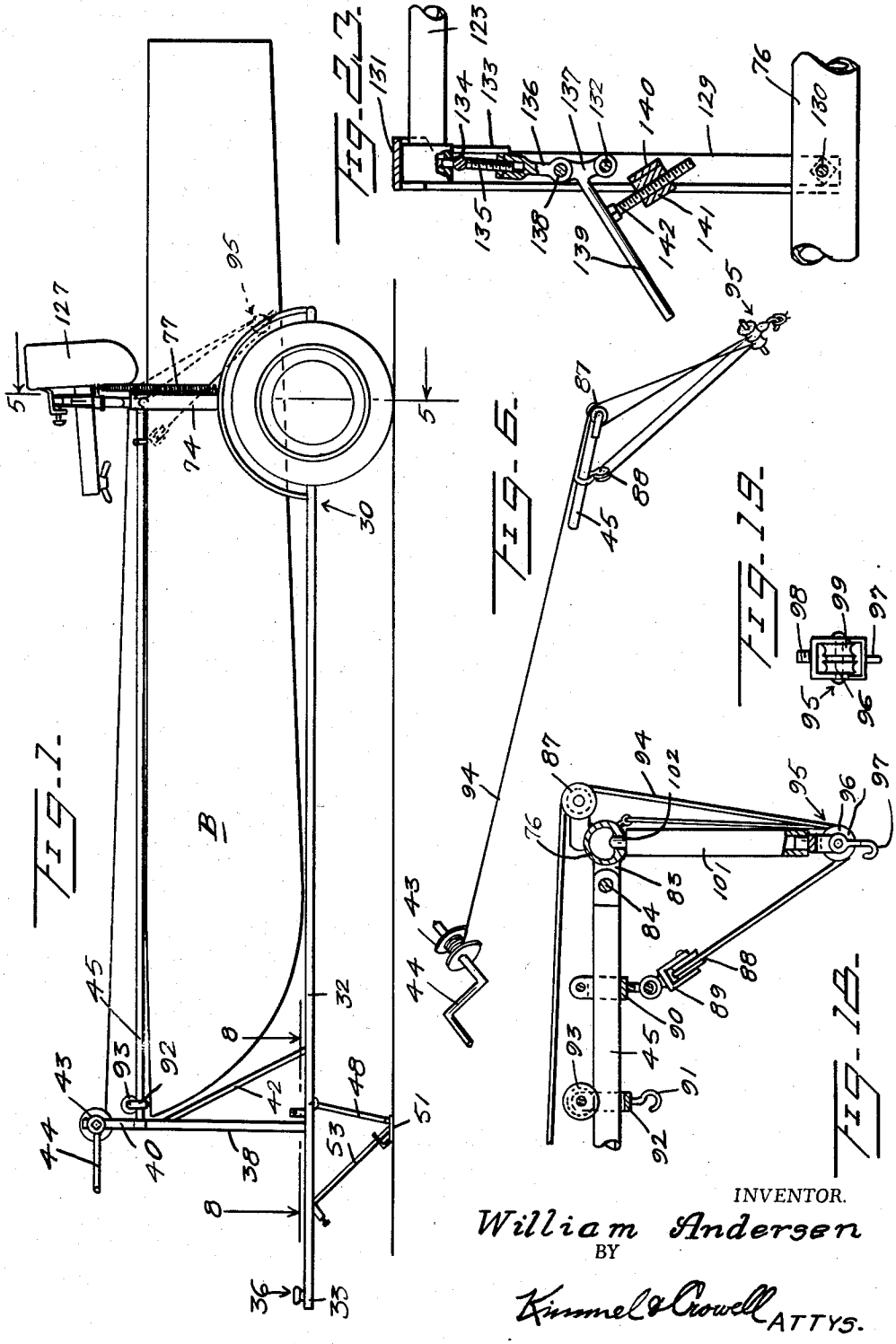
May 10, 1960 W. ANDERSEN 2,936,088

BOAT TRAILER

