

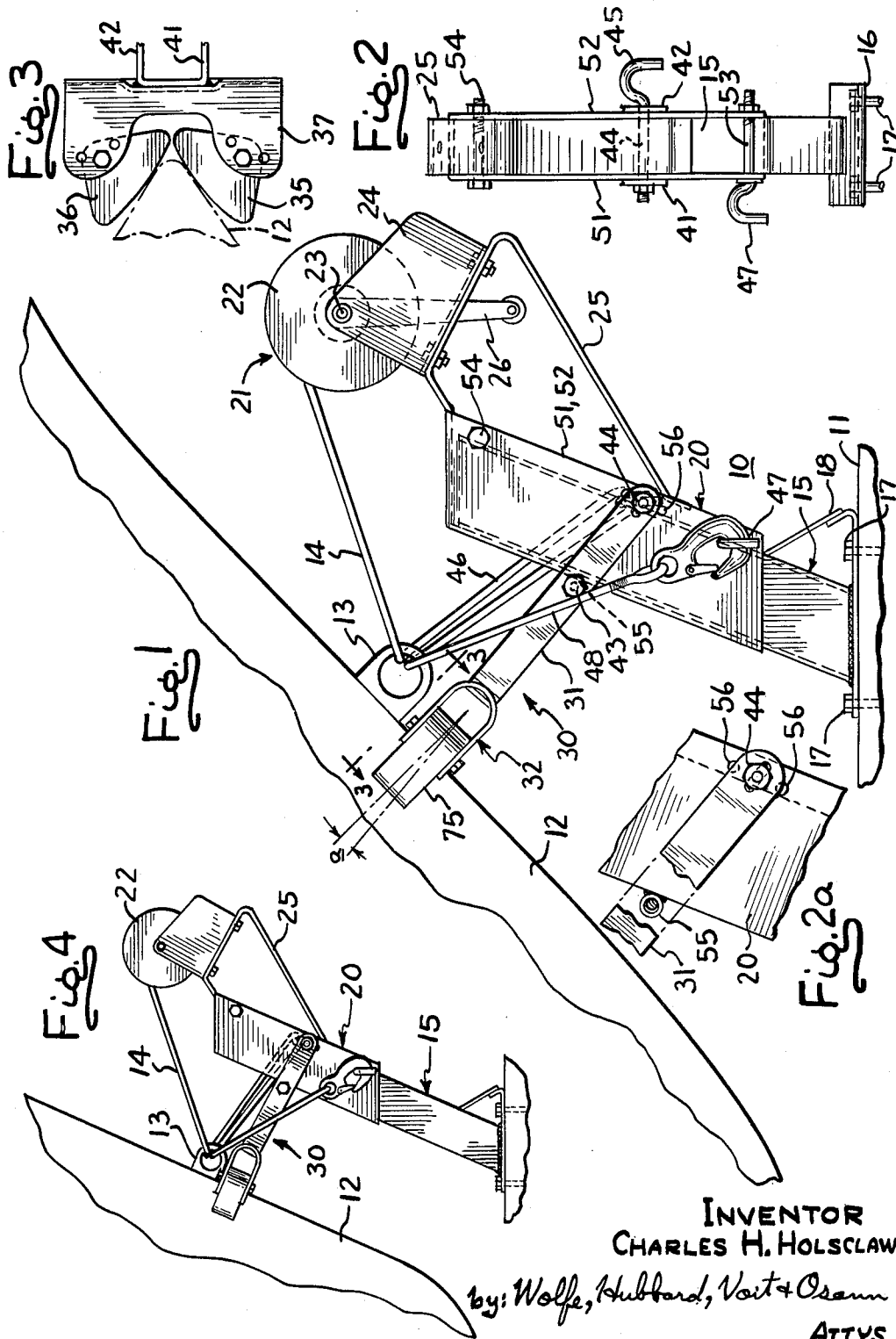
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WINCH ARRANGEMENT FOR BOAT TRAILER

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WINCH ARRANGEMENT FOR BOAT TRAILER

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The present invention relates to boat trailers and more particularly to a winch stand construction for drawing the boat onto the trailer and for locating and securing the bow of the boat during transport.

