

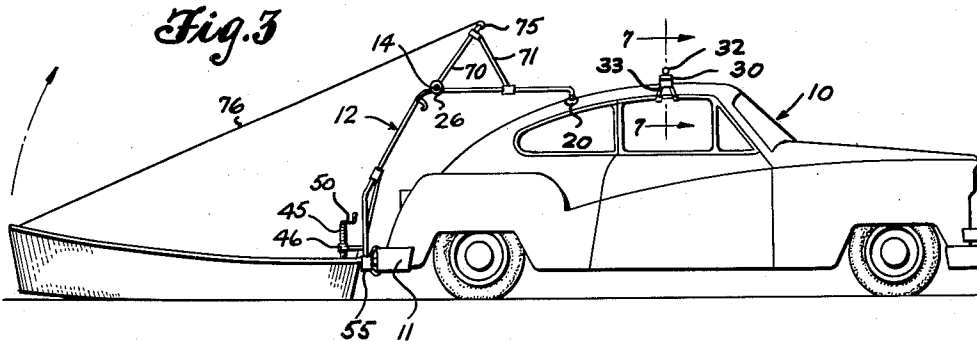
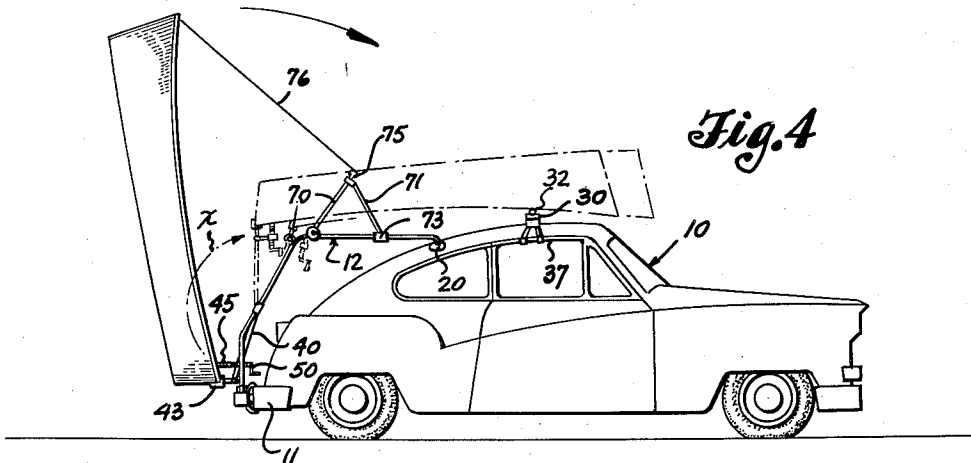
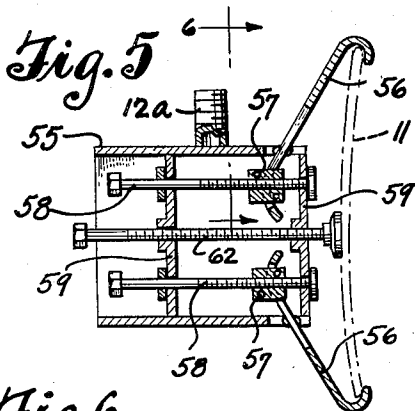
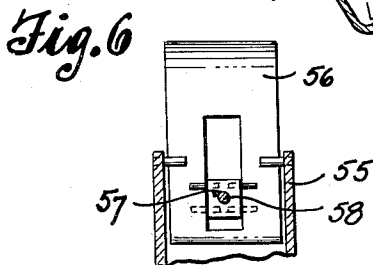
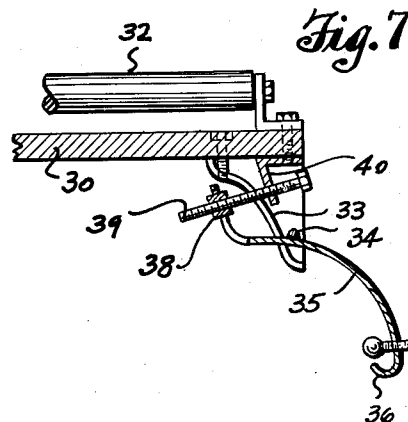
Jan. 10, 1961

