April 6, 1965 T. L. FAUL ETAL 3,176,865

BOAT TRAILER WITH PUSH-OFF DEVICE

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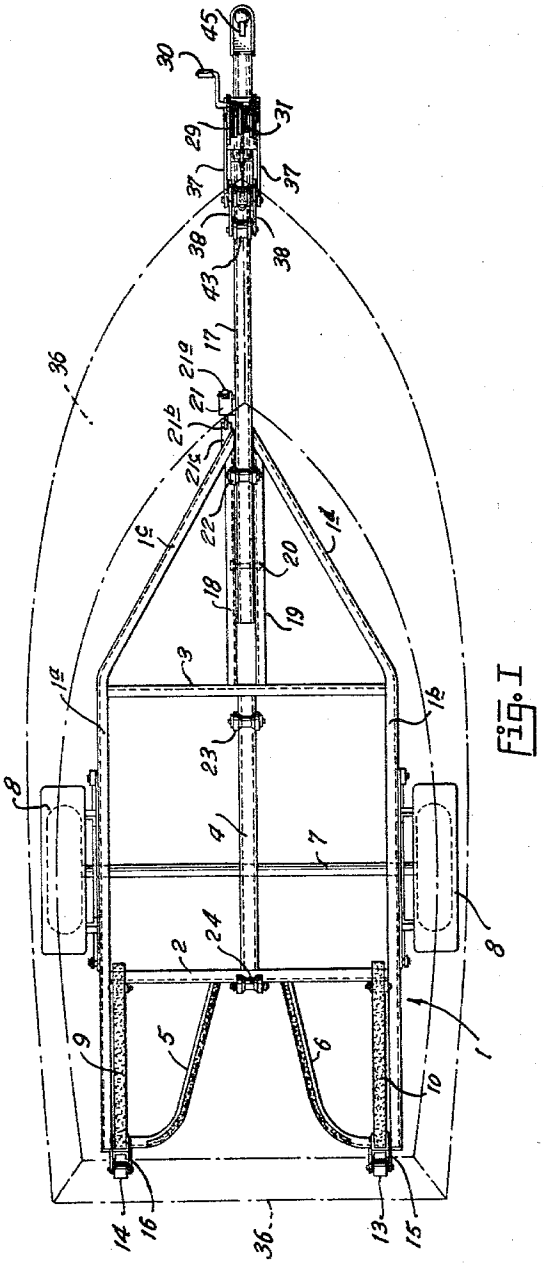