Boat trailers are manufactured in different sizes for transporting boats within a certain size and weight category and the purchaser generally assumes that the supporting structure and winch stand may be readily adjusted to fit the contours of the hull. While it is generally possible to accommodate the supporting structure to the boat bottom, the winch stand usually provided cannot be properly accommodated to the wide range of bow stem contour now being used by the various boat manufacturers. Some boat bows are classified as "straight" i.e., almost straight up and down, while others employ the so called "clipper" bow which reaches forwardly at a shallow angle. The problem is further complicated by the fact that certain boat manufacturers extend the front deck out over the actual bow, particularly on bows of the clipper type with the result that the winch handle tends to strike the under part of the bow or stem, making the turning of the handle inconvenient if not impossible on certain models. Finally, there is no standardization on the location of the bow or towing eye relied upon for pulling the boat onto the trailer and for hold-down as well. Thus where the bow eye is on the high side, above the line of pull of the winch, the winch exerts a downward component causing the keel of the boat to crowd downwardly against the keel support with a substantial increase in friction. This condition worsens as the boat approaches the winch stand, making it impossible under some circumstances to pull the bow completely into a good nest in the bow mount. Conversely where the bow eye is "low," the winch rope may drag on the bow mount causing the rope to fray and break. Most important of all, perhaps, is the fact that with some boat-winch stand combinations the bow is not held stable against movement in any direction so that it is possible for the bow to work up and down in the bow mount particularly under rough road conditions running the risk of chafing and other damage to both boat and trailer.

While adjustment to take care of the above problems may be theoretically obtainable in certain designs of winch stands, adjustment is so difficult and time consuming that the dealer is tempted to do a careless or incomplete job.

Accordingly it is an object of the present invention to provide a winch stand construction which is truly universal permitting accommodation of all boat constructions and bow stem designs within the size category for which the trailer is designed and independent of bow angle, deck overhang or location of towing eye. More specifically, it is an object of the invention to provide a winch stand which insures a straight line or slightly upward pull from the bow eye all the way up to seating of the stem in the bow mount and which provides secure anchoring of the eye under transport conditions so that the boat bow is restrained against both vertical and lateral movement in either direction. It is also an object to provide a winch stand including a bow mount which may be positioned directly under the bow eye and oriented to secure firm nesting of the bow regardless of the eye location or angle of the bow stem.

It is still another object to provide a winch stand con-

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struction which is easy to adjust and which may be adjusted within a few minutes' time either by the boat and trailer dealer or by the owner himself without prior experience or instruction. It is a more specific object to provide a winch stand construction in which the winch bow mount and hold-down remain in substantially the same relative position as the movable portion of the bow mount assembly is slid upwardly or downwardly relative to the trailer tongue. Thus it is an object to provide a winch stand construction in which the adjustment of a single sliding unit effects an adjustment which either cannot be effected at all in conventional constructions or which must be attained by laborious adjustment of individual elements. Thus where the winch stand assembly is moved vertically until the bow mount comes just below the bow eye, the winch and hold-down elements are automatically in proper position and adjustment may be completed in a single step.

Other objects and advantages of the invention will become apparent upon reading the attached detailed description and upon reference to the drawings in which:

FIGURE 1 is a side elevation of a winch stand constructed in accordance with the present invention as used with a boat having a bow of clipper type.

FIG. 2 is a front view, minus the winch, of the construction shown in FIG. 1.

FIG. 2a is a fragment showing the mounting for the arm which supports the bow pad.

FIG. 3 is a view looking along the line 3-3 in FIG. 1 showing the nesting of the bow stem in the bow mount.

FIG. 4 is a view similar to FIG. 1 at slightly reduced scale and showing the winch stand adjusted for use with a boat having a straight stem and relatively high bow eye.

While the invention has been disclosed in connection with a preferred embodiment, it will be understood that I do not intend to be limited to the particular embodiment shown but intend to cover the various alternative and equivalent constructions included within the spirit and scope of the appended claims.

