

- [54] WINCH MOUNT AND PLATE WITH COUPLER BALL ADAPTER
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- [73] Assignee: Dutton-Lainson Company, Hastings, Nebr.
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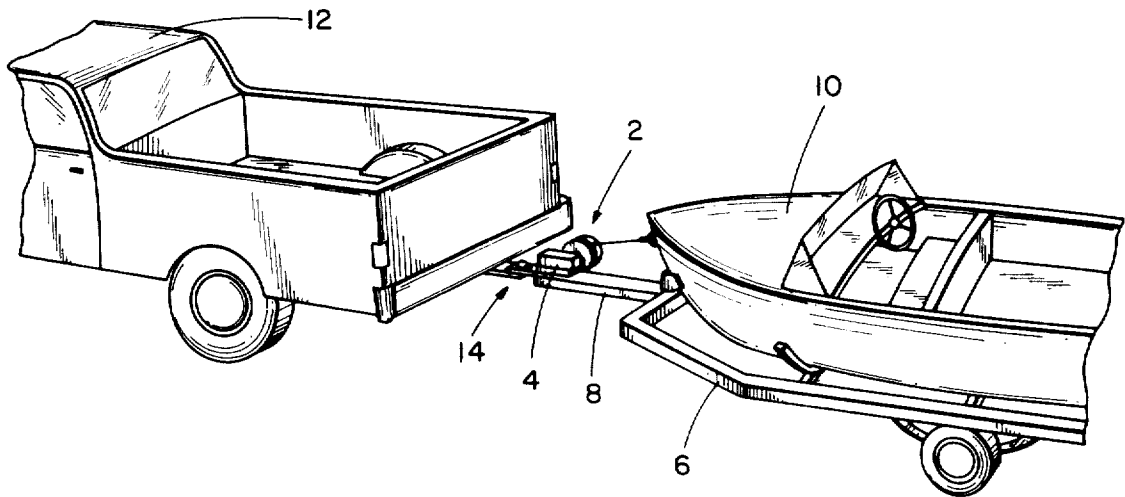
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 Attorney, Agent, or Firm—Molinare, Allegretti, Newitt & Witcoff

- [52] U.S. Cl..... 280/414 R; 280/511; 248/224; 248/225
- [51] Int. Cl.²..... B66D 1/00; B60D 1/06
- [58] Field of Search..... 280/511, 414 R; 242/106; 254/186 HC, 166; 248/224, 225

[57] **ABSTRACT**
 A device for detachably mounting a winch mechanism to a support structure. The device includes a base member, fixedly attached to the support structure, having upwardly and inwardly turned flange portions and a winch-carrying member having downwardly extending edge portions. The flange portions are adapted to receive and overlap the edge portions in an engaged state, thereby securing the winch-carrying member to the base member.

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11 Claims, 5 Drawing Figures