Fig. I

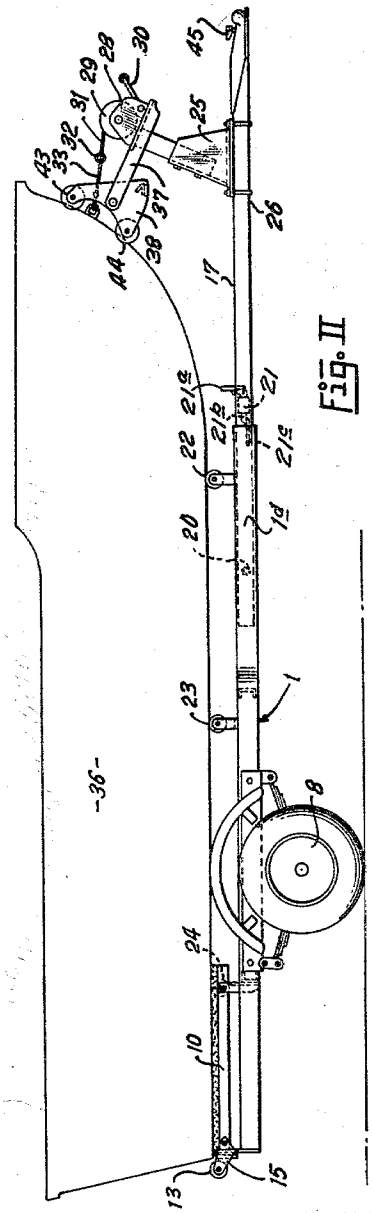


Fig. II

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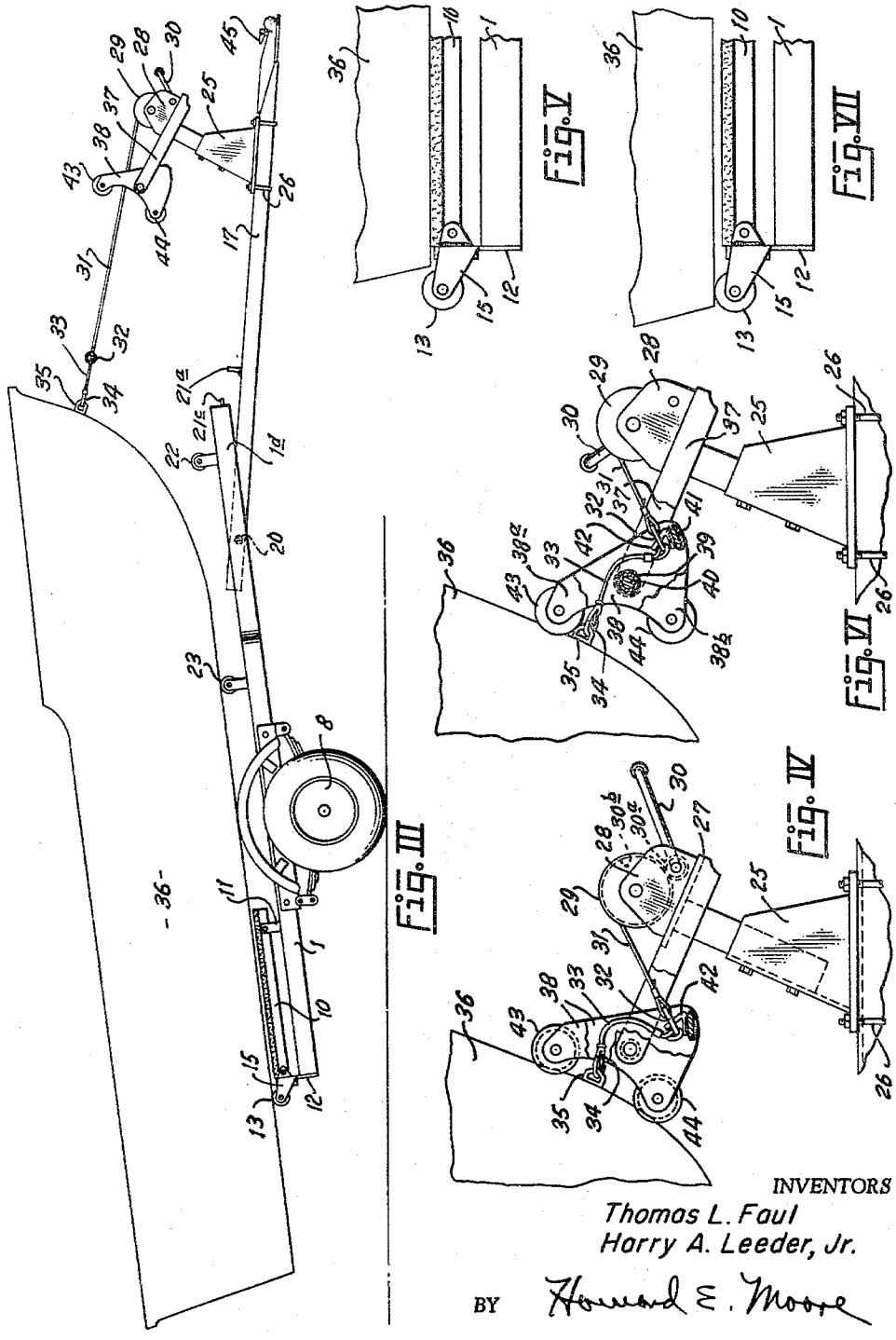
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3,176,865

BOAT TRAILER WITH PUSH-OFF DEVICE

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This invention has to do with boat trailers, and is particularly concerned with apparatus for loading and unloading a boat on a trailer.

Boat trailers have customarily employed a frame pivotally attached to the tongue so that the frame will tilt rearwardly with reference to the tongue to allow the boat to slide off the trailer, or be pulled thereupon from the rear.