F. H. BARNETT
BOAT LOADING DEVICE

2,967,635

Filed Nov. 20, 1957

3 Sheets-Sheet 2



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Fig. 8

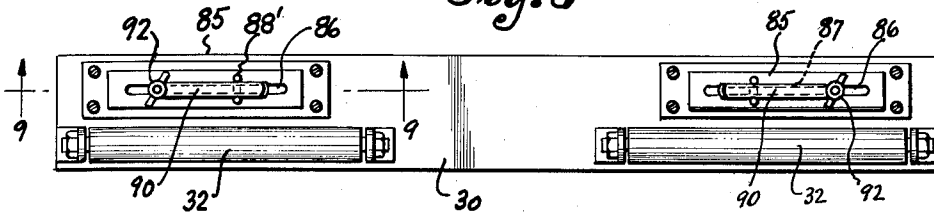


Fig. 9

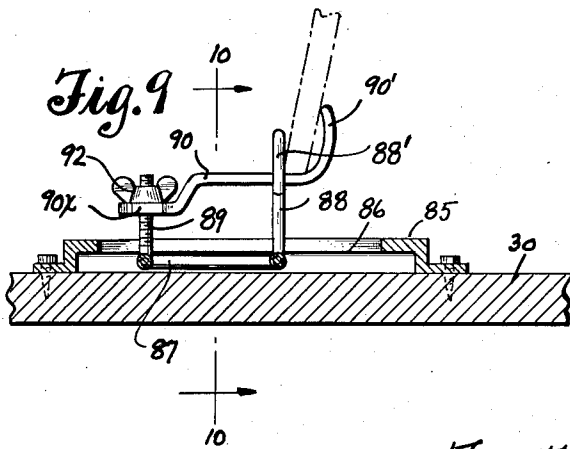


Fig. 10

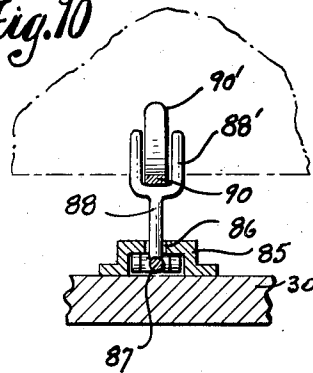


Fig. 11

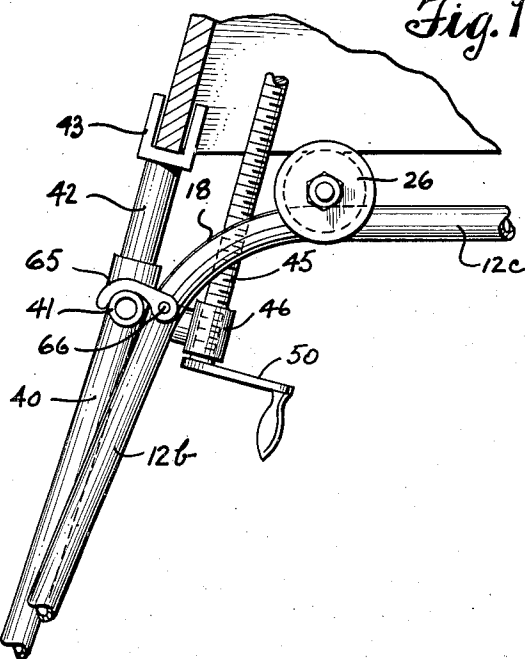
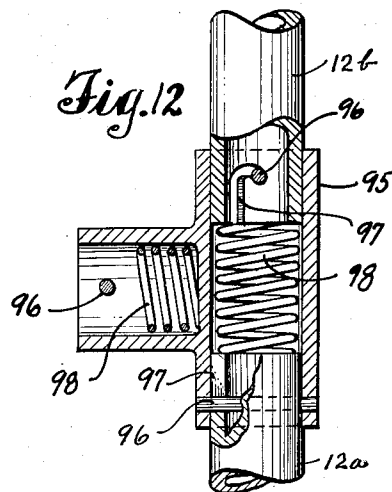


Fig. 12



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BOAT LOADING DEVICE

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Filed Nov. 20, 1957, Ser. No. 697,688

6 Claims. (Cl. 214-450)

This invention relates to boat loading and carrying frames as applied to the tops of automotive vehicles and it has for its principal object to provide an improved form of rack or frame structure that can be easily and readily applied to many of the present day sedan types of automobiles, and which includes novel means designed to aid in loading a boat onto the top of the automobile; for securing it safely on the vehicle top for transportation and for aiding in its unloading.

