July 21, 1964 F. E. CAIN 3,141,565

CAR TOP BOAT LOADER

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Fig. 1

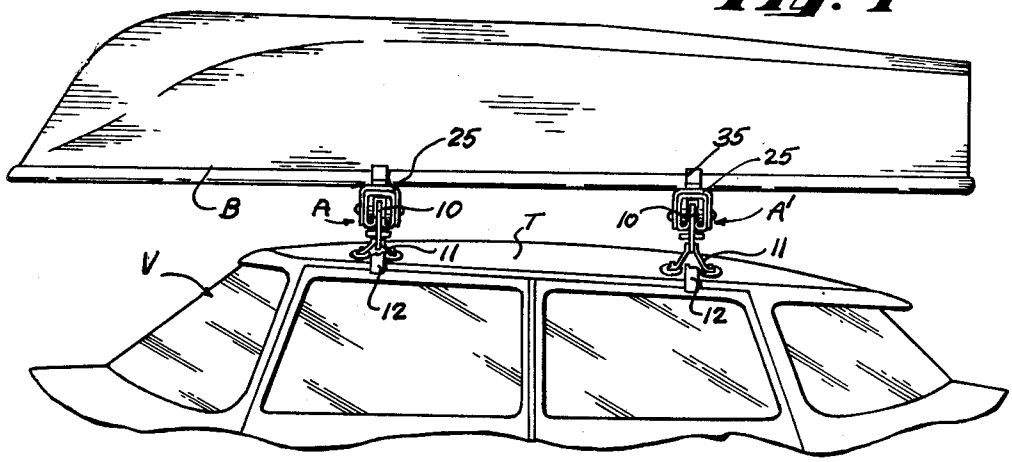


Fig. 3

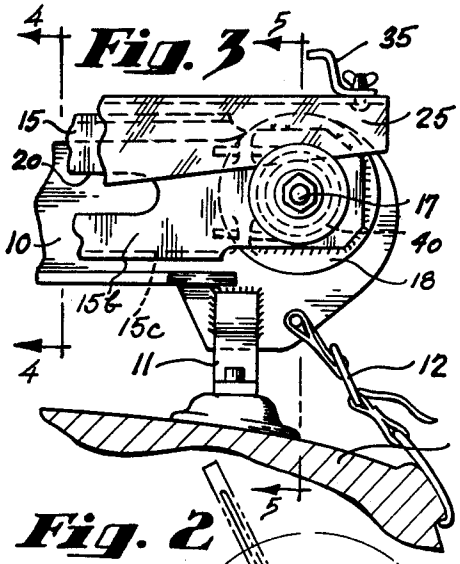


Fig. 4

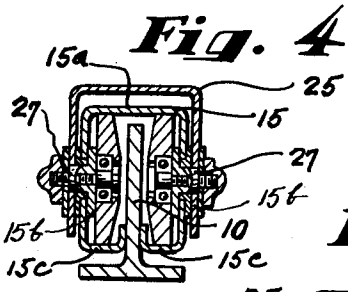


Fig. 5

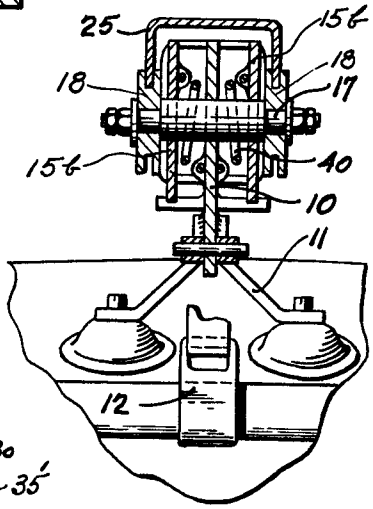
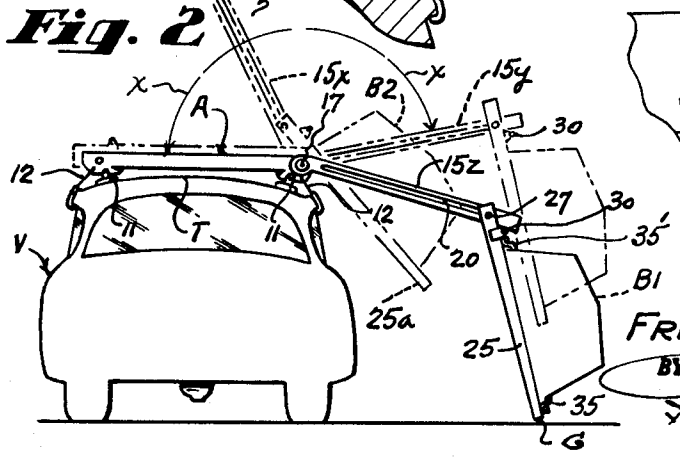


