

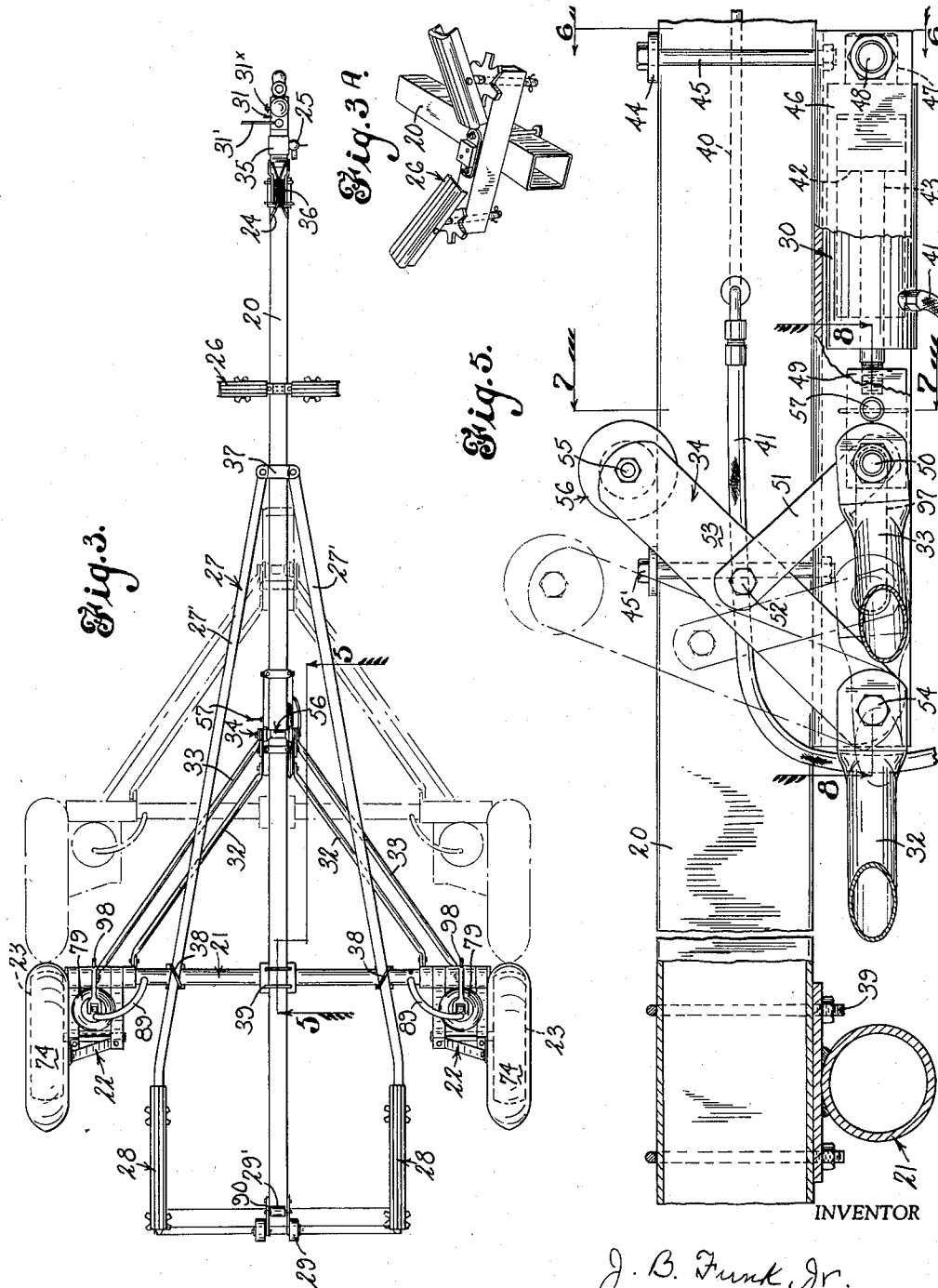
May 24, 1960

J. B. FUNK, JR
BOAT-CARRYING TRAILER

2,937,775

Filed May 24, 1957

5 Sheets-Sheet 2



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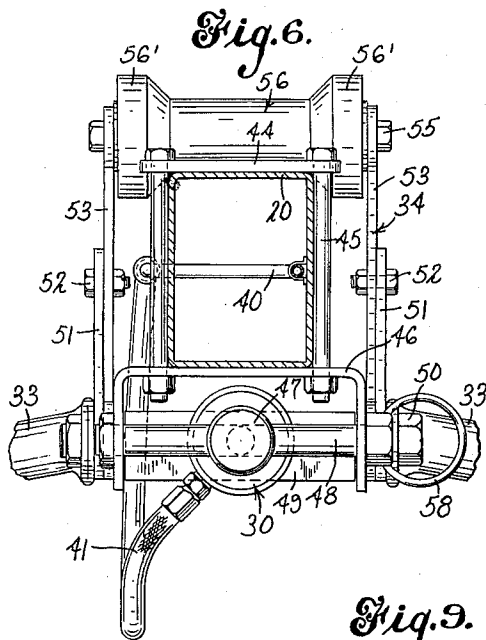
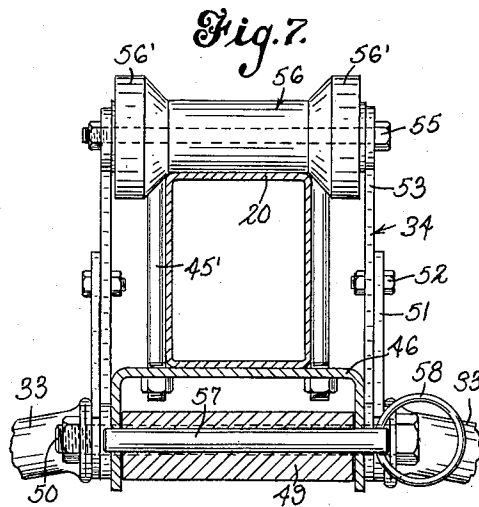
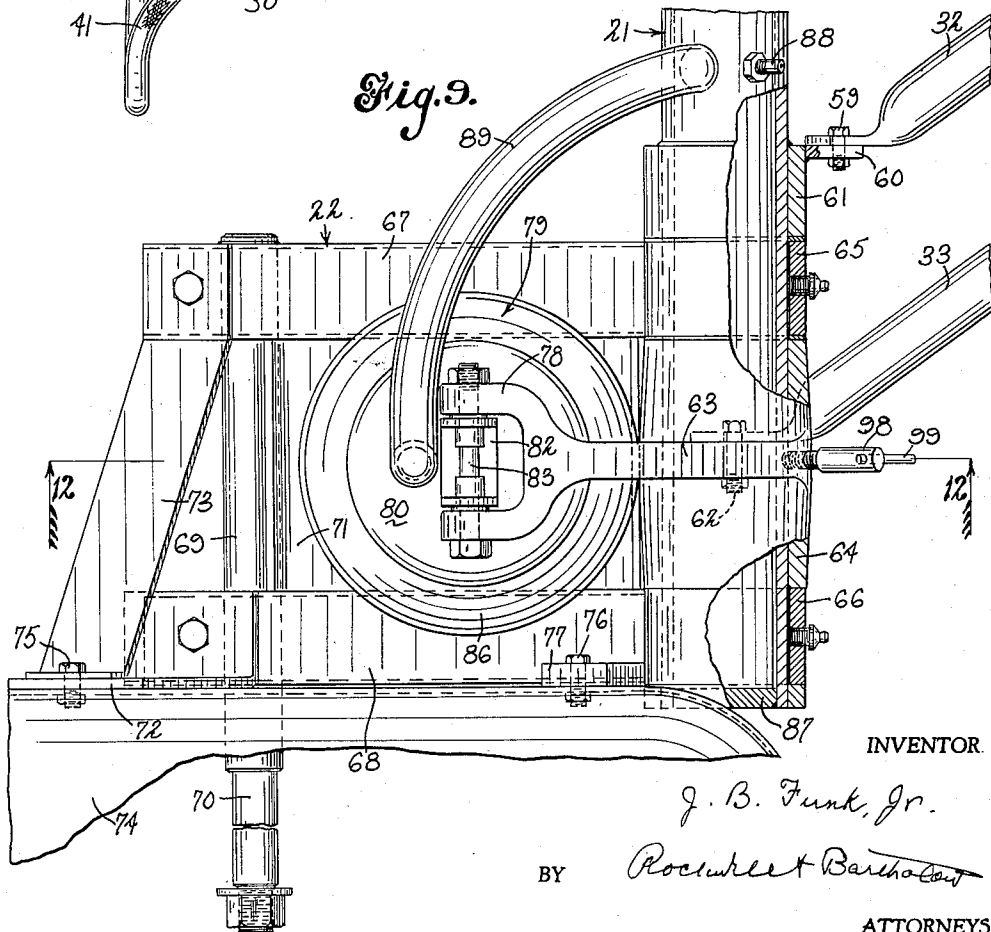