It is also an object of this invention to provide a rack or frame structure of the character above stated, having laterally spaced, opposite side members equipped for fixed securement at their forward ends to the vehicle top and at their rearward ends, to be clamped or otherwise fixed to the rear end bumper of the vehicle, and from which side members, at points intermediate their ends, a boat loading frame is pivotally secured at one end for swinging movement in the longitudinal direction of the vehicle and in a vertical plane; this frame, hereinafter referred to as the "loading frame," or "swing frame," being equipped with means for its fixed securement at its outer or swinging end and while in a rearwardly and downwardly directed position, to the transom of a boat to be loaded and, as thus attached, to serve as a brace whereby the boat will be held in alignment with the automobile as it is swung to an upright or upended position, and will then serve as a guide and stabilizing link in leaning the boat forwardly and moving it upwardly and forwardly to its final carrying position on the vehicle top.

Another object of the invention is to so arrange the present loading or swing frame that when the boat is in transporting position, it will serve to support and retain the boat on the vehicle top against any rearward sliding movement incident to travel of the vehicle over a rough highway.

A further object of the invention is to equip the frame structure or rack with rollers upon which the boat can be rested for easy movement to and from its position of support on the vehicle top.

Yet another object of this invention is to equip the swing frame or loading frame with novel clamps for application and securement to the transom rail of the boat whereby a secure loading and supporting connection can be effected and whereby the boat upending and lifting operations are permitted to be carried out with ease and safety.

Still another object of the invention is to provide novel means in connection with the loading frame and said clamps as applied thereto for a mechanical upending of the boat preparatory to its being lifted to a carrying position on the automobile top.

Further objects and advantages of the invention reside in the details of construction of the parts; in their combination and mode of use, as will hereinafter be fully explained.

In accomplishing the above mentioned and other objects, I have provided the improved details of construction,

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the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view showing the present boat loading and carrying frame or rack.

Fig. 2 is a cross-section taken transversely through the transom wall of a boat, and showing the means provided for securing the swing frame of the rack thereto.

Fig. 3 is a side view of an automobile equipped with the present boat loading and carrying frame structure, and showing the attachment of the boat thereto preparatory to its being swung to a loaded position.

Fig. 4 is a similar view showing the boat as upended for loading.

Fig. 5 is a detail of one of the bumper clamps for securing the rear end of the carrying frame to the automobile bumper.

Fig. 6 is a vertical section taken on line 6-6 in Fig. 5.

Fig. 7 is an enlarged sectional detail taken on line 7-7 in Fig. 3.

Fig. 8 is a top view of the roller and clamp mounting plate applied to the car top.

Fig. 9 is an enlarged vertical section taken on line 9-9, Fig. 8.

Fig. 10 is a cross section taken on line 10-10 in Fig. 9.

Fig. 11 is a detail of the frame latch.

Fig. 12 is a detail of frame construction.

Referring more in detail to the drawings:

In Figs. 3 and 4, I have shown a typical present day automobile of sedan type to which a boat carrying frame structure or rack, embodied by the present invention, has been applied for use.

The automobile body, herein designated in its entirety by numeral 10, is of the usual form. At its rear end, the vehicle chassis is equipped with the usual form of horizontal bumper bar 11.

The boat carrying frame or rack of this invention, in its present preferred form of construction, as seen in Fig. 1, comprises paired, longitudinally extending and laterally spaced opposite side members 12-12; these being hereinafter referred to as the "side rails." These paired rails are joined rigidly in their laterally spaced relationship as presently explained, by cross-members 13, 14, 15 and 16. Each of the opposite side rails is here shown to be made up from prepared lengths of metal pipe of 3/4" to 1" in diameter. However, they might comprise solid rods, or be angle iron members if so desired. The cross-members employed in the frame may be of the same or of other selected materials.

The side rails 12-12, as will be understood by reference to Fig. 1, are formed with substantially vertical rear end portions 12a which are fixed rigidly at their lower ends to the bumper bar 11 by clamp means presently described. The vertical portions 12a merge, at their upper ends, in rounded bends, as at 17, into upwardly and forwardly inclined medial portions 12b which at their forward ends merge in similar curves, as at 18, into horizontal, forward end portions 12c.

At their forward ends, the opposite side rails 12-12 are joined by the cross member 16. Also, they are formed with downturned forward ends 19 equipped with suction cup mountings 20 which are applied in the usual and well known manner to the top of the vehicle for their securement, as shown in Figs. 3 and 4. Thus, the frame structure, or rack, is fixedly supported from the rear end bumper of the vehicle and from its top. The size of the rack, in length and width, and its relationship to vehicle body and top may vary with different makes and types of automobiles.