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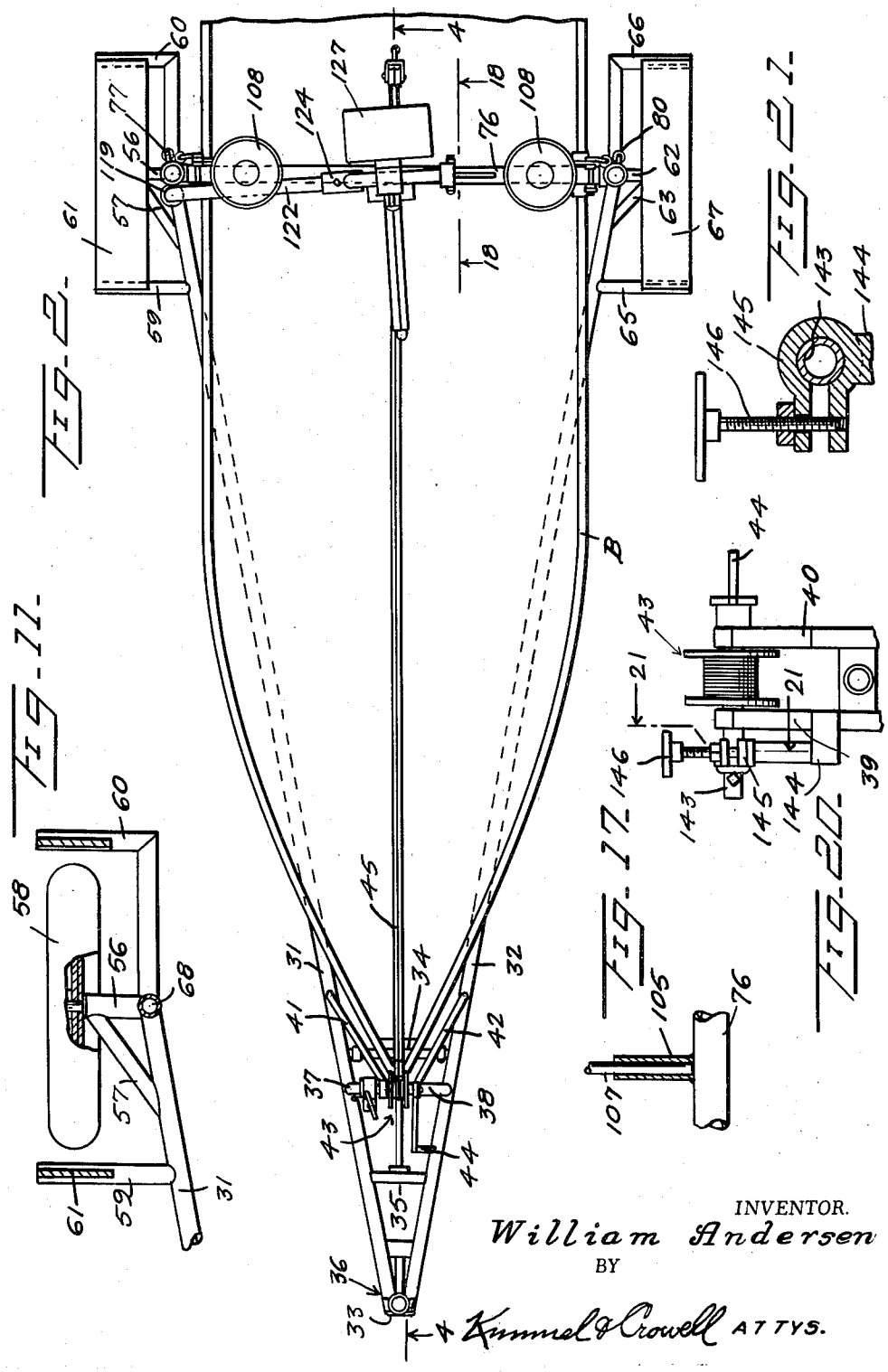