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5 Sheets-Sheet 3



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May 24, 1960

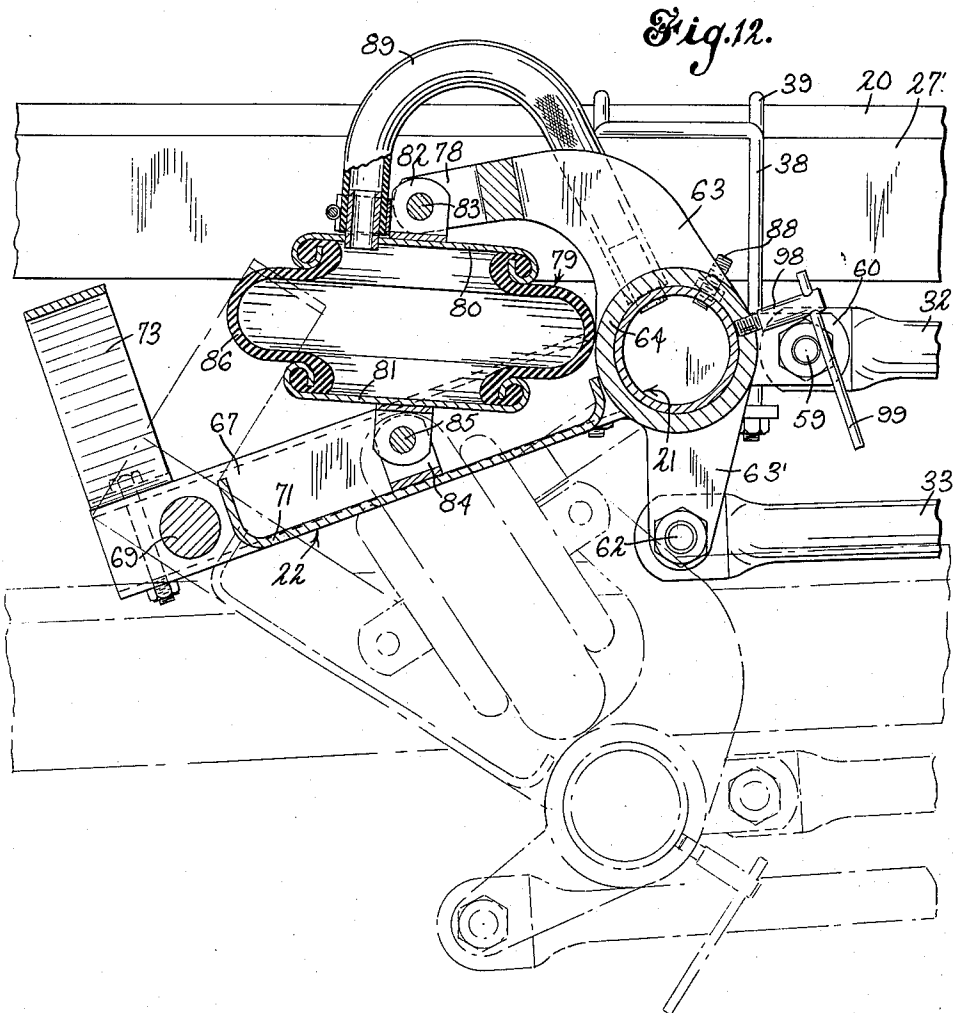
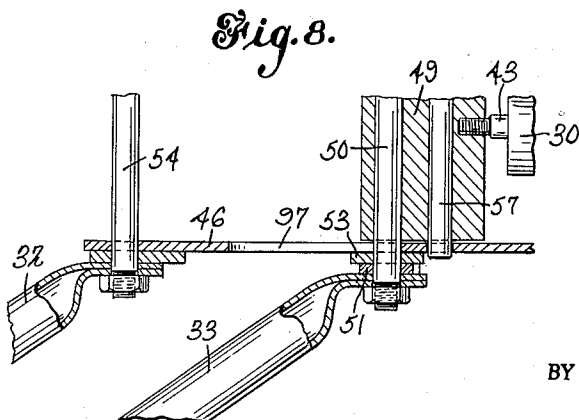
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BOAT-CARRYING TRAILER