Such boat trailers have also customarily included a plurality of keel rollers attached to the frame to provide ease in pulling the boat upon the frame or launching it therefrom, and have also usually included a pair of spaced, padded bolsters at the rear of the frame on which the boat is supported while being transported.

Means have been provided for lowering one or both of the bolsters when it is desired to unload the boat from the trailer, in order to deposit the weight of the boat upon the keel rollers, but in loading the boat on the trailer, it is necessary to drag the boat hull over the surface of the bolsters until it reaches a position of support on the rollers, and in unloading same the hull of the boat is frictionally slid along the surfaces of the bolsters. In either event, the hull of the boat is scarred and damaged, and unnecessary force is required to load and unload the boat on the trailer.

The present invention is intended to provide improvements which permit the boat to be loaded on and unloaded from the trailer while supported entirely upon resilient rollers, and the hull of the boat is not dragged along the surface of the bolsters. However, means is provided for depositing the weight of the boat upon the bolsters after it is loaded on the trailer, so that it will be firmly supported thereon while being transported.

It is, therefore, a primary object of the invention to provide means in a boat trailer for supporting a boat entirely upon resilient rollers while it is being loaded on, and unloaded from, the trailer.

Another object of the invention is to provide means for depositing the weight of the boat upon the bolsters when it is loaded on the trailer, so that it is firmly supported thereon.

Another object of the invention is to provide means for raising and depositing the boat upon resilient rollers when it is desired to unload the boat from the trailer.

A still further object of the invention is to provide boat supporting rollers directly behind the spaced parallel bolsters at the rear of the boat which have surfaces higher than the surfaces of the bolsters, with means mounted on the trailer for pushing the boat rearwardly off of the bolsters and onto the rollers.

Still another object of the invention is to provide means operable by the loading winch on the trailer for pushing the boat rearwardly upon rollers mounted at the rear of the rear bolsters, which extend above the level of the bolsters.

Other and further objects of the invention will become apparent upon reading the detailed specification hereinafter following, and by referring to the drawings annexed hereto.

A suitable embodiment of the invention is shown in the attached drawings wherein:

FIGURE I is a top plan view of the improved trailer construction;

FIGURE II is a side elevational view thereof showing a boat mounted thereupon;

FIGURE III is a side elevational view showing a boat partially loaded upon the trailer with the trailer frame in tilted position;

FIGURE IV is a side elevational view, partially cutaway, of the winch and push-off mechanism in the position it would appear before being actuated for imparting rearward force to a boat;

FIGURE V is an enlarged fragmentary, side-elevational view, showing the rear of a boat supported upon the longitudinal bolsters, and one of the rollers mounted behind one of the bolsters;

FIGURE VI is a side elevational view, partially cut away, of the winch and push-off mechanism as it would appear after being actuated to apply rearward force to the boat; and

FIGURE VII is an enlarged fragmentary, side elevational view of one of the rear bolsters and rollers mounted therebehind, showing the rear of the boat resting upon the rollers.

Numeral references are employed to indicate the various parts shown in the drawings, and like numerals indicate like parts throughout the various figures of the drawings.

The numeral 1 indicates the general frame of the trailer, which includes longitudinal side members 1*a* and 1*b*, angled front portions 1*c* and 1*d*, and cross braces 2 and 3.

A central longitudinal brace 4 is secured between the cross braces 2 and 3.

The general frame also includes the rear curved members 5 and 6, which are secured at their outer ends to the rear ends of the side frames 1*a* and 1*b*, and at their inner ends to the cross brace 2.

The frame members 5 and 6 are padded on their inner sides to prevent damage to the boat while it is being lifted to a position of support on the keel roller 24, or in being lowered therefrom in launching same.

The trailer frame 1 is supported upon wheel assemblies 8, which are connected together by an axle 7 secured to the frame.

A pair of longitudinal spaced bolsters 9 and 10, having suitable padding on the upper surfaces thereof, are rigidly secured at their front ends to the cross brace 2, and at their rear ends to the frame members 5 and 6, by means of mounting brackets 11 and 12. If desired the bolsters 9 and 10 may be mounted so that they are vertically adjustable and laterally pivotal, so as to be adjustable in height and may pivot laterally to accommodate and conform to boats having varying hull sizes and shapes.

Resilient rollers 13 and 14 are mounted, by means of brackets 15 and 16, to the rear ends of bolsters 9 and 10.