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FIG-1

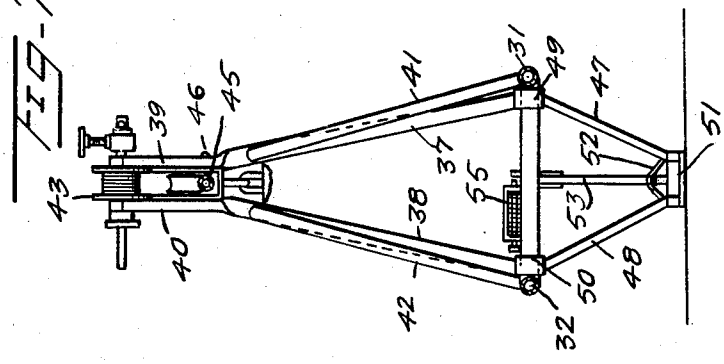


FIG-2

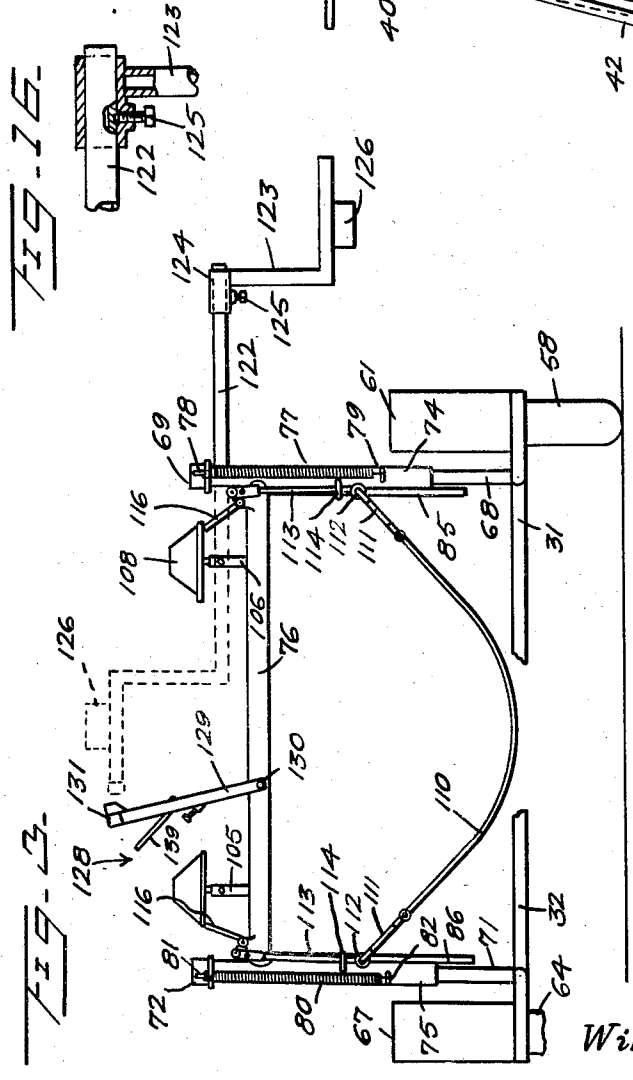
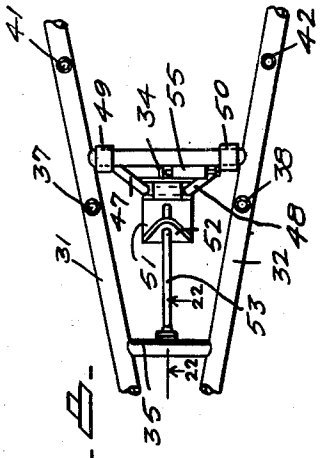


FIG-3

FIG-4



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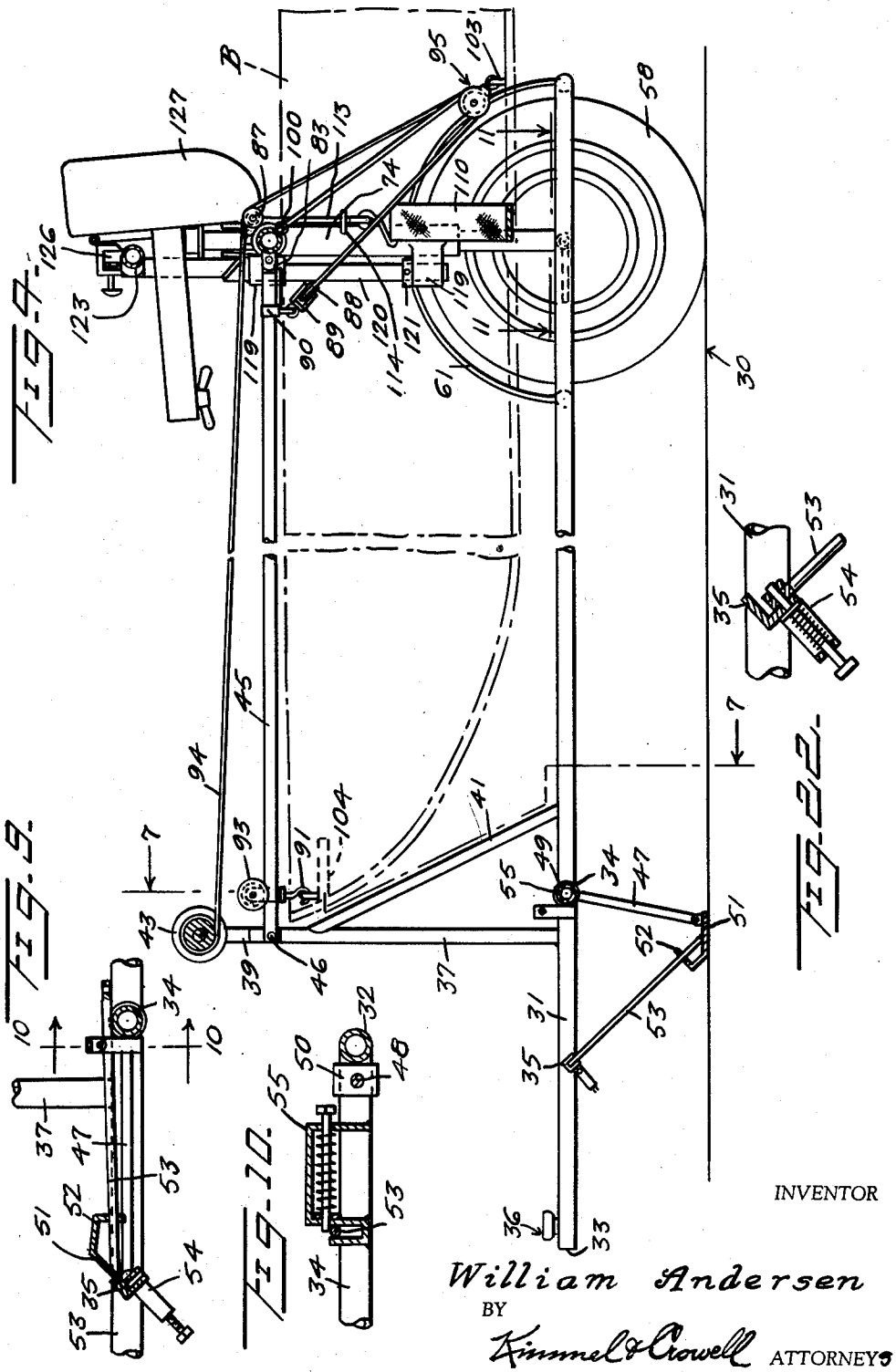


