch in diameter should travel over sheaves forty times the diameter of the tow line. Such a sheave for use with a tow line of standard gage would have a diameter of seven feet and when employed in connection with a swiveling carriage and a deck casting support, the top of the sheave would be about nine feet above the deck, the arrangement being similar to a gigantic inverted caster. A tug with an ordinary four ft. high towing post with a strain on the hawser at right angles to the fore and aft line of the vessel will careen twenty degrees; and with the above sheave five feet higher, the leverage would be so great that it would not be practical to put any strain on the hawser, since the vessel would be in great danger of capsizing. It is also not practical to locate the top of a seven ft. sheave the same height from the deck as an ordinary towing post since this would necessitate a sunken hatch. A sunken hatch in this connection would fill with water and dirt from the deck and would be a source of danger and annoyance in a sea way. My next thought,

therefore, was to perfect a towing post which not only attained the primary objects set forth above but also overcame the objections incident to the use of a seven ft. sheave and the present towing post, therefore, represents the result of my efforts.

More particularly, my improved towing post comprises an arcuate casing having the radius of its curvature approximately three and one half feet and with its top not higher than four feet from the deck of the vessel. This casing has a swivel mounting and can efficiently turn through an angle of 180 degrees. The same efficient results of rendering the bending moments as easy as possible which would be attained by the use of a seven ft. sheave, are attained in the present invention by providing a number of small sheaves or rollers at close intervals in the casing and over which the tow line passes.

The invention also includes novel means for taking up the sudden stress accompanying the surging of the tow line in a heavy sea way and such means preferably comprise a strut arm which is connected to the post and which is provided at its end with a roller working on a circular track located on a deck abaft the post.

A preferred and advantageous embodiment of the invention is illustrated in the accompanying drawings, the structural details of such embodiment are set forth at length in the following description and the novel features of construction and arrangement by which the device is distinguished from the prior art are set forth in language of the proper determinative scope in the claims appended at the end of the description.

In the accompanying drawings: Figure 1 is a central longitudinal sectional view of a self-adjusting towing post constructed in accordance with the present invention and assembled upon the deck of the vessel. Fig. 2 is a top plan view thereof, and Fig. 3 is a detail perspective view of the towing post *per se*.

Similar characters of reference refer to corresponding parts throughout the several views.

Upon the deck 1 a base plate 2 is mounted, being held fast by bolts or other fastenings 3 which are suitably located. The plate 2 has a central depending annular boss, as 4, which serves as a bearing for the journal portion of the towing post. The latter is indicated generally as 5, and comprises a casing, as 6, having a curvature of ninety degrees and a tangentially extended journal portion, as 7. The journal 7 fits in the boss 4 and is constructed with a flaring bore, as 8, through which the tow line is led. In order that the towing post may be firmly seated and held against axial play, an annular flange, as 9, is provided, the latter resting upon the plate 2 and fitting against an arcuate lug, as 10, which projects upwardly from said plate. The journal 7 is formed near its lower end with an annular groove, as 11, to receive split rings, as 12, or other devices to engage the boss 4 and prevent axial play. The casing 6 is preferably of U shape in cross section, its inner face being open, and within said casing a plurality of closely associated pulleys, as 13, are disposed. The pulleys 13 are introduced in the casing through the open inner side thereof, and are carried upon transverse pins, as 14, which have their ends disposed in bearings 15 formed in the side walls of the casing 6. The tow line, as 16, passes through the casing, over the pulleys 13 and to the towing machine located in the hold of the vessel, the journal 7 being coaxial with said tow line. The casing 6 has also at its rear side an extension, as 17, which is co-axial with the journal 7 and which has its end portion journaled in a bearing collar, as 18, the latter being carried by two angularly disposed arms, as 19, which are secured to the base 2 in any suitable manner.