It will be noted that the upper surfaces of the rollers 13 and 14 extend above the padded upper surfaces of the bolsters 9 and 10.

A tongue 17 is pivotally secured between the parallel frame members 18 and 19 by means of a pivot pin 20 extending through said parallel frame members and the tongue. The parallel frame members 18 and 19 are secured between the cross brace 3 and the outer ends of the angled frame members 1*c* and 1*d*.

The tongue 17 is disengageably secured to the parallel frame members 18 and 19 by means of a latch 21 secured to the side of the tongue 17 so that the frame is prevented from tilting with reference to the tongue while the boat is being transported on the trailer.

The latch 21 includes a catch 21*b* which is spring-urged outwardly and engages a bracket 21*c* secured to the frame member 1*c* to hold the frame down in alignment with the tongue. A lever 21*a* is pivotally attached to the latch housing 21 and is attached to catch 21*b* so that the lever may be pivoted outwardly to withdraw the catch from engagement with the bracket 21*c* to permit the frame to

tilt with reference to the tongue. A diagonal surface is provided on the outer upper end of the catch 21*b* which is engaged by the bracket 21*c* when the trailer frame is brought into alignment with the bracket 21*c* to pass thereunder, whereupon the catch springs outwardly to overlap the bracket to hold the frame down until the catch is manually released as hereinbefore described.

A plurality of keel rollers 22, 23 and 24 are attached to the frame, the keel roller 22 being attached to the parallel frame members 18 and 19, the keel roller 23 being attached to the longitudinal brace 4, and the keel roller 24 being attached to the cross brace 2.

It will be noted that the rear keel roller 24 is on a lower level than the keel rollers 22 and 23, so that it may be engaged by the vertical keel portion of the boat, and the boat may be pulled upon the trailer frame thereover to a position where it may be engaged by the keel rollers 22 and 23, and by the bolster rollers 13 and 14.

A winch stand 25 is secured to the tongue 17 by means of U-bolts 26 embracing the tongue.

The winch stand 25 has mounted on its upper end a winch support plate 27 to which is secured the spaced winch supports 28 between which the cable drum 29 is rotatably mounted. The line drum 29 may be rotated by a crank handle 30 which is operatively attached to the axle for the winch drum 29 through gears 30*a* and 30*b*.

A line 31, such as a cable or rope, is wound about the drum 29, and has secured to its end a ring 32. An additional length of line 33 is secured at one end to the ring 32 and has a hook 34 attached to the outer end thereof.

The hook 34 is arranged to be disengageably attached to the bow eye 35 on the boat 36 for pulling the boat upon the trailer and for holding same as it is launched from the trailer.

A pair of spaced parallel arms 37 are attached to, and extend outwardly from, the plate 27.

A pair of identical spaced flat plates 38 are pivotally secured between the outer ends of the arms 37 by means of a tube 39 welded between the plates which is rotatable about a pivot pin 40 which extends through the tube 39 and the parallel arms 37 and is secured therein against displacement therefrom.

A spacer bar 41 is secured between the lower edges of the spaced plates 38, and a hook 42 is secured to the spacer bar 41, substantially centrally thereof.

Rollers 43 and 44 are rotatably secured between the spaced ends of the outwardly extending legs 38*a* and 38*b* on the plates 38, said rollers being grooved and made of resilient material, and being arranged to engage the keel at the bow of the boat. The plates 38 provide a modified bell crank lever with legs 38*a* and 38*b* angularly disposed with reference to the pivot point 40.

The tongue 17 has a trailer hitch 45 on the outer end thereof.

The operation and function of the trailer apparatus and push-off mechanism hereinbefore described is as follows:

Assuming that a boat 36 is mounted on the trailer as shown in FIGURE II, with the hull of the boat resting upon the bolsters 9 and 10, in order to unload the boat from the trailer, the latch pin 21 is disengaged from the bracket 21*c*.