FIG. 4.

FIG. 8.

FIG. 9.

FIG. 10.

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FIG. 5.

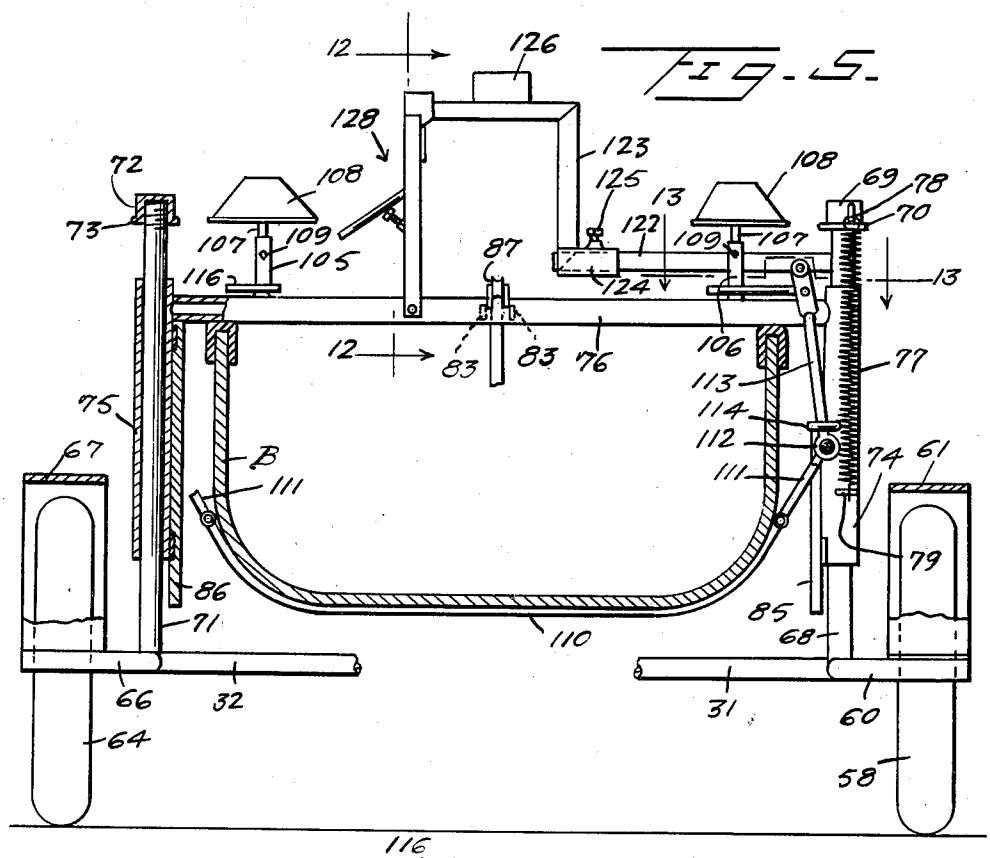


FIG. 12.