Filed May 24, 1957

5 Sheets-Sheet 4



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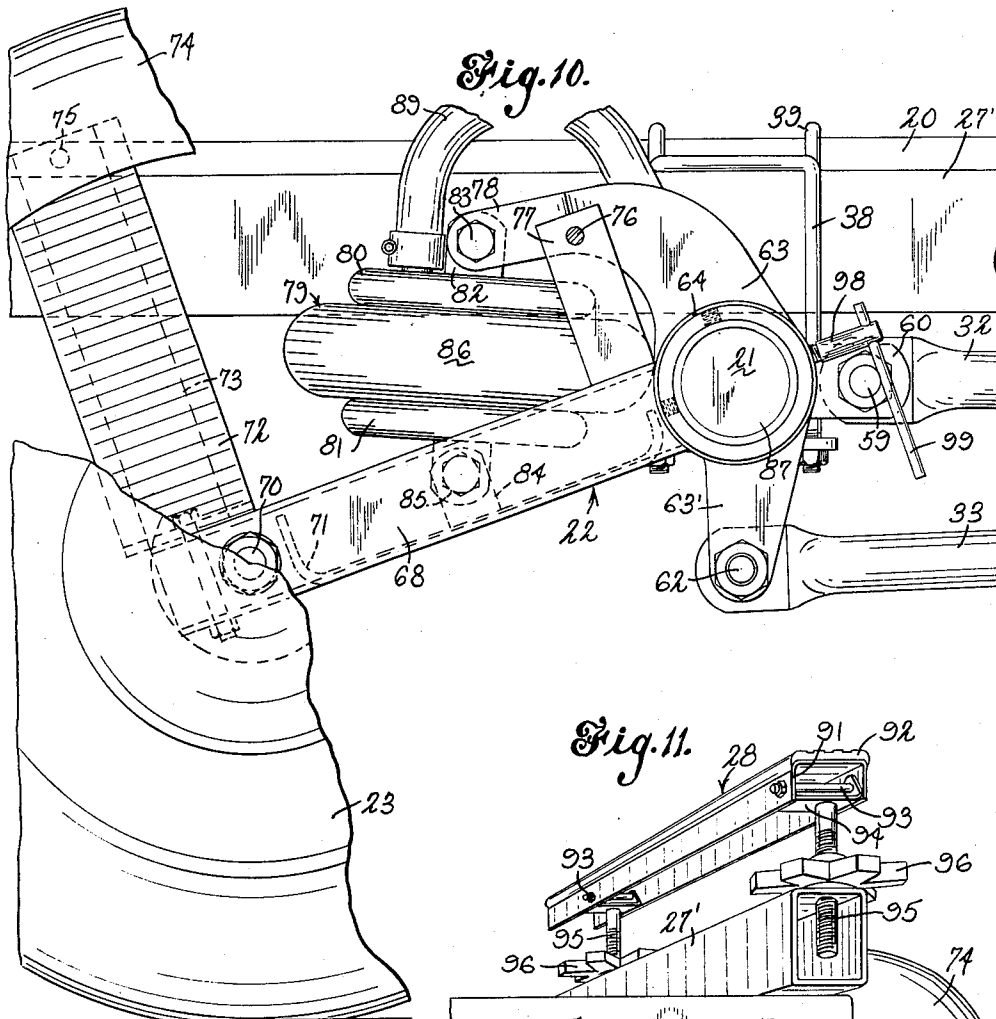
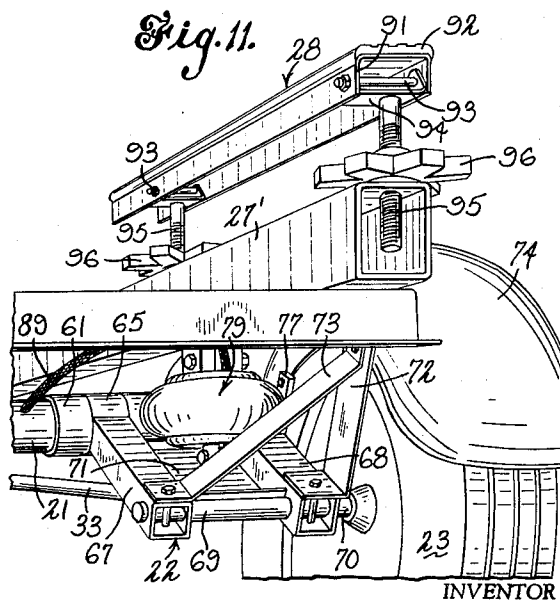
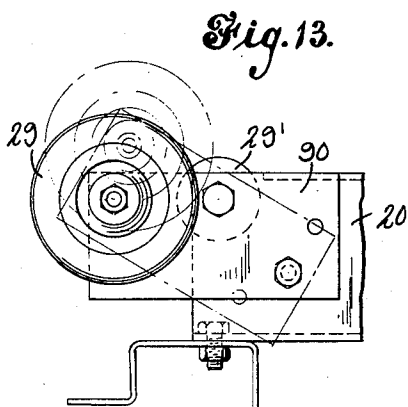
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BOAT-CARRYING TRAILER