Turning now to the drawing, there is shown in FIGS. 1-3 a winch stand 10 mounted on the tongue 11 of a boat trailer for securing a boat having a bow stem 12 and a bow eye 13 which is to be engaged by a winch line 14. The bow stem angle in the particular boat shown is relatively shallow, of the so called "clipper" shape. The supporting structure of the winch stand includes a pedestal 15 welded or otherwise secured to a base plate 16 having U-bolts or the like 17 for securing to the trailer tongue enabling the winch stand to be adjusted fore and aft depending upon the size of the boat. An integral bracket or brace 18 extending forwardly of the pedestal and secured at its lower end to the base plate tends to rigidify the pedestal with respect to forces applied fore and aft.

Secured to the pedestal is a vertically extending frame 20 having a winch assembly 21 at its upper end. The winch assembly includes a reel having a shaft 23 and which serves to wind up the rope 14. The shaft is journaled in a winch base 24 which is bolted or otherwise secured to a winch bracket 25 so that the reel is not only mounted upwardly but also forwardly of the winch stand. It will be understood that the base of the winch includes the usual stepdown gearing and ratchet for locking the reel, with a manual crank 26 for manual operation. It will be understood, however, that while a manual winch assembly has been shown, the present invention contemplates the substitution of a power driven reel if desired.

For the purpose of centering and positioning the bow stem of the boat, a bow mount 30 is provided having an arm 31 and padded receptacle 32. The receptacle, which is shown in plan view in FIG. 3, includes a pair of bow pads 35, 36 pivotally mounted in a bow pad holder 37

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which is of channel shape. The pads 35, 36 which may be of rubber, are eccentrically pivoted so that they nest and crowd in upon the stem 12 of the boat holding it securely against lateral displacement. The arm 31 of the bow mount is preferably formed of a pair of parallel strip members 41, 42 which are spaced to embrace the frame 20 of the winch stand between them. The arm is clamped to the frame by means of clamping bolts 43, 44 respectively.

For the purpose of providing a downward pull upon the bow eye 13 during transport conditions, means are provided on the frame 20 for anchoring of a hold-down loop at a point which is below the level of the bow mount. More specifically, hooks are provided at the opposite sides of the frame 20, one for engaging a hold-down loop and the other for engaging the final run of the winch rope also employed for hold-down purposes. Thus, referring to the drawing, I provide a first hook 45 for anchoring a loop 46 and a second hook 47 for anchoring the end of the rope 48. Since the hooks are laterally spaced from one another and located below, as well as forwardly of, the eye 13, forces are applied to the eye 13 in all three planes to maintain the bow of the boat seated in the bow mount and held against movement in all possible directions.

In accordance with one of the features of the present invention, the frame 20 is formed of a cross section which mates with the cross section of the pedestal to provide a box-like structure having a high degree of rigidity and permitting endwise sliding adjustment so that the frame may be secured at any desired height with respect to the pedestal. More specifically, I provide a pedestal of squared hollow construction and a frame 20 which is of mating channel shape having side walls which are extended beyond the pedestal terminating in parallel flanges 51, 52, with bolts extending through the flanges for clamping the side walls of the frame intimately to the pedestal. The clamping function is accomplished in the present instance by utilizing the same bolt 44 as is employed to support the forward end of the arm 31 of the bow mount. A second clamping bolt 53 may, if desired, be integral with the anchor hook 47 previously discussed (see FIG. 2). At the top of the frame 20 a third clamping bolt 54 may be used. In the case of all three of the clamping bolts the function is not only to clamp but also to maintain the channel-shaped frame fully seated on the pedestal, i.e., to "close the channel" so that the frame 20 and pedestal are in true telescoping relation. Thus in fitting the winch stand to the boat, the clamping bolts 44, 53, 54 are loosened permitting the frame 20 to be slid upwardly on the pedestal until the pads of the bow mount lie immediately below the bow eye, following which the bolts are re-tightened.