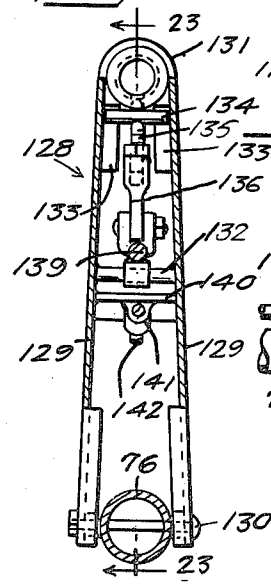


FIG. 15.

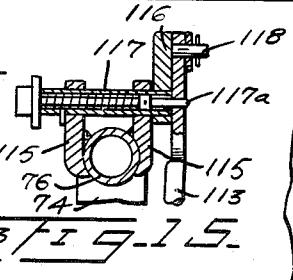


FIG. 13.

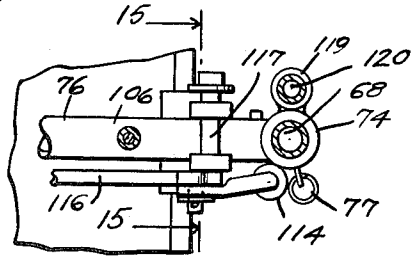
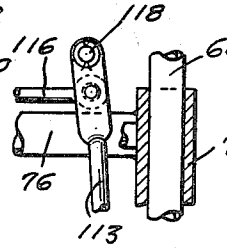


FIG. 14.



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BOAT TRAILER

William Andersen, Arcadia, Iowa

Application February 4, 1958, Serial No. 713,154

3 Claims. (Cl. 214—396)

The present invention relates to boat trailers and particularly to self-loading boat trailers.

The primary object of the invention is to provide a boat trailer in which the boat is suspended from a rigid framework.

Another object of the invention is to provide a boat trailer having means thereon for loading the boat and for suspending the boat in loaded position thereon.

A further object of the invention is to provide a boat trailer having independently sprung wheels and a longitudinally extending combined frame and carrying track.

A still further object of the invention is to provide a boat trailer of the class described above which is inexpensive to manufacture, easy to use and which can be towed behind a motor vehicle with a minimum of effort.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a side elevation of the invention with the boat in loaded position.

Figure 2 is an enlarged fragmentary top plan view of the structure shown in Figure 1.

Figure 3 is a fragmentary rear elevation of the invention with parts broken away for convenience of illustration.

Figure 4 is a longitudinal vertical cross-section taken along the line 4—4 of Figure 2, looking in the direction of the arrows.

Figure 5 is a transverse vertical cross-section taken along the line 5—5 of Figure 1, looking in the direction of the arrows, with parts omitted for convenience of illustration.

Figure 6 is a semi-diagrammatic view of the cable arrangement for the loading structure.

Figure 7 is a vertical transverse cross-section taken along the line 7—7 of Figure 4, looking in the direction of the arrows.

Figure 8 is an enlarged fragmentary horizontal cross-section taken along the line 8—8 of Figure 1, looking in the direction of the arrows.

Figure 9 is an enlarged fragmentary detail section similar to Figure 4, illustrating the raised position of the stand.

Figure 10 is an enlarged fragmentary transverse vertical cross-section taken along the line 10—10 of Figure 9, looking in the direction of the arrows.

Figure 11 is an enlarged fragmentary horizontal cross-section taken along the line 11—11 of Figure 4, looking in the direction of the arrows.

Figure 12 is an enlarged fragmentary vertical cross-section taken along the line 12—12 of Figure 5, looking in the direction of the arrows.

Figure 13 is an enlarged fragmentary horizontal cross-section taken along the line 13—13 of Figure 5, looking in the direction of the arrows.

Figure 14 is an enlarged end elevation shown partly in section and partly broken away for convenience of illustration.

Figure 15 is an enlarged vertical fragmentary cross-section taken along the line 15—15 of Figure 13, looking in the direction of the arrows.

Figure 16 is an enlarged fragmentary sectional view of the motor mount swivel.

Figure 17 is an enlarged rear elevational detail of the anchor mount.

Figure 18 is an enlarged fragmentary longitudinal cross-section taken along the line 18—18 of Figure 2, looking in the direction of the arrows.

Figure 19 is an enlarged rear elevational view of the lifting block.

Figure 20 is an enlarged fragmentary end elevation of the winch.

Figure 21 is an enlarged fragmentary vertical section taken on the line 21—21 of Figure 20, looking in the direction of the arrows.

Figure 22 is an enlarged fragmentary vertical section taken on the line 22—22 of Figure 8, looking in the direction of the arrows.

Figure 23 is a fragmentary vertical sectional view taken on the line 23—23 of Figure 12, looking in the direction of the arrows.