2,937,775

Filed May 24, 1957

5 Sheets-Sheet 5



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2,937,775

BOAT-CARRYING TRAILER

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Filed May 24, 1957, Ser. No. 661,373

4 Claims. (Cl. 214—505)

This invention relates to boat-carrying trailers, and more particularly to those of the type in which a longitudinal member in the form of a tongue or beam, equipped with supports engaging the bottom of the boat hull adjacent the bow and stern, respectively, is provided with a pair of ground wheels adjacent the rear end of the beam so mounted that the rear end of the beam can be lowered for launching.

An object of the invention is to overcome objections to trailers which are now in use and provide a strong, durable trailer that will withstand rough usage and will enable the trailer, in the operations of transporting the boat and launching and retrieving it, to be operated and controlled with maximum facility and convenience.

Another object is to provide improved power mechanism for raising the bed or beam from launching to traveling position, and for facilitating launching by engaging and lifting the hull at its lower surface between forward and rear supports used in transporting the boat.

Another purpose of the invention is to provide an improved device for raising the rear end of the beam by power, and an improved mechanism, operated by power, for lifting the hull preliminary to sliding it into the water.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and pointed out in the following claims.

In the accompanying drawings:

Fig. 1 is a side elevation of a trailer embodying the invention, the same being shown in transporting position, with one of the wheels omitted;

Fig. 2 is a similar view showing the frame in a lowered position for launching;

Fig. 3 is a plan view showing the trailer in boat-carrying position;

Fig. 3A is a fragmentary view showing in perspective the forward hull support or cradle;

Fig. 4 is a section on line 4—4 of Fig. 1;

Fig. 5 is a section on line 5—5 of Fig. 3;

Fig. 6 is a section on line 6—6 of Fig. 5;

Fig. 7 is a section on line 7—7 of Fig. 5;

Fig. 8 is a section on line 8—8 of Fig. 5;

Fig. 9 is a plan view of one of the wheel supporting frames, partly broken away, the wheel being omitted, the wheel axle being in traveling position;

Fig. 10 is a side elevation of the structure shown in Fig. 9, a part of the wheel being shown and the parts being in the traveling position;

Fig. 11 is a perspective view from the rear end of the trailer showing one of the wheeled supporting frames and the wheel mounted thereon;

Fig. 12 is a vertical section of parts disclosed in Fig. 10, the lowered position of the frame being shown by broken lines; and

Fig. 13 is a detail elevation showing the roller device at the rear end of the trailer.

In the trailer shown in the drawings, the structure comprises a longitudinal tongue or beam from which the

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boat is supported by means of supports or cradles engaging the bottom of the hull adjacent the bow and stern. Adjacent the rear portion is a cross tube extending in a transverse direction to support the beam and supported at the ends by ground-engaging wheels, the wheel axles and the cross tube being interconnected by trailing wheel frames in pivotal and locking relationship to the beam, such that the beam can be held substantially horizontally for transporting the boat, and such that when the wheel frames are unlocked the beam can be dropped to a boat-launching position. In association with the wheel frames are air springs, as hereinafter described, which cushion the vehicle body as it moves over the road.

The forward support or cradle for the hull is located slightly rearwardly of a bow chock at the forward end of the beam, and this bow cradle is transverse to and supported wholly on the beam. Rearwardly of this cradle the beam supports a tapering frame having side members which diverge rearwardly, the rear portions of these members resting upon the cross tube and being fixed thereto. These side members continue to diverge for a distance rearwardly beyond the cross tube, but the rear end portions of these members are substantially parallel to each other and serve to provide a wide cradle for the stern portion of the boat, as hereinafter described. At the rear end of the frame providing this stern cradle is a cross member interconnecting the side members, and adjacent the rear extremity of the beam upon which this cross member is supported is a roller device upon which the hull is adapted to slide in being launched.

For the purpose of providing a power device for the trailer adapted to serve the purposes above mentioned, a hydraulic jack is mounted on and under the beam in a location between the cross tube and the forward cradle, the jack being supplied with hydraulic fluid by connections with a pump at the forward end of the beam. The cross tube with which the wheel frames are associated serves as a support for and is connected to the diverging side members of the stern-supporting frame member previously mentioned, and for maintaining the cross tube and the beam at right angles to each other drag struts diverging rearwardly from the middle portion of the beam are appropriately connected to the cross tube. Additional drag struts placed alongside the drag struts just mentioned are connected at their forward ends to the hydraulic jack and at their rear ends to parts of the wheel frames so that the rear end of the hull-supporting frame can be lifted by power. Provisions are made also for utilizing the hydraulic jack in engaging the hull bottom and lifting it from the forward and rear cradles to facilitate launching, as hereinafter described.