In accordance with one of the more detailed features of the present invention, means are provided for changing the angle of the pads on the bow mount so that they seat flatly against the lateral surfaces of the bow stem. In the present instance this is accomplished by securing the pad holder 32 to the arm 31 at a slight angle indicated at α in FIG. 1. When used with boats of the "clipper" type, the pads are angled upwardly as shown in FIG. 1. However, when the winch stand is used for boats having a more "straight", i.e., vertical bow, the bolts 43, 44 which secure the bow mount are removed and the bow mount is simply turned upside down with respect to the frame 20, after which the fastening bolts 43, 44 are re-secured. Thus in the condition of adjustment shown in FIG. 1, the angling of the pads effectively is added to the upward angling of the arm 31 of the bow mount whereas in the condition of FIG. 4 the angle of the pads is effectively subtracted permitting a wide range of bow angle to be accommodated. The bolt 43 is preferably telescoped through a sleeve 55 which is welded, as shown in FIG. 2a, to the frame 20 so that the bolt 43 serves as a horizontal pivot. Where the bolt 43 is thus anchored

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with respect to the frame, additional holes 56 may be provided in the flanges to provide steps of angled adjustment. In a practical case, the range of adjustment may be on the order of 10° and the angling of the pad may provide a range of 10°, permitting a total adjustment on the order of 20°, enabling the pads to be accommodated to intermediate bow stem angles. If desired, the joint between the members 31, 32 may be articulated and provided with a clamping bolt without departing from the present invention.

Experience has shown that the above winch stand construction may be employed universally with boats having a wide range of bow stem angle as well as a wide variation in the vertical position of the bow eye. Adjustment is extremely simple. The boat is drawn onto the trailer nearly in engagement with the bow mount. The clamping bolts 44, 53, 54 are loosened, enabling the frame 20 to be slid bodily upwardly or downwardly along the pedestal 15 until the pads of the bow mount are positioned slightly below the bow eye. The angling of the pads is changed, as discussed, as may be necessary so that the pads seat flatly against the stem, following which all of the clamping bolts may be turned tight. This completes the adjustment. Such adjustment automatically positions the reel of the winch above the bow eye of the boat and positions the hooks for the hold-down loop below the bow eye. Such a relationship is, indeed, maintained in all positions of adjustment, i.e., regardless of the final adjusted position of the frame 20. This insures that during the loading of the boat there will be a slightly upward component of force against the bow eye in addition to the main or horizontal component. This upward component tends to relieve the friction of the boat keel against the keel supports at the forward end of the boat, permitting the stem to be drawn firmly into seated engagement with the bow mount. This upward component is particularly important during the final few inches of boat movement. Moreover, with the winch automatically positioned, and maintained, above the frame 20, there is no possibility that the lead of the rope from winch to eye will chafe or rub against the winch stand as frequently occurs in more conventional constructions.

With the points of anchoring for the hold-down loop maintained at all times and in all conditions of adjustment below the level of the bow mount and bow eye, an effective vertical component of force is assured, preventing any vertical "working" of the bow when traveling on rough roads. Moreover, in the preferred construction the lateral spacing between the hooks 45, 47 at the opposite sides of the frame, provides balanced lateral forces which assist the bow mount in maintaining the bow of the boat in a firmly centered position.

It is found that the present construction is ideally suited to boats having a flaring bow line and with the deck forwardly extended or overhanging. Since the winch is mounted forwardly of the frame 20 and moves downwardly with the frame when adjusting the level of the bow mount, adequate horizontal and vertical clearance for the swinging of the crank 26 is assured, with little risk of the operator's banging his knuckles.

Since the winch stand construction described above is so easily adjusted with the mode of adjustment being obvious even to a lay person, trailers may be shipped in knocked down condition to different points with assurance that the user will be capable of conforming the mechanism to the boat regardless of the many variables in bow design. With regard to those units which are set up by the dealer, adjustment may be accomplished in a fraction of the time previously required.

In the following claims, the term "squared" cross section is intended to cover pedestals having corners and parallel sides. The term "tongue" as applied to a trailer covers any longitudinal trailer member to which the winch stand may be secured.