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures, the reference numeral 30 indicates generally the boat trailer constructed in accordance with the invention.

The boat trailer 30 is provided with a pair of elongated horizontal rearwardly diverging frame members 31, 32. The frame members 31, 32 are formed of tubular material and are secured together at their forward ends 33. A tubular transverse cross member 34 extends between and is secured to the frame members 31, 32 adjacent to but spaced rearwardly from their forward ends 33. A V-shaped transverse cross member 35 extends between the frame members 31, 32 parallel to the cross member 34 and intermediate the cross member 34 and the forward ends 33 of the frame members 31, 32.

A trailer hitch indicated generally at 36 is secured to the frame members 31, 32 at their forward ends 33 for attaching the trailer 30 to an automotive vehicle.

A pair of tubular posts 37, 38 have their lower ends secured to the frame members 31, 32 respectively, and extend upwardly therefrom in converging relation. The posts 37, 38 are provided with substantially parallel upper end portions 39, 40 respectively. Rearwardly sloping braces 41, 42 are secured respectively between the frame member 31 and post 37 and the frame member 32 and post 38 to secure the posts 37, 38 in upright position.

A cable winch 43 is journalled between the parallel end portions 39, 40 at the upper end thereof and is provided with a hand crank 44 for reasons to be assigned.

An elongated tubular boom 45 has the forward end thereof secured between the parallel portions 39, 40 by means of a pivot pin 46 to permit vertical swinging movement of the boom 45. The boom 45 extends rearwardly from the pivot 46 in a generally horizontal plane.

A pair of downwardly converging standards 47, 48 have their upper ends carried by journal bearings 49, 50 respectively, mounted on opposite ends of the cross member 34 and their lower ends pivotally secured to a foot 51 having a flange 52 secured on the forward end thereof. A rod 53 engages through and is fixed to the flange 52 at one end and engages within the V-shaped cross member 35 at the other end as illustrated in Figure 4. The rod 53 is detachably secured to the cross member 35 by a resilient clamp 54 and prevents the foot 51 from moving so that the standards 47, 48 support the frame members 31, 32 in a generally horizontal plane. A clamp 55 is secured to the cross member 34 and the rod 53 is clamped therein as illustrated in Figures 9 and 10 when the standards 47, 48 are swung upwardly to their

collapsed position. The rod 53 as can be seen in Figure 9 and the foot 51 engage within the cross member 35 and support the standards 47, 48 in their raised position.

The rear end of the frame member 31 is provided with a laterally extending horizontal stub axle 56 braced by a diagonally extending member 57. A ground engaging wheel 58 is journalled on the sub axle 56 to support the frame member 31. Brackets 59 and 60 extend laterally from the frame member 31 on each side of the wheel 58 supporting a fender 61 overlying the wheel 58.

The frame member 32 is provided at the rear end thereof with a laterally extending stub axle 62 secured in position by a forwardly diagonally extending brace member 63. A wheel 64 is journalled on the stub axle 62 to support the frame member 32. Laterally extending braces 65, 66 are secured to the frame member 32 and project on opposite sides of the wheel 64 to support a fender 67 overlying the wheel 64. The stub axles 56, 62 are arranged in axial alignment perpendicular to a centerline between the frame members 31, 32.

A tubular standard 68 is welded at its lower end to the frame member 31 at its junction with stub axle 56 and extends perpendicularly upwardly therefrom. The standard 68 has a cap 69 threaded on the upper end thereof and provided with an annular flange 70. A tubular standard 71 has its lower end welded to the frame member 32 at the juncture thereof with the stub axle 62 and extends perpendicularly upwardly therefrom in parallel relation to the standard 68. A cap 72 is threaded on the upper end of the standard 71 and is provided with an annular flange 73 thereon.

A tubular sleeve 74 is telescoped over the standard 68 and arranged thereon for vertical reciprocation. A tubular sleeve 75 is telescoped over the standard 71 and is arranged thereon for vertical reciprocation. A tubular cross member 76 has its opposite ends welded to the upper end portions of the sleeves 74, 75, respectively.

A tension coil spring 77 has its upper end secured to the flange 70 at 78 and its lower end secured to the lower end portion of the sleeve 74 at 79. A tension coil spring 80 has its upper end secured to the flange 73 at 81 and its lower end secured to the lower end portion of the sleeve 75 at 82. The springs 77 and 80 support the sleeves 74, 75 from the standards 68, 71, as is seen in Figure 3.

The rear end of the boom 45 is secured between a pair of ears 83 centrally positioned on the cross member 76 by means of a pivot pin 84. A pair of wood wear plates 85, 86 are secured respectively to the sleeves 74, 75 in opposed parallel facing relation to engage the sides of a boat 87 being loaded on the trailer 30 to prevent injury thereto.