In the drawings, the longitudinal beam is shown at 20, the transverse member, shown as a cross tube, at 21, the pivoted wheel frames at 22, the wheels at 23, the bow chock on the beam at 24, a dolly supporting the forward end of the beam at 25, the bow cradle at 26, the forwardly tapering frame providing the stern cradle at 27, the stern cradle at 28, the bottom-engaging roller device at the rear end of the beam at 29, the hydraulic jack mounted beneath the beam at 30, the pump for pumping the hydraulic jack at 31, the fixed drag struts extending between the beam and the cross tube at 32, the struts or rod members operable from the jack for raising the wheeled frames at 33, and the hull-engaging lifting device operably connected to the jack at 34.

The beam 20 is a hollow member of box-shaped cross section, and the bow chock 24 is carried by a post-like support 35, the lower end of which is mounted on the forward extremity of the beam in a manner such that said support is adjustable lengthwise of the beam. The support 35 also carries a hand-operated winch 36 by

means of which the boat can be drawn into the transporting position. The member supporting the winch on the post is adjustable vertically, and this is true of the bow chock also.

The bow cradle 26 is a narrow transverse cradle adapted to engage the hull bottom near the stem and this comprises pivoted members swingable in a vertical plane and adapted to be conformed to the hull. This cradle is shown in Fig. 3A and in its structure there is some similarity to the stern cradle 28, as will be mentioned hereinafter.

The stern-supporting frame 27 tapers forwardly, as shown in Fig. 3, the side members 27' thereof being joined to a clamp member 37 embracing the beam and adjustable along the beam. The hollow side members 27' of rectangular cross section extend over the cross tube and are clamped thereto in an adjustable manner by clamping devices 38, enabling the cross tube to be adjusted longitudinally of the beam 20, said clamping devices including lower plates clamped to the cross tube and arranged as shown in Figs. 3 and 4, with U-shaped clamping bolts embracing the side members 27', as shown in Fig. 4. A similar clamping device 39 connects the cross tube 21 with the beam in an adjustable manner, the cross tube being welded to an upper clamping plate. By the arrangements just described the cross tube supported by the ground wheels can be adjusted lengthwise of the beam to a position such as that shown, for example, by the broken lines in Fig. 3, this being for the purpose of accommodating the trailer to hulls of different lengths.

The pump 31 having an operating lever 31' can pump hydraulic fluid to the jack 30 by way of a conduit 40 extending rearwardly through the hollow beam to a point located above the jack where this interior conduit is joined to an external flexible conduit 41. This flexible conduit depends from the beam in loop form, as shown in Fig. 1, the other extremity of the loop being connected to the cylinder of the jack at the forward part of the cylinder, as shown in Fig. 5. The flexible conduit 41 is of such length that the jack, along with the cross tube and its associated parts, may be shifted lengthwise of the trailer frame to different positions, as previously mentioned. Within the jack cylinder is a forwardly located piston head 42 fixed to a rearwardly directed piston rod or ram 43, the rear end of which extends through the rearward head of the cylinder, as shown in Fig. 5.

At the forward end of the jack cylinder, the latter is supported from the beam by a plate 44 extended across the top of the beam and bolts 45 extended downwardly from the plate 44 at the sides of the beam, the lower ends of bolts 45 being connected to a downwardly facing channel member 46 located under the beam in the manner shown in Fig. 6. The lower ends of the bolts 45 are provided with nuts by means of which the channel 46 is held in place in a manner to permit longitudinal adjustment of the channel member. Within the channel member is a forward extension 47 from the cylinder of the jack, said extension having a horizontal bore in which is disposed a holding bolt 48 mounting the forward end of the cylinder within the channel member. By loosening the nuts on the bolts 45, the position of the jack lengthwise of the beam can be adjusted. At the rearward end of the cylinder the outwardly extended end of the ram 43 is screwed into a block 49 located within and extending across the channel member 46, and this block has pivoted to it by means of a bolt 50 short links 51 extended upwardly from the sides of the channel member 46, as shown in Figs. 5 and 7. The upper ends of these links are pivoted by means of short bolts 52 to upwardly extending pivoted arms or levers 53, the lower ends of which are pivoted by a bolt 54 to the sides of the channel member 46. The bolt 54 also extends through the forward extremities of the drag struts 32, the arrangement

being such that these drag struts are in fixed relationship to the channel member and the parts carried thereby. At the upper ends of the arms 53, the latter are interconnected by a bolt 55 providing a bearing for a keel-engaging roller 56. As shown in Fig. 7, this roller 56 has a cylindrical body adapted to conform to the upper surface of the beam, and it has end portions 56' of enlarged diameter. The body portion of the roller is intended to engage the keel edge and preferably the roller has the contour shown in Fig. 7, with inclined surfaces between the cylindrical surfaces presented by the middle portion and the end portions of the roller.

The bolt 50 mentioned above not only pivots the links 51 with respect to block 49 but serves to pivot to the beam structure the forward extremities of the struts 33, which struts have a function in connection with the raising and lowering of the wheeled frames 22.