The cross-member 13 of the rack or frame structure extends between the side rails 12-12 immediately above the curved portions 17 of the latter, and it is mounted at

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its opposite ends in pipe fittings 24—24. These fittings permit axial rotation of the cross-member in opposite directions therein for the vertical swinging of the swing frame, in the boat loading and unloading operation as will presently be explained.

The cross-member 14 extends across and is welded or otherwise suitably fixed to the opposite side rails 12—12 of the rack just forwardly of the bends 18 thereof. The opposite end portions of this cross-member 14, which extend substantially to the outside of the rails, 12—12, are equipped, coaxially thereof, with free turning rollers 26—26 of substantial length and preferably flared at their ends as shown. These rollers serve as rolling supports for the boat during its loading and unloading operations.

Extended across the vehicle top, somewhat forwardly of the line of the suction cups 20—20, is a flat plate 30 which is equipped at its underside, at opposite ends, with suitable securing means, as shown in Fig. 7, whereby the plate is functionally mounted. On top of this plate, lengthwise thereof are rollers 32 for the rolling support thereon of the forward end portion of the loaded boat, as indicated in dotted lines in Fig. 4. This plate is shown in plan view in Fig. 8.

The securing means for the plate 30 comprises, at each of its opposite ends, a downwardly projecting leg or bracket 33 designed to rest against the vehicle top. Pivotally attached to bracket, as at 34, is a lever arm 35 having a hook-shaped lower end portion 36 designed to holdingly engage with the drainage trough 37 above the doors of the vehicle, thus to secure the lever at that end. At its upper end, the lever is equipped with a bearing block 38 through which a clamp screw 39 is threaded. The screw is secured at its outer end in a bracket 40 fixed to the underside of the plate 30 and when tightened will operate to draw the lever arm 35 to and secure it in its plate securing position.

One of the important elements of the present structure is the vertically swinging loading frame which in use has fixed connection at its swinging end with the transom rail of the boat. This loading frame, as well shown in Fig. 1, comprises at its inner end, the rotatably mounted cross-rod 13; two parallel, opposite side arms 40—40 which, at their inner ends, have fixed and rigid mounting on the cross-rod 13 and which extend in parallel relationship therefrom and, at their outer ends, are joined by a cross-rod 41. Rod 41 extends at its opposite ends, somewhat beyond the lateral limits of the loading frame as established by the side rails 12—12. This swing frame or loading frame, as supported by the cross-member 13, is adapted to swing from that downwardly and rearwardly inclined position which it is shown in full lines in Figs. 1, 3 and 4, through the substantially vertical or forwardly leaning position, as in Figs. 4 and 11.

Mounted on the cross-member 41, just inside its connections with the side members 40—40, as noted in Fig. 1 are short swinging legs 42—42 equipped at their lower ends with downwardly opening U-shaped yokes 43 applicable to the transom of a boat for loading and carrying it; these yokes being applied to the transom rail 46 as has been illustrated in Fig. 2.

After the yokes 43 have been seated on the transom rail as shown in Fig. 2, the connection is secured by means of a screw shaft 45 that is threaded downwardly through a bearing 46 that is fixed rigidly to a sleeve 47 that is rotatably fitted about cross-rod 41 between the legs 42—42 as noted in Fig. 1. At its lower end the screw 45 carries a swivel hook 48 designed to engage a horizontal pin 49 fixed in a plate secured to the boat frame within the transom wall, as seen in Fig. 2. At its upper end the screw shaft is equipped with a crank 50 whereby it may be rotated to draw the cross-rod 41 downwardly and seat the yokes 43—43 firmly over the top edge of the transom wall.

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For securing the lower ends of the two side rails 12—12 to the bumper 11, I prefer to employ clamps of the kind shown in Figs. 5 and 6. It is there shown that each rail 12 is fixed at its lower end to the top wall of an inverted channel form of housing 55. Extended from this housing at its rear end, are upwardly and downwardly directed hooks 56—56 designed to engage over the top and lower edges of the bumper 11. At their inner ends these hooks are operatively fixed to blocks 57—57 through each of which a horizontally directed clamp adjusting screw 58 is threaded. The screws are mounted for rotation in vertical walls 59 and can be rotated to draw the hooks tightly to securing position.

It is also shown in Fig. 5 that a clamp screw 62 is threaded through the walls 59 and can be tightened against the bumper 11 to aid the clamp plates 56 in securing the connection.