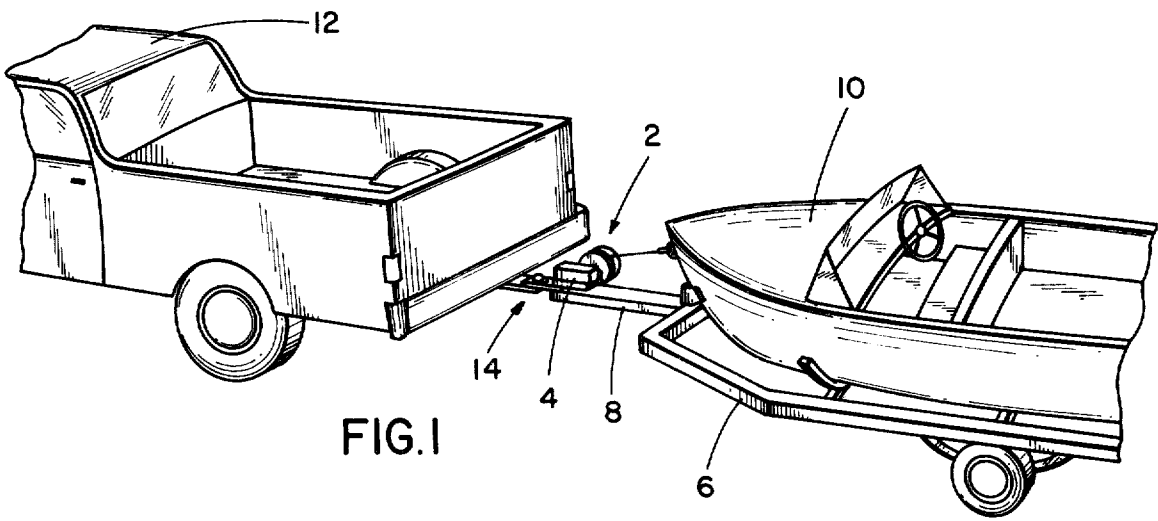


FIG. 1

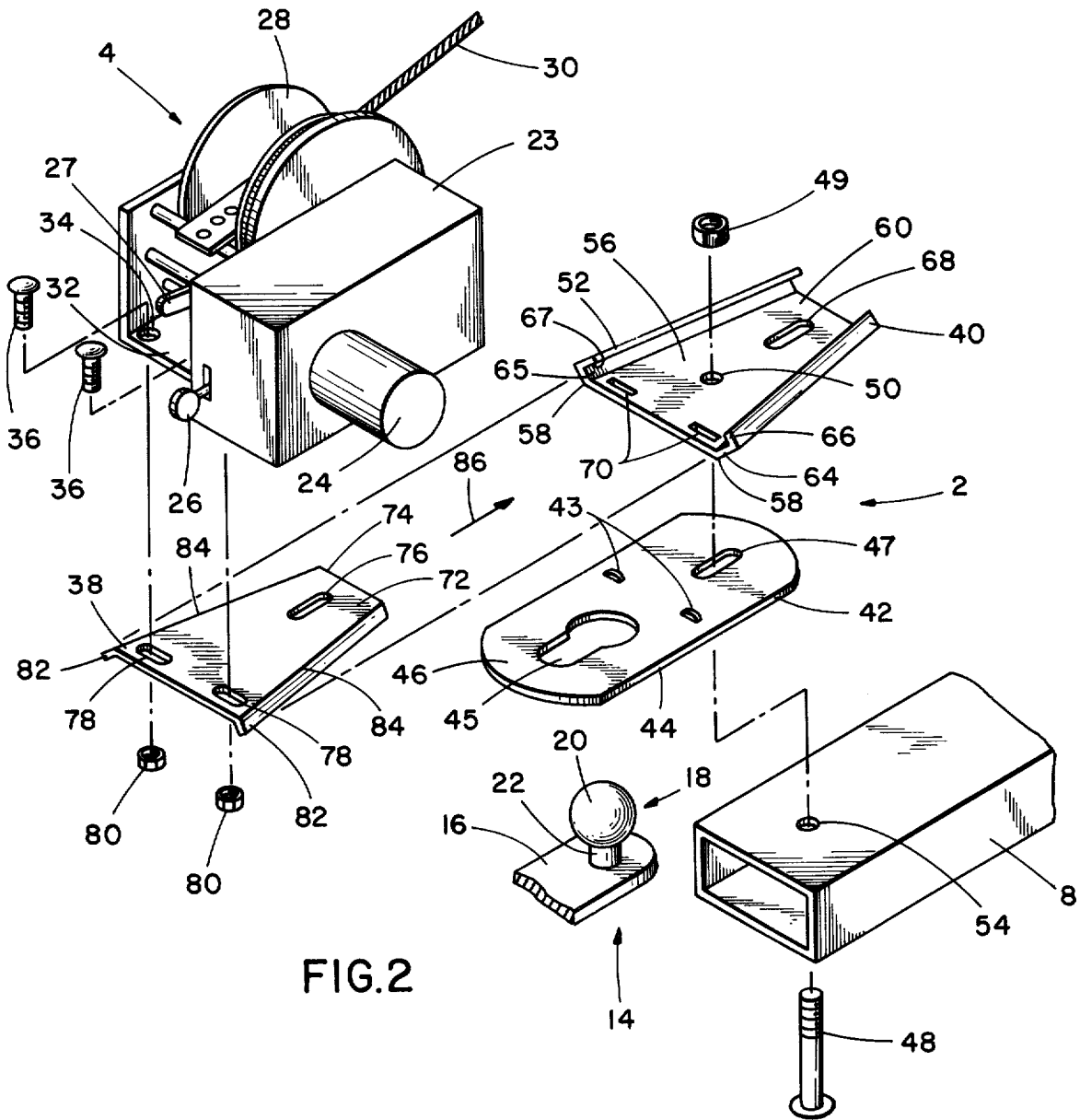


FIG. 2

FIG. 3

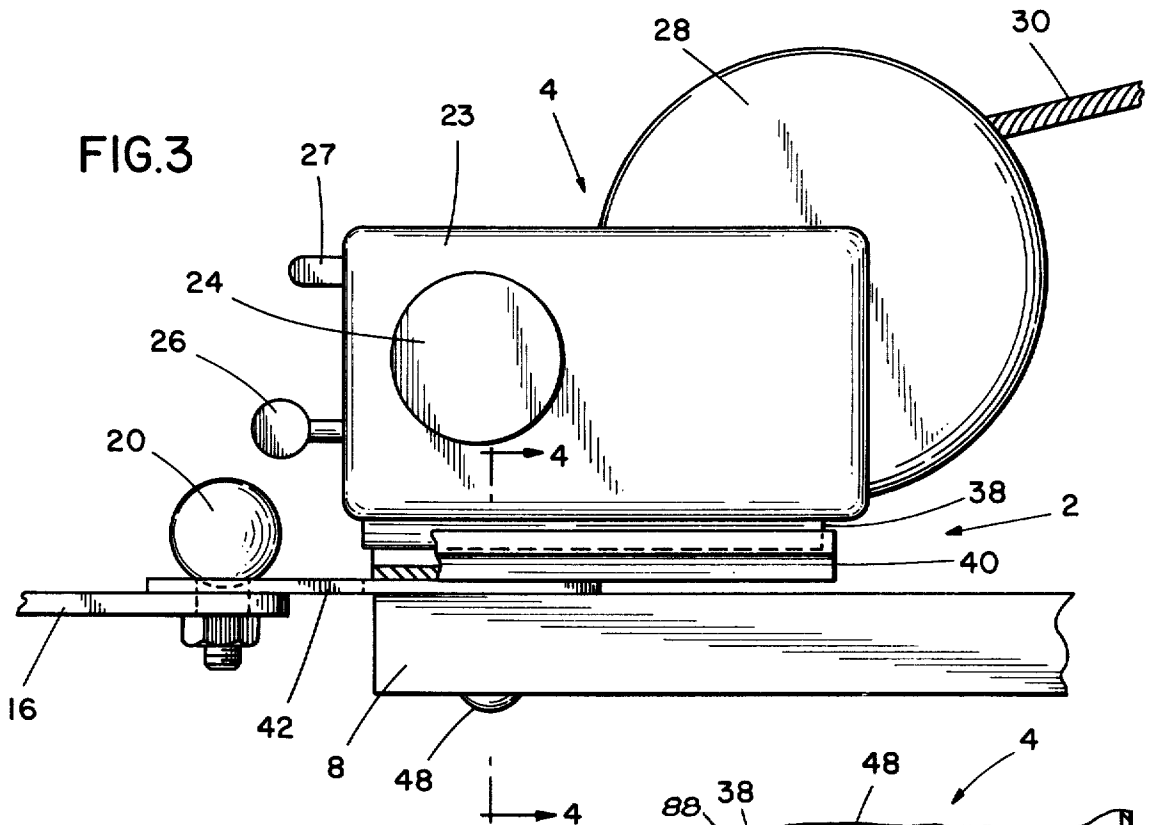


FIG. 4