It will be noted from Fig. 5 that in a location somewhat rearwardly of the pivot bolt 50, additional bolts 45', similar to bolts 45, are employed for supporting the channel member 46 from the beam, these bolts being somewhat forwardly of the rear end of the channel member. It will be evident that the channel member serves as a longitudinally adjustable support or carrier for the jack and the parts connected to the outward end of the ram, i.e., the block 49, the pivoted links 51 and arms 53, and the forward extremities of the struts 32, 33. In the position shown in Fig. 5 in full lines, the roller 56 is in contact with the upper surface of the beam, the jack ram being in its forward position in the cylinder. Upon the release of pressure fluid in the jack cylinder, the block 49 can be moved rearwardly to shift links 51 and arms 53 to the position shown in broken lines, wherein the roller 56 is in an elevated position. Such movement can cause raising of the boat hull, as hereinafter described. For the purpose of locking the jack in the position shown in full lines in Fig. 5, a locking pin 57 may be inserted through apertures in the sides of the channel member 46 and through a bore in the block 49. At one end this locking pin is provided with a manipulating ring 58, and by pulling on this ring the locking pin can be removed.

Referring now to the detail structure of the wheel frames 22 and their associated parts, each wheel frame has pivotal relationship to the cross tube 21 adjacent one end of the tube, as shown more particularly in Figs. 9 to 12. In a location inwardly from the extremity of the cross tube, each of the inner drag struts 32 has its rear extremity rigidly fixed by a fastening member 59 (Fig. 9) to a lug 60 rigid with a sleeve 61 which embraces the cross tube and is rigidly fixed thereto as by welding. Each of the other struts 33 has its rear extremity pivoted by a bolt 62 to the downwardly extending part 63' of an elbow lever 63 the intermediate part of which is formed in one piece with a sleeve member 64 embracing the cross tube and capable of having a turning movement on the axis of the cross tube. This sleeve 64 is considerably wider than the sleeve 61 and at one side is separated from sleeve 61 by an additional sleeve 65; and another sleeve 66, similar to 65, is placed at the opposite side of sleeve 64. The sleeves 65 and 66 are rigidly fixed at and upon the ends of hollow frame bars 67, 68 of box-like section forming a part of the trailing frame which carries one of the wheels. At their rear ends the bars 67, 68 carry rigidly a horizontal transverse member in the form of a rod or shaft 69 having one end portion 70 extended at the side of the vehicle to provide an axle for the wheel 23. The bars 67 and 68 have between them a metal plate 71 closing in the bottom of the wheeled frame. This frame also includes an upstanding strap or post 72 extending upwardly from the rear end of bar 68. The upper end of strap 72 is connected with the rear end of bar 67 by an inclined brace 73, as best shown in Fig. 11. The braced strap 72 serves as a sup-

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port for the fender 74 of the adjacent wheel, being connected to the rear part of the fender by fastening member 75 (Fig. 9). At the forward portion of this fender, the latter is connected by a fastening member 76 to an upstanding strap member 77 rising from the forward portion of the wheel frame.

Reverting to the elbow lever 63, the upper part of this lever extends rearwardly in the traveling position of the vehicle, as shown in Fig. 12, and its rear extremity is in the shape of a fork 78 (Fig. 9), and this fork serves to connect the lever with the upper part of an air spring 79 the lower part of which is connected to the lower member or plate 71 of the wheeled frame. The air spring comprises a flat metallic upper member 80 and a similar lower member 81. The member 80 has secured to it in a central location an upstanding lug 82 through which passes a horizontal bolt 83, said bolt also engaging apertures in the tines of the fork 78, the arrangement being such that the lever and the member 80 may swing independently in a vertical plane extending lengthwise of the vehicle. A similar connection is provided between the lower member or plate 81 of the air spring and the plate 71 of the wheeled frame. For this purpose a forked lug 84, extending upwardly from plate 71, is connected by a bolt 85 to a downwardly projecting forked lug on the lower air-spring plate. Between the air-spring members or plates 80, 81 a flexible, collapsible, tubular part 86 of rubber or like material is interposed and held in a manner customary in air springs. In the present trailer, air for filling and operating the air springs is contained and stored within the cross tube 21. At each end the tube is closed and sealed by a head member 87 which prevents the escape of air, and in a suitable location such as that indicated at 88 an inflation valve is provided on the tube so that air under suitable pressure can be placed in the cross tube. In connection with each of the air springs a flexible air conduit 89 connects the air spring through its upper plate 80 with the interior of the cross tube in a manner such that the air-spring member and the cross tube may move relatively to each other to the necessary extent as the trailer is used in transporting the boat and launching and reloading it.

For the purpose of lubricating the movement of each wheeled frame relatively to the cross tube, the swinging sleeve parts at opposite sides of each frame are each provided with a grease fitting, as shown in Fig. 9.

Each flexible hose or conduit 89 connecting the cross tube with an air spring extends upwardly from the top of the air spring and at the other end of the conduit extends downwardly to the cross tube, suitable fittings being employed to fasten the ends of the conduit to the air spring and cross tube.

The roller device 29, located at the rear end of the beam and above the rear frame member extending across the stern-supporting frame, comprises rollers, preferably of rubber, that are each supported by a supporting plate 90. Each plate is in pivotal relationship to the beam and the plates can be adjusted and secured so that the rollers can be adjusted vertically to upper and lower positions. Between the rollers of this pair, a smaller roller 29^a is placed on the beam. The rollers 29 are adapted to engage the bottom of the hull at opposite sides of the keel, and the smaller member 29^a is a keel-engaging roller.