The line 31 is slacked off by counter rotating the drum 29 sufficiently to allow the ring 32 to be engaged with the hook 42, as shown in FIGURE IV. It will be noted that in this position both of the rollers 43 and 44 engage the keel of the boat. The drum 29 is then rotated in a direction to take up the cable 31, thereby pivoting the plates 38 about the pivot pin 40 to cause the roller 43 to exert a rearward force against the boat, and push the boat rearwardly of the trailer frame and onto the bolster rollers 13 and 14, as shown in FIGURE VII. As the boat is moved rearwardly on the rollers 13 and 14, the trailer frame will begin to tilt with reference to the tongue 17, and the keel of the boat will engage the keel rollers 22 and 23. The boat is then supported entirely upon the keel rollers, and the rollers 13 and 14 mounted at the rear of the bolsters 9 and 10.

As the boat moves rearwardly, the slack is taken out of the line section 33, the ring 32 is pulled rearwardly out of engagement with the hook 42, and as the boat rolls rearwardly on the rollers, the line 31 can be used to steady same.

When the bow of the boat reaches the rear of the trailer frame, the keel of the boat will rest upon the roller 24 and the bow of the boat is lowered into the water as it moves down upon and along the roller 24.

In order to load the boat upon the trailer, the trailer frame 1 is tilted with reference to the tongue 17. The hook 34 is attached to the eye 35, and as the drum 29 is rotated to take up on the line 31, the bow of the boat is lifted between the padded frame members 5 and 6 until the vertical keel portion at the front of the boat engages the roller 24. The boat is then pulled upon the trailer on the roller 24 until the hull thereof outwardly of the keel engages the rollers 13 and 14, and as the boat is pulled further forwardly of the frame, the keel thereof engages the keel roller 23 and then the keel roller 22. As the boat reaches a position on the frame to counterbalance the weight thereof, the frame 1 will tilt back to horizontal alignment with the tongue.

When the rear of the boat passes from the upper surfaces of the rollers 13 and 14, the boat hull will gently drop to a position of support upon the upper surfaces of the bolsters 9 and 10, as shown in FIGURE V. The boat is then firmly supported on the bolsters for transport, after the latch 21 engages bracket 21*c* to lock the frame to the tongue.

It will thus be seen that we have provided a boat trailer apparatus in which the boat is supported entirely upon rollers while it is being loaded and unloaded from the trailer, and while being transported is supported by bolsters, and we have provided novel means for depositing the boat upon the rollers prior to unloading same.

It will be understood that other and further embodiments of the invention may be devised without departing from the spirit and scope of the appended claims.

We claim:

1. In a boat trailer; a frame; a tongue pivotally connected to the frame; a pair of longitudinally extending, laterally spaced bolsters secured to the frame at the rear end therof; a resilient roller mounted at the rear of each bolster, the upper surfaces of the rollers being higher than the upper surfaces of the bolsters; a plurality of keel rollers mounted centrally of the frame; a winch, including a rotatable drum attached to the tongue; a line wound about the drum; a pivoted member carried by the tongue having first and second legs thereon extending from the pivot point therefor; means attached to the first leg for attachment of the line thereto so that upon taking up on the cable the pivoted member is rotated to cause the second leg to exert force against the boat to push it rearwardly to a position of support on the rollers mounted at the rear of the bolsters to cause the frame to tilt rearwardly with reference to the tongue and raise a boat thereon to a position of support on the keel rollers and the rollers at the rear of the bolsters.

2. The combination called for in claim 1 with the addition of resilient rollers on the ends of the legs arranged to contact the keel at the front of a boat disposed on the frame.

3. In a boat trailer, a frame; a tongue pivotally attached to the frame; keel rollers arranged centrally of the frame; a pair of laterally spaced, longitudinally extending, bolsters secured to the frame at the rear thereof; a roller mounted at the rear of each bolster, with the upper surfaces of said rollers arranged above the upper surfaces of the bolsters; a winch including a rotatable drum mounted on the tongue; a line wound about the drum; means to rotate the drum; a lever pivotally carried by the tongue,

having legs extending from the pivot point therefor, at least one of said legs being arranged to engage a boat disposed on the frame; a line attachment member on the other leg, including a hook; means to attach the line to the line attachment member including a ring engageable over the hook; a line extension attached to the ring; attachment means on the free end of the line extension for attaching same to the bow eye on a boat; the hook on the attachment member and the ring on the line being so related that upon outward force being exerted on the line extension the ring will be disengaged from the hook.

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