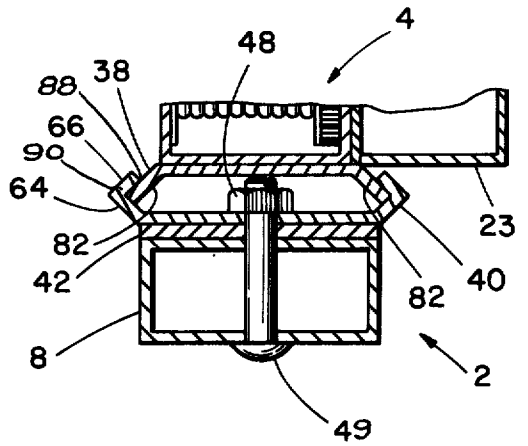
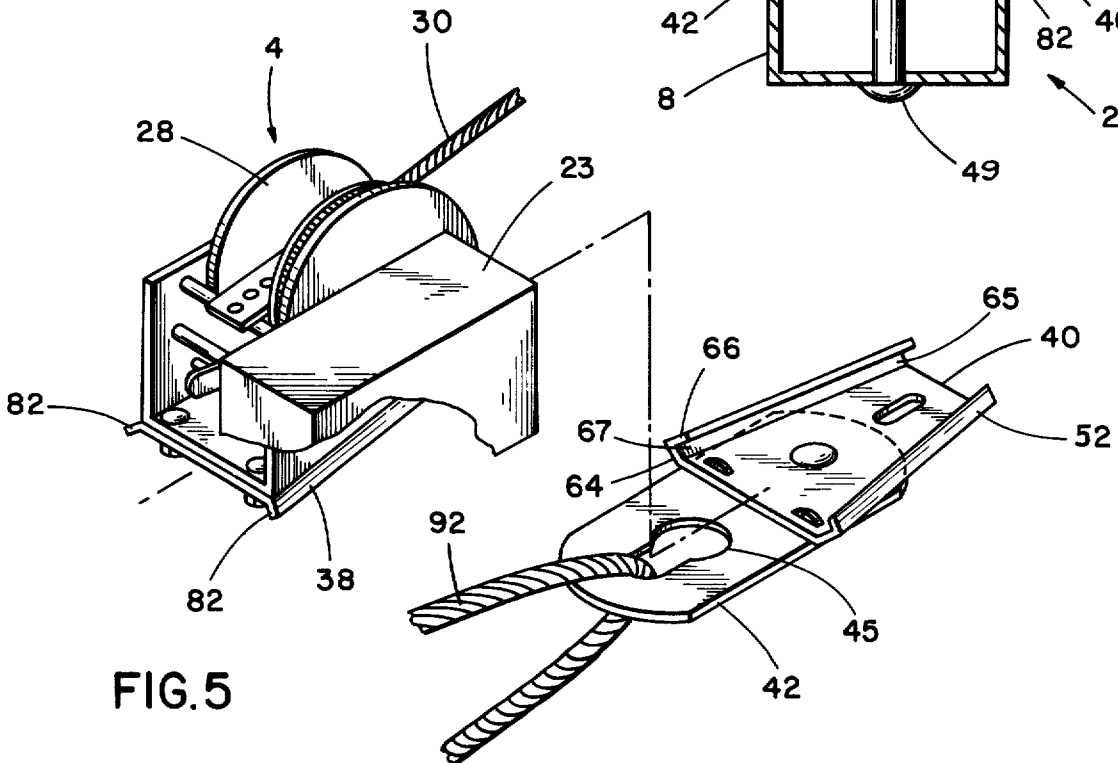


FIG. 5



WINCH MOUNT AND PLATE WITH COUPLER BALL ADAPTER

BACKGROUND OF THE INVENTION

The present invention relates generally to a mounting device and more particularly, to a device for detachably mounting a winch mechanism on a support structure.