Referring now to the members for supporting the under portion of the hull at the stern, in other words, the parallel cradles 28, these cradles are adjustably supported from the rear portions of the frame members 27'. The cradles are adjustably and pivotally connected adjacent their forward and rear extremities to the underlying frame members. Each cradle member 28 comprises in its structure a downwardly facing channel bar 91 of metal to the upper surface of which is suitably applied a soft but wear-resisting non-skid cover member 92 of rubber

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or the like suitable for engaging the hull bottom. Near each end of the cradle member a cross pin 93 is fastened in the channel 91, and on this cross pin is swiveled a U-shaped part 94 capable of swinging to a certain extent in a vertical longitudinal plane. To the part or clip 94 is fixed the upper end of a screw 95, the lower end of which extends freely through an aperture in the top wall of frame member 27'. The screw 95 is threaded throughout the greater part of its length, and the threads are engaged by threads within the hub of an adjusting wheel 96 which rests upon the top of member 27'. The wheel 96 has a number of radial free-ended spokes which may be engaged by the fingers of the operator for turning the wheel by a spinning movement and lifting or lowering the corresponding end of the cradle bar or channel. By this construction the elongated cradle member may be raised and lowered relatively to the supporting frame therefor, and, moreover, the ends of the cradle member may be at different elevations so that the cradle member may be suitably conformed to the hull in order to hold the hull securely in place. The spokes of wheel 96 are above and extend laterally beyond the side faces of the supporting frame or bar so that they are readily accessible for manipulation.

It has been stated that the forward cradle 26 is generally similar to the stern cradle structure which has just been described. In the case of the forward cradle, shown in Fig. 3A, the cradle members are in line with each other, one being located at one side of the beam and the other at the opposite side. These members are pivoted intermediate of their ends to an underlying hollow cross member or base so that they can swing in a common transverse vertical plane. They preferably have upper cover members similar to those of the stern cradle members. Each cradle member has a pivot with which is associated a hand-wheel-operated adjusting means similar to that employed with the end structure of the stern cradle members. The forward cradle can be adjusted lengthwise of the beam as its hollow cross member is adjustably clamped to the beam.

In the case of this forward cradle, each of the threaded bolt members threadedly engaging the spinning wheel extends downwardly through an aperture in the lower wall of the hollow support, the lower extremity of the bolt carrying a cotter pin or the like to limit upward movement of the cradle member. In the case of the stern cradles 28, the bolt at the rear end of the cradle member does not extend down through the hollow supporting member (Fig. 11) but at the forward end of member 28 a retaining cotter pin or the like is used as in the case of the forward cradle.

As will be noted from Fig. 8, the pivot bolt 50 for the links 51 extends through a longitudinal slot 97 in the channel member 46 at each side of the channel member and through a hole in the end portion of the strut 33. The slot 97 guides the bolt 50 in forward and rearward movement and limits the movement of the members operated from the jack piston.

When the boat is in the transporting or traveling position, the parts are in the position shown in Fig. 1, the stem of the hull being engaged in the bow chock, the bottom of the hull at the bow being engaged by the cradle 26, and the bottom of the hull near the stern being engaged with and supported by the longitudinal cradle members 28. At this time the cradle members 28 are usually adjusted so that the hull bottom at the stern is somewhat above and out of engagement with the rollers 29. When supported in this manner, the hull throughout its length is spaced above the beam, the entire support of the hull being provided by the bow and stern cradles. In this position, the hull-lifting device 34 is out of engagement with the hull bottom. The wheel frames 22 are locked in position by the locking pin 57, which is in the position shown in Fig. 7. If desired, each of the wheel frames may be held additionally in the

transporting position by means of a fastening screw 98 carried by the sleeve 64 of the wheel frame and engageable with the external surface of the cross tube, as shown in Fig. 12. This screw 98 may be conveniently operated by means of a handle member 99. In this transporting position the elbow levers 63 connecting the air springs with the struts 33 are stationary, the top plate of each air spring being in a fixed position. Consequently, when the vehicle moves over a rough spot in the road, the air spring is compressed from the lower end because of the connection of the pivoted wheel-carrying frame to the lower part of the air spring at a point between the ends of the swinging wheel-carrying frame body. As shown in Fig. 10, the connection of the wheel-frame body with the lower part of the air spring is about midway between the wheel axle and the axis of the cross tube. With this construction the movement of the trailer over the road is very effectively cushioned so that, in being transported, the support of the boat by the bow and stern cradles will not be adversely affected.

For launching the boat after the trailer has been brought to the desired launching place, the locking pin 57 is removed and the screw 98 released, the boat being cable-held meanwhile by the winch 36 being locked against rotation. Upon release of the wheel frames by opening a valve 31^{*} associated with pump 31 so as to release pressure in the cylinder of the jack, the frames are free to turn relatively to the supporting cross tube, and the wheeled supports turn to the position shown in Fig. 2, whereby the rear end of the trailer frame or bed is lowered. As this movement of the wheel frames takes place due to the load on the trailer, the lifting device 34 is actuated and moved from the position shown in Fig. 1 to that shown in Fig. 2. The outer struts 33 are pulled rearwardly by their connection with the elbow levers 63, causing the link members 51 to be drawn rearwardly to the position shown in broken lines in Fig. 5. This causes the arms 53 to be lifted up so as to engage the keel roller 56 with the keel and lift the hull at a point approximately midway of the bow and stern cradles. This lifting movement of the hull will cause it to be lifted clear of the bow cradle and stern cradle and to be engaged at the bottom near the stern by the bottom-engaging rollers 29. Thereupon the boat, being released from the fixed winch connection at the stem, will, while in engagement with the lifting device 34 and the rollers 29 and out of engagement with the cradles, slide along a gentle incline into the water. This makes for an easy launching with a minimum amount of manipulation and labor on the part of the operator.

In dropping the axles of the trailer in the manner above described, the individual air springs for the wheels serve as cushioning elements between the wheel frames and the connections of the rod members or struts between the wheel frames and the power unit.