The strut arms to which reference has been made are shown at 20 and project radially from the side walls of the casing 6 and angularly with respect to one another, as shown more particularly in Figs. 2 and 3. The arms 20 carry at their lower ends rollers, as 21, which engage upon the curved track 22 provided on the plate 2.

The radius of the curvature of the casing 6 is approximately three and one half feet long and consequently the towing post is slightly less in height than the posts ordinarily employed which, as previously stated, are about four feet in height. The provision of the pulleys 13 renders the bending moments of the tow line 16 perfectly easy and prevents buckling, abrasion, or distortion of said line. The provision of the tangentially extended journal 7 allows of the post being assembled slightly abaft and near the center of the tug for the purpose of steerageway and this fact, coupled with the self-adjusting swinging movement of the towing post permits of the complete control of the tug and of the tow at all times, for which reason the device is especially adapted for use in harbor towing and in intricate channels where the turns are short and sudden. The manner in which the post is mounted assures of the post being completely responsive to the movements of the tow line, such movements being perfectly free, owing to the absence of chocks or gripping devices on the taffrail of the tug. The arms 20 take up the stress which would ordinarily be placed upon the towing post incident to the surging of the tow line in a heavy sea way. In the use of the device the tug can be handled from hard-a-port to hard-a-starboard, and the tow line automatically hauled in or paid out by the towing machine to suit different conditions of work-

ing with a tension on the tow line all the time and the post swings with the tow line, accommodating itself to any position which the tow line takes when the tug is in motion. All abrasions and other kinks which the tow line has in the arrangements in which it is led through the after chocks are eliminated by the present invention.

While attaining the above objects, the advantages of simplicity, inexpensiveness and strength have not been overlooked.

It may be added that the device may be readily set up and dismantled and that the pulleys 13 may be conveniently taken out and replaced for the purposes of renewal and repairs.

Having fully described my invention, I claim:

1. A towing post comprising a casing of curved outline and provided with a hollow tangentially extended journal and a bearing for the journal.

2. A towing post comprising a casing of curved outline and provided with a hollow tangentially extended journal, a bearing for the journal and a plurality of closely associated pulleys in the casing affording a bearing surface for the tow line.

3. A towing post comprising a casing of curved outline, a swivel bearing for the casing to allow the latter to swing horizontally, a curved track in the rear of the bearing and a strut arm projecting radially and inwardly from the casing and having a roller engaging the track.

4. A towing post comprising a casing of curved outline and of U shape cross section, a swivel bearing for the casing to allow the latter to swing horizontally, and a plurality of closely associated pulleys in the casing affording a bearing surface for the tow line.

5. In a towing post construction, in combination, a plurality of closely associated pulleys, means for supporting the pulleys in conterminous relation and as an arc-shaped series, said means including a hollow journal and a swivel bearing for the journal.

6. A towing post comprising a casing of curved outline, a swivel bearing for the casing to allow the latter to swing horizontally, angularly disposed strut arms projecting radially and inwardly from the casing, a curved track in the rear of the bearing and a roller provided on each strut arm and engaging the track.

7. A towing post comprising a casing of curved outline, a swivel bearing for the casing to allow the latter to swing horizontally, and means connected to the casing for relieving the stress incident to the surging of the tow line.

8. The combination with a towing post comprising a freely swinging curved casing having a tangentially extended journal, of a base plate for attachment to the deck and having a bearing for the journal.

9. The combination with a towing post comprising a freely swinging curved casing having a tangentially extended journal, of a base plate for attachment to the deck and having an annular boss through which the journal passes and means for holding the journal in the base plate against axial play.

10. The combination with a towing post comprising a freely swinging curved casing having a tangentially extended journal, of a base plate for attachment to the deck and having a bearing for the journal, a curved track on the base plate in the rear of the bearing and an inwardly projecting strut arm carried by the casing and having a roller engaging said track.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILSON F. JOHNSTONE.

Witnesses:
RICHARD H. TRENT,
OLAF L. SORENSON.