Power-driven winches are presently available for a variety of purposes. For example, many boat trailers include a power-driven winch to facilitate the withdrawal of a boat from the water.

In most instances, the winch is fixedly and rigidly attached to a support structure. As such, use of the winch is greatly restricted. That is, the winch is, for all practical purposes, unavailable to do any alternative job or serve any alternative purpose.

In addition, a power-driven winch is a relatively expensive device and should be safely stored during periods of non-use. Where the winch is rigidly secured to the support structure, this is impossible. For example, during a boating excursion, the boat trailer and attached winch are left at the loading area. Thus, the winch is exposed to unwarranted tampering and possible damage or destruction.

SUMMARY OF THE INVENTION

In a principal aspect, the present invention is a device for detachably mounting a winch mechanism on a support structure. The device includes primarily a base member, secured to the support structure, and a winch-carrying member.

The base member includes a pair of upwardly and inwardly turned flange portions. The flange portions are angled relative to each other and converge towards one end of the base member.

The winch-carrying member includes a pair of downwardly extending edge portions. The flange portions of the base member are adapted to receive the edge portions and, upon engagement, the flange and edge portions cooperatively define means for detachably securing the winch-carrying member to the base member. More specifically, the winch-carrying member and base member interlock as the edge portions contact the flange portions.

It is thus an object of the present invention to provide a device for detachably mounting a winch mechanism to a support structure, thereby permitting alternative use and safe storage of the winch mechanism.

It is a further object of the present invention to provide a winch mounting device which is easily operated and inexpensively manufactured.

These and other objects, advantages and features of the present invention will become apparent in the following detailed description.

BRIEF DESCRIPTION OF THE DRAWING

A preferred embodiment of the present invention will be described, in detail, with reference to the drawing wherein:

FIG. 1 is a partial perspective view of a preferred embodiment of the present invention illustrating use in combination with a vehicle and boat trailer;

FIG. 2 is an enlarged, exploded perspective view of the preferred embodiment shown in FIG. 1;

FIG. 3 is an enlarged, partially cut-away side view of the preferred embodiment shown in FIG. 1;

FIG. 4 is a partial cross-sectional view of the preferred embodiment shown in FIG. 3 taken along 4—4; and

FIG. 5 is an exploded, partially cut-away perspective view of the preferred embodiment shown in FIG. 1 illustrating an alternative use of the power-driven winch mechanism.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention is shown in the drawing as a mounting device, generally designated 2, for detachably securing a winch mechanism 4 to a support structure 6. The support structure in this specific embodiment is a boat trailer, similarly designated 6, having a forwardly extending tongue 8. The boat trailer 6 is utilized to transport a boat 10. The boat trailer 6 is towed by a vehicle 12 having a hitch, generally designated 14.

As best shown in FIGS. 2 and 3, the hitch 14 includes a draft bar 16 and hitch pin 18. The draft bar 16 is rigidly fastened to the frame (not shown) of the vehicle 12, such as by welding. The hitch pin 18 includes a ball head 20 and a shaft or shank 22 affixed to the draft bar 16.

The power-driven winch mechanism 4 is a standard, battery-powered winch. Winches of this type are presently manufactured and marketed by the Dutton-Lainson Company of Hastings, Neb.

The winch 4 includes a housing, generally designated 23, a power supply 24, an operation lever 26, a directional switch 27 and a power-driven spool 28. A cable or rope 30 is wound upon the spool 28. In operation, the cable 30 is attached to the boat 10 and the spool 28 is actuated to draw the boat 10 from the water and onto the trailer 6.

Referring to FIG. 2, the bottom portion of the housing 23 defines a mounting plate 32. The mounting plate 32 includes a pair of openings 34 (only one is shown) adapted to receive mounting bolts 36.