In retrieving the boat, the trailer has a sloping position of the bed or frame such as shown in Fig. 2, and the boat is brought with its stem into engagement with the rear end of the trailer, the bottom at the stem portion being engaged with the rollers 29 and the keel with the small keel roller 29^a. The boat is then drawn by the cable to a position in which the stem is engaged by the bow chock. In this movement the hull is drawn over the keel roller 29^a and the keel roller 56 of device 34, and, when it is in position lengthwise of the trailer and held from the winch, the power unit may be actuated to lift the wheel frames and lower the lifting device 34 so as to restore the parts to the position shown in Fig. 1.

The load capacity of the trailer shown in the drawings is from zero to 1400 pounds. When the boat is on the trailer, with the latter in the position shown in Fig. 2, air can be added to or removed from the air reservoir comprising the cross tube, the air springs, and the connections from the cross tube to the air springs, until the

wheel-carrying frames are raised under the load to the proper position. Indications of the proper loaded position may be given, if desired, by having a marking on a movable sleeve of the wheel frame adapted to register with a marking on an adjacent fixed sleeve or other fixed part on the cross tube. The proper riding or traveling position for the boat is obtained where the load capacity (boat-supporting air pressure) matches the total boat weight, and the fact that this balance can be obtained with maximum ease and convenience is an important advantage of this trailer. Other advantages are that the supporting points or locations for the hull are those where the hull has its greatest strength against crushing or other damage, and that in transporting the boat there is effective clearance for the keel, which is a relatively delicate or vulnerable part, so as to give protection against keel pounding or other blows which would be apt to occur if the keel in the transporting position were so disposed as to be in contact or near contact with an elongated keel support. A still further advantage arises from the fact that, as the running gear of the vehicle is adjustable lengthwise, as described, the same may be easily placed to accord with the center of gravity of the loaded vehicle. Another advantage arises from the fact that the arrangement for holding the hull in transporting position lends itself to the use, if desired, of any of a number of practical hold-down devices.

The dolly associated with the forward extremity of the trailer may be a swivel-wheel dolly equipped with power means for raising and lowering the trailer hitch.

The wheels for adjusting the cradle members, as above described, have relatively long spokes with free ends, and this construction lends itself to spinning of the wheel by hand so as to speed up adjustment to the desired level.

It is noted that in the position shown in full lines in Fig. 3 the transverse wheeled beam-supporting member is adjacent the rear extremity of the hull-supporting frame, and that, in the position of this member shown by broken lines in the same view, the member is rearwardly of a point midway of the beam, and the transverse member is substantially midway of the distance from the forward cradle to the stern end of the frame. As the ground wheels are usually spaced somewhat forwardly from the rear extremity of the frame, it is not necessary to have the wheels enter the water for launching the boat.

The illustrated form of trailer is understood to be by way of example only, and various modifications and changes in detail may be made without departure from the principles of the invention and the scope of the claims.

What I claim is:

1. In a boat-carrying trailer, the combination of a longitudinal beam member, a cross member supporting said beam member adjacent the rear end of the latter, swingable frames pivoted to said cross member and extending rearwardly therefrom and carrying ground wheels, said frames having a traveling position in which said beam member is supported substantially horizontally and a released position in which the rear end of the beam member is lowered, a forwardly tapering frame carried by the rear portion of said beam member providing cradle members for engaging the bottom of the boat at the stern portion thereof, a transverse cradle on said beam member forwardly of said tapering frame for engaging the boat bottom near the bow, power means co-operating with said swingable frames for lifting the beam member from the launching position to the traveling position including a fluid-operated jack mounted on said beam member between said cross member and the forward end of said tapering frame, said jack being operably connected with said swingable frames by rearwardly extending rod members, and a roller-carrying member extending upwardly from said beam member and operably connected to said jack for engaging the boat bottom intermediate of the ends of the boat and lifting the boat

from said supporting cradles, said cross member, jack and roller-carrying member being adjustable lengthwise of said beam member.

2. In a boat trailer, a longitudinal beam member having provisions for supporting a boat hull from beneath adjacent the bow and stern with an intervening clear space adjacent the keel, a cross member equipped with trailing pivoted wheeled frames movable from a lower position to an upper position in which said beam member is substantially horizontal, said cross member being adjustable lengthwise of said beam member, a vertically swingable member in pivoted relation to said beam member carrying at its upper end a roller for engaging the boat keel forwardly of said cross member and in the aforesaid clear space in order to lift the boat above said supporting provisions, a jack-carrying element supported from said beam member adjacent the lower face of said beam member and adjustable lengthwise of said beam member, a fluid-operated jack fixedly mounted with respect to said carrying element and having a piston movable rearwardly by pressure fluid entering the jack, means of operative connection between said piston and said wheeled frames whereby the latter may be raised and lowered, and means of operative connection between said piston and said member carrying said keel-engaging roller whereby said roller is raised and lowered.

3. A boat trailer as defined in claim 2, in which said keel-engaging roller has a lowered position in which it rests upon the upper surface of said beam member.

4. In a boat trailer having an elongated carriage including a pair of substantially horizontal longitudinally extending supporting bars, a hull cradle structure comprising each bar defining apertures at two spaced points in its length, first and second pairs of wheels each having an interiorly threaded hub portion resting on the

bars in line with a respective aperture, first and second pairs of threaded upright screws extending through respective hub portions and into respective bars with their threads engaging those of the respective hub portions so that the screws can be raised and lowered by rotation of the wheels, a pair of upper elongated cradle members in the same vertical planes as respective bars mounted for swinging movement in said plane, each cradle member being pivoted to the upper ends of a pair of screws, the wheels having a plurality of free-ended hand-manipulable spokes extending laterally beyond the side faces of the supporting bars so as to be readily accessible for a spinning movement, and additional transverse cradle members on the carriage forwardly of the first-mentioned cradle members and angularly adjustable in a transverse vertical plane.

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