A V-pulley 87 is secured centrally on the cross member 76 slightly above and slightly to the rear thereof for reasons to be assigned. A V-pulley 88 is journalled in a swivel block 89 and secured to the boom 45 at the rear end portion thereof by a clamp 90. A hook 91 is mounted in a yoke 92 swung beneath the boom 45 on a trolley roller 93 engaged on the boom 45 and adapted for longitudinal movement therealong.

A cable 94 is wound on the winch 43 and extends rearwardly therefrom over the pulley 87. A double pulley block 95 has one pulley 96 thereof engaged over the cable 94 and is provided with a hook 97 depending therefrom and an upstanding stub shaft 98 extending oppositely of the hook 97. The block 95 has a second pulley 99 arranged parallel to the pulley 96. The cable 94 on leaving the V-pulley 96 is trained over the V-pulley 88 in the block 89. On leaving the pulley 88 the cable 94 is trained over the pulley 99 and has its end secured centrally to the cross member 76 at 100. In Figure 18, a tubular spacer bar 101 is illustrated for holding the block 95 when the trailer 30 is operated without a boat thereon. The bar 101 has a pin 102 extending axially from its upper end and engaging in an opening in the center portion of the underside of the cross member 76. The bar 101 is tubular and the stub shaft 98 on the block 95 engages in the lower end thereof to maintain the block 95 in spaced relation with respect to the cross member 76 to prevent the cable 94 from becoming entangled. The hook 97 on the block 95 engages an eye 103 in the boat B for loading the boat B on the trailer 30. The hook 91 engages a ring 104 in the boat B at the bow thereof so as to support the bow of the boat B on the boom 45.

The cross member 76 at the opposite ends thereof is provided with a pair of upstanding tubular socket members 105, 106 to receive the shanks 107 of anchors 108. Set screws 109 lock the shanks 107 in the sockets 105, 106.

A sling 110 is arranged for engagement beneath the boat B and is provided at each end with a buckle 111 for engagement with an eye 112 formed on the lower end of a vertical rod 113. A guide eye 114 is secured to the sleeve 74 and a second guide eye 114 is secured to the sleeve 75 with the rod 113 being vertically slidably engaged therein. The cross member 76 is provided with a pair of spaced parallel ears 115 adjacent the opposite ends thereof and has a bell crank hand lever 116 journalled therein for swinging movement about a longitudinally extending horizontal shaft 117. The upper end of the rod 113 is pivotally connected at 118 to the free end of the bell crank hand lever 116 so as to be raised and lowered upon pivotal movement of the bell crank hand lever 116. It should be noted, wtih particular reference to Figure 14, that the pivot 117 is hollow and has a spring pressed slide bolt 117*a* mounted therein for locking engagement with the upper end of the rod 113 when in its raised position.

A pair of vertically spaced sleeve bearings 119 are welded in axial alignment to the sleeve 74 forwardly thereof. A tubular shaft 120 is journalled in the bearings 119 and provided with a collar 121 engaging one of the bearings 119 to limit the vertical movement of the tubular shaft 120 with respect to the bearings 119. The shaft 120 has a perpendicularly offset tubular arm 122 secured to the upper end thereof. An L-shaped motor bracket 123 is fixed to a tubular sleeve 124 engaged over the offset portion 122. The sleeve 124 is arranged for rotary movement with respect to the offset portion 122 and has a set screw 125 engaging the offset portion 122 to fix the sleeve 124 to the offset portion 122. A block 126 is secured to the L-shaped bracket 123 to receive the clamping bolts of an outboard motor 127.

A clamp generally indicated at 128 is provided for locking the bracket 123 in overlying position with respect to the cross member 76. The clamp 128 comprises a pair of links 129 pivotally secured on opposite sides of the cross member 76 by a pivot bolt 130 engaging through their lower ends and having the upper ends thereof rigidly connected by a semi-cylindrical bight 131.

A shaft 132 extends between and is secured to the links 129 intermediate the opposite ends thereof, a pair of guide plates 133 are secured in upright relation to the links 129 and a clamp 134 engages between the links 129 and the guide plates 133 for vertical sliding movement toward the bight 131. A threaded shaft 135 is integrally formed on the clamp 134 and has an arm 136 threaded thereon. A lever 137 is journalled on the shaft 132 and has the upper end thereof pivotally connected to the arm 136 at 138. A handle 139 is fixed to the lever 137 and extends outwardly therefrom. A plate 140 secured between the links 129 has a threaded boss 141 mounted thereon with an adjustable stop screw 142 threaded through the boss 141. The handle 139 engages the stop screw 142 to limit the movement of the lever 137 past dead center so that the clamp 134 can be locked against the bracket 123 by movement of the handle 139.