The mounting device 2 includes a winch-carrying member 38 and a base member 40. In this preferred embodiment of the present invention, the mounting device also includes a substantially planar, plate member 42. The plate member 42 includes a pair of upwardly extending, semi-circular tabs 43 located near the sides of a central portion 44, a keyhole-shaped slot 45 at one end 46, and, opposite the keyhole-shaped slot 46, a longitudinally extending, elongated slot 47. The keyhole-shaped slot 45 is adapted to receive and engage in the hitch pin 18, thereby securing the trailer 6 to the vehicle 12.

As shown, the base member 40 and plate member 42 are rigidly secured to the tongue 8 of the trailer 6 by a bolt 48 and locking nut 49. The bolt 48 engages the vertically aligned openings 54 in the bottom and top faces of the tongue 8, the elongated slot 47 in the plate member 42 and a centrally-located opening 50 in the base member 40, placing the round head of the bolt 48 at the bottom opening of tongue 8 and the locking nut 49 at the top of base member 40.

As best shown in FIG. 2, the base member 40 includes a substantially planar, substantially trapezoidal portion 56 having a pair of angled, converging edges, generally designated 58. The edges 58 converge towards a first end 60 of the base member 40 and trapezoidal portion 56.

A pair of flange portions 52 extend upwardly and inwardly from the edges 58. More particularly, the flange portions 52 are substantially L-shaped, having a first leg section 64 extending upwardly and outwardly from the edge 58 and a second leg section 66 extending upwardly and inwardly from the first leg section 64. The leg sections 64, 66 have interior surfaces 65, 67, respectively. Extending along the edges 58, the flange portions 52 also converge towards the first end 60 of the base member 40.

The trapezoidal mounting portion 56 also includes a slot 68 and a pair of rectangularly-shaped apertures 70. The slot 68 extends longitudinally from the first end 60 towards the opening 50. The apertures 70 are opposite the first end 60 and extend transversely from the edges 58.

In an assembled state, the tabs 43 of the plate member 42 engage the apertures 70 of the base member 40. The engagement substantially strengthens the structure of the mounting device 2.

Similarly, the winch-carrying member 38 includes a substantially planar, substantially trapezoidal mounting portion 72, defining a narrow end 74. In the preferred embodiment shown, the mounting portion 72 is substantially equivalent, in size and shape, to the trapezoidal mounting portion 56 of the base member 40. The mounting portion 72 includes a longitudinally extending slot 76 near the narrow end 74 and, opposite therefrom, a pair of transversely extending slots 78.

In the assembled state, the slot 78 substantially aligns with the openings 34 in the housing 23 and thereby receives bolts 36 to secure the winch 4 to the winch-carrying member 38. The bolts 36 are threaded to engage nuts 80. As shown, the winch 4 is secured such that the power-driven spool 28 effectively draws or pulls the cable 30 from the narrow end 74 of the winch-carrying member 38 towards the slots 78.

The winch-carrying member 38 also includes a pair of edge portions 82 extending downwardly and outwardly from the converging edges 84 of the mounting portion 72. Each edge portion 82 is substantially planar, elongated and rectangular and defines an upper surface 88 and end surface 90.

As shown in FIGS. 2, 3 and 4, the L-shaped flange portions 52 of the base member 40 are adapted to receive, in the direction of arrow 86, the edge portions 82 of the winch-carrying member 38. As the narrow end 74 of the winch-carrying member 38 approaches and substantially aligns with the first end 60 of the base member 40, the upper surface 88 and end surface 90 of the edge portion 82 substantially engage the interior surface 67 of the second leg section 66 and the interior surface 65 of the first leg section 64, respectively. In this engaged state, shown in FIGS. 3 and 4, the L-shaped flange portions 52 enclose and the second leg portions 66 overlap at least part of the edge portions 82, thereby detachably securing the winch-carrying member 38 to the base member 40. As shown, the edge portions 82 and second leg sections 66 substantially align in the engaged state.

It should be noted that operation of the winch 4 can in no way work a disengagement or unlocking of the base member 40 and winch-carrying member 38. Indeed, operation of the winch 4 under heavy load conditions can only tighten the engagement of the base and winch-carrying members 40, 38.