I claim:

1. In a winch stand for use with a boat trailer having a tongue, the combination comprising a rigid pedestal secured to the tongue and extending upwardly and forwardly therefrom, a winch at the upper end of the frame, a bow mount including an arm secured to the central portion of the frame and extending rearwardly therefrom for nesting engagement with the bow stem, hooks on opposite sides of the frame below the bow mount for hooking a hold-down loop formed in the winch rope, said frame being of hollow construction telescoped over the pedestal and having means for clamping the same to the pedestal in a selected vertical position in which the bow mount is directly below the bow eye of the boat and in which the winch and hooks are respectively above and below the bow eye for holding the bow eye against movement in all directions.

2. In a winch stand for use with a boat trailer having a tongue, the combination comprising a rigid pedestal having means for securing to the trailer tongue and extending upwardly and forwardly therefrom, a frame mounted on the pedestal, a winch secured to the upper end of the frame, a bow mount having an arm mounted on the frame below the winch extending rearwardly therefrom and having bow pad means for nested engagement with the bow stem, said frame being of hollow construction telescoped over the pedestal and having means for clamping the same to the pedestal in a selected vertical position, first and second hooks projecting from the opposite sides of the frame substantially below the winch for engaging the end of the winch rope and a hold-down loop respectively, said hooks being secured to the frame for bodily movement upwardly and downwardly with the winch as the frame is adjusted to a selected vertical position.

3. In a winch stand for use with a boat trailer having a tongue, the combination comprising a rigid pedestal secured to the trailer tongue and extending upwardly and forwardly with respect thereto, a frame of tubular construction telescoped over the pedestal, a winch secured to the upper end of the frame, a bow mount having an arm mounted on the frame below the winch extending rearwardly therefrom and having a pair of bow pads for nested engagement with the bow stem, rope anchoring means on the winch stand below the bow mount for securing a hold-down loop formed in the winch rope, said frame having means for clamping the same rigidly to the pedestal in a selected vertical position with the bow mount under the bow eye of the boat, the arm of said bow mount having threaded clamping means for clamping the arm to the frame in a position of angular adjustment for flat seating of the bow pads against the bow of the boat thereby permitting accommodation of boats having a wide range of bow angle.

4. In a winch stand for use with a boat trailer having a tongue, the combination comprising a rigid pedestal having means for securing to the trailer tongue and

extending upwardly and forwardly therefrom, a frame mounted on the pedestal, a winch secured to the upper end of the frame, a bow mount having an arm removably secured to the frame below the winch and having bow-engaging pads slightly angled with respect to the arm, said frame having means for securing in a selected vertical position with respect to the pedestal for positioning of the pads immediately below the bow eye of the boat, said arm being formed to straddle the frame and being detachably secured thereto so as to permit upside down reversal of the arm so that the angling of the pads is additive or subtractive depending upon the bow angle for flat seating of the pads on the bow.

5. In a winch stand for use with a boat trailer having a tongue, the combination comprising a pedestal of square tubular cross section having means at its lower end for securing to the trailer tongue and extending upwardly and forwardly with respect thereto, a frame mounted on the pedestal, a winch secured to the upper end of the frame, a bow mount having an arm mounted upon the central portion of the frame and having pads at its rear end for nesting engagement with the bow stem, said frame being of channel shape for enclosing the pedestal and with the sides of the channel being extended to form parallel flanges, and bolt means extending through the flanges and through the forward end of the arm for clamping the sides of the frame against the pedestal thereby to maintain the frame at a selected vertical position while holding the arm in a selected upwardly angled position relative to the frame.

6. In a winch stand for use with a boat trailer having a tongue, the combination comprising a rigid pedestal of squared cross section having means for securing the same to the trailer tongue in a upwardly and forwardly extended position, a frame of channel shape snugly enclosing the pedestal and vertically slidable with respect to it, a winch secured to the upper end of the frame, a bow mount secured to the central portion of the frame and extending rearwardly therefrom for nested engagement of the bow stem, the sides of the frame being extended beyond the pedestal to form parallel flanges, and at least one bolt extending through the flanges for securing the frame to the pedestal in a position of vertical adjustment, said bolt having a hook at its end for engaging a hold-down loop formed in the winch rope.

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