It is to be explained that the upending of the boats of smaller sizes for loading can be accomplished manually without undue work due to the fact that it is the relatively light bow end of the boat that has to be lifted. After the boat has been leaned forwardly and against the rollers 26, it fulcrums thereon substantially in balance and its movement forwardly to final position is relatively easy. If the boat is large and heavy, instead of manually lifting it from its position of Fig. 3 to the upended position of Fig. 4, I have provided the mechanical lifting means shown in Figs. 1, 3 and 4 which will now be described.

Referring particularly to Fig. 1, an inverted Y-shaped standard 70 is shown as being mounted pivotally on the cross-rod 14 between the rails 12—12 to swing forwardly and rearwardly. At its upper end this standard has a supporting brace 71 pivoted thereto, as at 72. The brace is carried at its lower end on the cross-rod 15; this being rotatably mounted at its opposite ends in fittings 73—73 that are slidable rearwardly along the rails 12—12 to engage against stop collars 74 fixed on the rails. At its upper end the standard carries a sheave wheel 75 over which a cable 76 passes. The outer end portion of the cable extends rearwardly and at its rear end is equipped with a hook 77 that is applicable to a ring, pin or other means fixed in the bow end of the boat, as indicated in Fig. 3. The other end portion of the cable 76 extends through the tubular standard and is wound on a reel 78 operable by a hand crank 79. The reel is contained in the lower end portion of the standard close to the cross-rod 14.

With the cable end attached to the prow end of the boat, as in Fig. 3, it is a relatively easy operation to manually wind in the cable on the reel and thus swing the boat to an upright or upended position from which it is easily loaded onto the vehicle top, as previously explained.

It will be understood that when the boat has been lifted and leaned against the rollers 26, the cable 76 can be released therefrom and the standard and brace folded down to the dotted line position of Fig. 1, against the vehicle top.

It is to be explained also that it is quite advisable, that provision be made to secure the suction cups 20 against being released from the vehicle top by the pull on cable 76. To accomplish this, I attach the usual form of luggage ties (not shown) to the frame legs 19 above the cups and secure the ties to the gutter strip 37 of the vehicle.

It is also required that clamps be used to secure the forward end of the boat, as rested on the rollers 32, from tipping upward. The clamps for this particular purpose have been shown in Figs. 9 and 10. It is shown in Fig. 8 that metal plates 85 are fixed to the top side of cross-plate 30 just forwardly of the rollers 32. Each plate is formed with an upwardly offset portion, as seen in Fig. 10, that is formed with a longitudinal slot 86. These plates secure the clamps to the plate 30. Each clamp has an anchor member 87 located beneath the plate, with leg portions 88 and 89 extended upwardly therefrom through

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the plate slot. The leg 88 has a forked upper end portion 88' forming a seat in which a clamp lever 90 is rested. At its inner end the lever 90 has an upturned end portion 90' that is inwardly spaced from the upper end of leg 88, and it has an outer end portion 90x through which the leg 88 is extended. A wing nut 92 is threaded onto the leg 88 for tightening against the outer end of the lever. When the boat is sealed in carrying position, the gunwale is rested on the clamp lever 90 between the upper end of leg 89 and the upturned hook like end of the lever, as indicated in Fig. 9. Then the wing nut drawn down against the outer end of the lever to cause the gunwale to be clamped and held by the coacting parts of leg 88 and lever.

In order to simplify the assembly of the frame parts, and to provide for easy dis-assembly, the various fittings, such as those designated at 73, or those which carry the opposite ends of cross-rod 13 are formed as shown in Fig. 12. In this view the T-fitting 95 is bored smooth on the inside to receive the ends of the frame members therein. Pins, as at 96, are fixed in the open end sockets of the fitting diametrically thereof and the end portions of the tubular frame sections that are to be applied thereto are formed with bayonet slots 97 to receive the pins. When the ends of the tubular sections are inserted and the pins seated in the slots, coiled springs, as at 98, contained in the fittings retain the sections against release.