In the engaged or interlocking state, the elongated slots 68, 76 of the base member 40 and winch-carrying member 38, respectively, substantially align. Thus, the winch-carrying member 38 can be physically locked, by means of a padlock (not shown), to the base member 40.

An alternative use of the present invention is shown in FIG. 5. A rope 92 is used to fasten the base member 40 and plate member 42 to the support structure 6 (not shown).

Utilization of the mounting device 2 permits a single use winch mechanism 4 to be readily detached from the support structure 6 and safely stored during periods of non-use. Further, where several winch mechanisms were previously used, only a single winch is now required. Base members 40 of similar design are simply fixedly attached to the various support structures 6 and the winch mechanism 4 is transported to the place of need.

A single preferred embodiment of the present invention has been described herein. It should be understood, however, that various changes and modifications can be made without departing from the true scope and spirit of the present invention, as defined by the following claims.

What I claim is:

1. A device for detachably mounting a winch mechanism to a ball hitch structure comprising, in combination:

a hitch plate including a forward slot for cooperation with the ball hitch structure;

a base member having a first end and a pair of upwardly and inwardly turned flange portions, said flange portions converging towards said first end; means for securing said base member to said hitch plate;

a winch-carrying member having a pair of downwardly extending edge portions, said flange portions being adapted to receive said edge portions, said flange and edge portions cooperating in an engaged state; and

means for securing said winch mechanism to said winch-carrying member, whereby said winch mechanism is detachably secured to said base member in said engaged state.

2. A device as claimed in claim 1 wherein said base member includes a substantially trapezoidal mounting portion defining a pair of angled edges, said flange portions joining said mounting portion along said angled edges.

3. A device as claimed in claim 1 wherein said flange portions are substantially L-shaped.

4. A device as claimed in claim 1 wherein said flange portions include a first upwardly and outwardly extending leg section and a second upwardly and inwardly extending leg section.

5. A device as claimed in claim 4 wherein said edge portions are substantially planar, downwardly and outwardly extending flanges.

6. A device as claimed in claim 5 wherein said edge portions substantially engage and align with said second leg sections of said flange portions in said engaged state, said second leg sections overlapping at least part of said edge portions to interlock said base member and said winch-carrying member.

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7. A device as claimed in claim 1 wherein said plate member includes a keyhole-shaped opening adapted to receive said ball hitch.

8. A device for detachably mounting a winch mechanism to a support structure comprising, in combination: 5
a base member having a first end and a pair of upwardly and inwardly turned substantially L-shaped flange portions, said flange portions converging towards said first end;
means for securing said base member to said support 10 structure;
a winch-carrying member having a pair of downwardly extending edge portions, said flange portions being adapted to receive said edge portions, said flange and edge portions cooperating in an engaged state; and 15
means for securing said winch mechanism to said winch-carrying member, whereby said winch mechanism is detachably secured to said support structure in said engaged state. 20

9. A device as claimed in claim 8 wherein said base member includes a substantially trapezoidal mounting portion defining a pair of angled edges, said flange portions joining said mounting portion along said angled edges. 25

10. A device for detachably mounting a winch mech-

anism to a support structure comprising, in combination:

a base member having a first end and a pair of upwardly and inwardly turned flange portions, each flange portion including a first upwardly and outwardly extending leg section and a second upwardly and inwardly extending leg section, said flange portions converging towards said first end; means for securing said base member to said support structure;

a winch-carrying member having a pair of downwardly extending edge portions, said flange portions being adapted to receive said edge portions, said flange and edge portions cooperating in an engaged state to define means for securing said winch-carrying member to said base member; and means for securing said winch mechanism to said winch-carrying member, whereby said winch mechanism is detachably secured to said support structure in said engaged state.

11. A device as claimed in claim 10 wherein said base member includes a substantially trapezoidal mounting portion defining a pair of angled edges, said flange portions joining said mounting portion along said angled edges. 25

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