The winch 43 is fixed to a shaft 143 journalled in the uprights 39 and 40. A brake bracket 144 is fixed to the upright 39 and has a split brake sleeve 145 fixed to the

upper end thereof encompassing the shaft 143. A locking screw 146 is mounted in the brake sleeve 145 to compress the sleeve 145 into braking engagement with the shaft 143 locking the winch 43 against rotation when desired.

In the use and operation of the invention, the trailer 30 is backed to a loading point with the wheels 58, 64 extending a short way into the water in which the boat B is floating. The ring 104 in the bow of the boat B is engaged with the hook 91 and the cable 94 is pulled from the winch 43 to permit the hook 97 to be engaged with the eye 103 rearwardly of the center of the boat B. The winch 43 is then operated by means of the handle 44 drawing the cable 94 inwardly thereon thus pulling the block 95 toward the cross member 76. The initial movement of the boat B will be longitudinally forwardly and the wear plates 85, 86 will protect the boat B should any mis-alignment exist. When the bow of the boat engages the posts 37, 38 forward motion of the boat ceases and continued operation of the winch 43 will cause the block 95 to lift the boat B so that the gunnel thereof engages the cross member 76.

The sling 110 is then positioned beneath the boat and the buckles 111 engage with the eyes 112 on the rods 113. The bell crank hand lever 116 is then operated to pull the sling 110 into tight engagement with the bottom of the boat B binding the boat B against the transverse cross member 76. With the L-shaped bracket 123 in the position illustrated in solid lines in Figure 3, the outboard motor 127 is clamped to the block 126 and the L-shaped bracket 123 is inverted on the shaft 122 and set screw 125 locked to hold the bracket 123 upright. The shaft 122 is then rotated to its dotted line position, as illustrated in Figure 3, and the clamp 128 is applied thereto locking it in position for movement.

When traveling with the trailer 30 with the boat B unloaded therefrom, the block 95 is maintained in spaced relation with respect to the boom 45 by means of the spacer 101 as illustrated in Figure 18.

It should be understood that suitable lights, tag brackets, brakes and other accessories may be provided on the trailer 30 when desired or required.

Having thus described the preferred embodiment of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A boat trailer comprising a pair of rearwardly diverging horizontal frame members secured together at their forward ends, a trailer hitch secured to the forward ends of said frame members, mean journalling a ground engaging wheel to the rear end portion of each of the frame members with said wheels arranged in axial alignment, a standard secured to said frame members adjacent to but spaced rearwardly from said hitch, a transverse cross member positioned substantially above said frame members parallel to and overlying the axis of said wheels, means supporting the opposite ends of said transverse cross member for vertical sliding movement in relation to the horizontal plane of said frame members, said means including a pair of spaced parallel upright posts secured to said frame members adjacent said wheels, a pair of sleeves respectively mounted on said posts for vertical sliding movement thereon, said transverse cross member having its opposite ends rigidly secured to said sleeves, and resilient means having one end secured to the upper end of each of said posts and the lower end respectively connected to the lower end portion of said sleeves, a generally horizontal elongated boom pivotally secured centrally on said cross member, transverse pivot means securing the forward end of said boom to said standard in spaced relation above said frame members, a winch mounted on the upper end of said standard above said boom, a cable wound on said winch and extending rearwardly therefrom, a trolley mounted for longitudinal movement on said boom for supporting the forward end of a boat, said cable passing over said cross member, and means on said cable for detachably connecting said cable to the rear end portion of a boat whereby upon initial actuation of said winch said boat is moved longitudinally forwardly of said frame members and upon continued actuation of said winch the rear end of said boat is raised into suspended relation beneath said transverse cross member with the boat in its foremost position with respect to said trailer.

2. A device as claimed in claim 1 wherein suspended means are provided on said cross member for securing said boat in contact therewith.

3. A device as claimed in claim 2 wherein said suspended means for securing a boat in contact with said cross member includes a suspension sling engaged beneath the boat and means on said cross member for drawing said sling upwardly with respect thereto, said last-mentioned means comprising a vertical rod having an eye formed on the lower end thereof for engagement with a buckle on said sling positioned adjacent each of said sleeves, a guide eye on each of said sleeves for slidably receiving said rods, a pair of spaced parallel ears mounted on said cross member adjacent the opposite ends thereof, a bell crank lever including a horizontally disposed hollow shaft journalled in each pair of ears, an upper end of each rod connected to its respective bell crank lever, and a spring pressed bolt mounted in each of said shafts for locking engagement with the upper end of each rod when each rod is in raised position.

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