Assuming the boat loading and carrying frame to be so constructed, and applied to an automobile in the manner described and illustrated, its use is as follows:

The boat to be loaded is first brought into a position directly in the rear of the vehicle, aligned therewith and with its stern end adjacent the vehicle bumper as shown in Fig. 3. The loading frame is then swung to a downwardly directed position, permitting the yokes 43—43 of the legs 42—42 to be applied to top edge of the transom end wall of the boat as shown in Fig. 2 and the screw 45 is attached to pin 49 and drawn tight. Then the boat is lifted at its prow end, and swung upwardly from the initial position through the full line position of Fig. 4 and to the final carrying position shown in dash lines in Fig. 4. During this operation the gunwales will engage the rollers 26—26 at the ends of cross-member 14 to aid the loading. With the up-ended boat leaned against the rollers, the loader then lifts upwardly on the transom or stern end of the boat, causing the loading frame to swing upwardly through the arc designated by arrow X in Fig. 4. This causes the boat, now inverted, to pivot and move forwardly on the rollers 26—26 and to ultimately contact as its prow end with the cross roller 32, then to move forwardly thereon to that carrying position, designated in dotted lines in Fig. 4. In this position the opposite end portions of cross-rod 41 seat against the frame members 12a as has been shown in Fig. 11 and latches 65 pivot on the parts 12a, as at 66, are hooked over the cross-rod 41 thus to hold it against rearward swinging.

After the boat has been moved to this carrying position, it is secured against possible rearward travel and against back-flip by the clamp means of Figs. 9 and 10 presently described.

To unload the boat, the securing clamps above mentioned are first removed and the latches 65 disengaged. The boat is pulled rearwardly and through the various loading positions is reverse order, bringing it back to position of Fig. 3. The securing clamp screw 45 is then released and the loading frame swung upwardly and clear of the transom of the boat to its latched position of Fig. 11.

What I claim as new is:

1. A car top boat loader and carrier comprising a rigid frame structure equipped with means for its functional securement to a car body to extend upwardly along the rear end of the body and forwardly along its top, a rigid loading frame hinged on said frame structure, at the rear of said car body to swing about a transverse horizontal axis from a rearwardly and downwardly

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directed position to an upwardly and forwardly inclined position, and equipped at its swinging end with laterally spaced yokes that are hinged to the swinging end of the loading frame and adapted to seat the top edge of the transom wall of the boat therein, and a clamp screw mounted by the loading frame, between said yokes and equipped at its lower end with means for its securement to the boat adjacent the transom wall, and with means at its other end for its adjustment to seat the edge of the transom wall in said yokes and secure it to the loading frame for upending, and for support in travel.

2. The combination recited in claim 1 wherein said loading frame has a transverse shaft at its swinging end, a sleeve rotatably fitted to said transverse shaft, and wherein said yokes and said clamp screw are mounted on said sleeve.

3. In combination with a hard top vehicle of the character described having a rear end bumper; a boat loading and carrying frame structure comprising paired laterally spaced longitudinal rods, cross-rods joining said longitudinal rods in rigid spacings, means fixing said frame structure to the car to extend upwardly along the back and over the top thereof a roller mounted on the vehicle top, transversely thereof, and forwardly of said loading and carrying frame structure, a rigid loading frame swingingly fixed to the upwardly extending portions of said frame structure at the rear end of said vehicle at a level substantially above said bumper but below the level of said top, to swing between a downwardly and rearwardly directed position to an upwardly and forwardly leaning position, means at the swinging end of said loading frame for effecting its hinged connection with the transom end wall of a boat to permit the boat to be swung about said hinged connection to an upended position of support and leaned against one of said cross rods; said loading frame being adapted to be swung upwardly and forwardly to lift the rear end of the attached boat and to swing its forward end downwardly against said rollers for forward travel and support and to bring said loading frame to a position of rest against the frame structure, a standard supported on one of the cross-rods, a sheave wheel mounted at the upper end of said standard, a cable winding drum mounted by the standard, a cable wound on the drum and extended therefrom over said sheave and equipped at its end for attachment to the prow end of a boat as attached to said loading frame for loading, as a means for upending the boat preparatory to lifting it by means of the loading frame.

4. The device of claim 3 wherein a roller mounting plate is extended transversely of and rests against the vehicle top and wherein clamping means are associated with said roller mounting plate for seating the opposite edges of the boat as rested on said rollers and for securing that end of the boat against movement in a lateral direction.

5. The combination recited in claim 3 wherein said roller is mounted upon the car top transversely thereof at a forward location, by a transversely positioned plate, equipped with clamping means at its ends for fixed securement of the plate on the car top and wherein said clamps are adjustable to different spacings and are equipped to grip and secure the boat edges therein.

6. The combination recited by claim 3 including means mounted by said carrier frame structure for functional support of said standard; said means being releasable from said standard to permit it to be laid down against the vehicle top.

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