Fig. 2



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Fig. 6

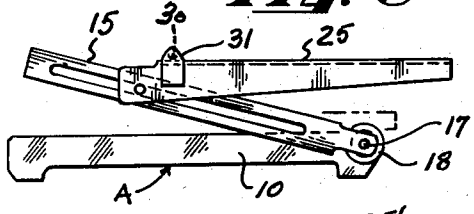


Fig. 7

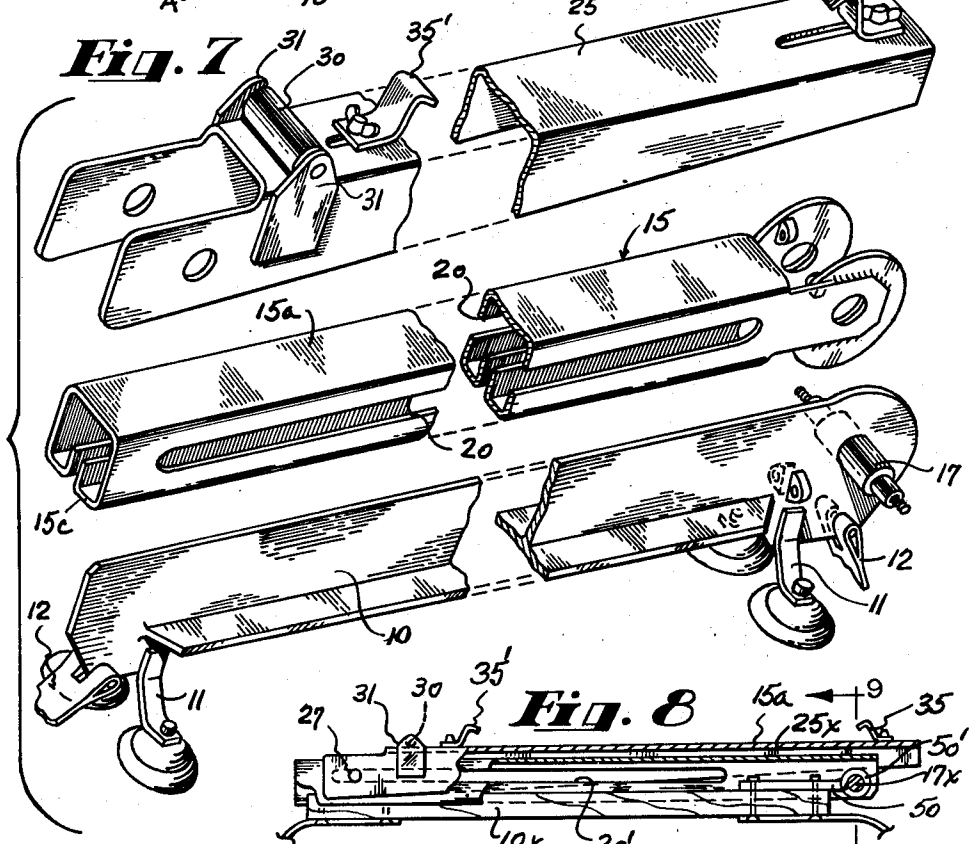


Fig. 8

Fig. 10

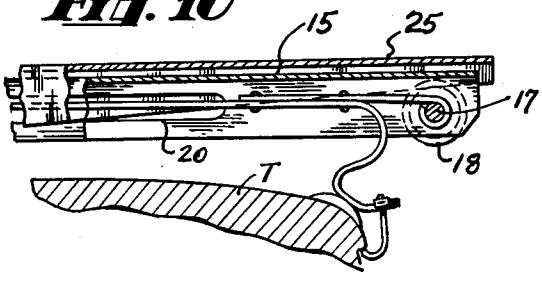
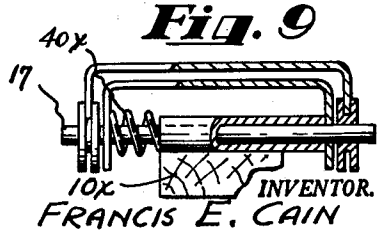


Fig. 9



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Fig. 11

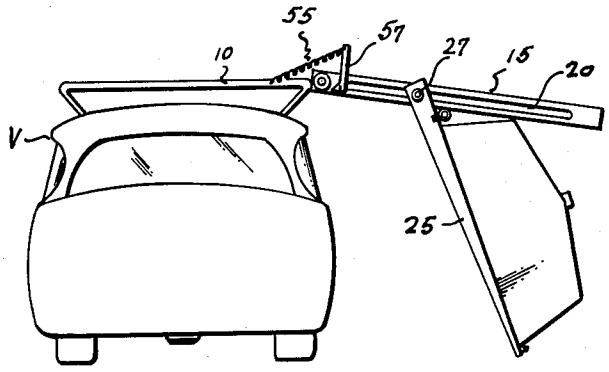
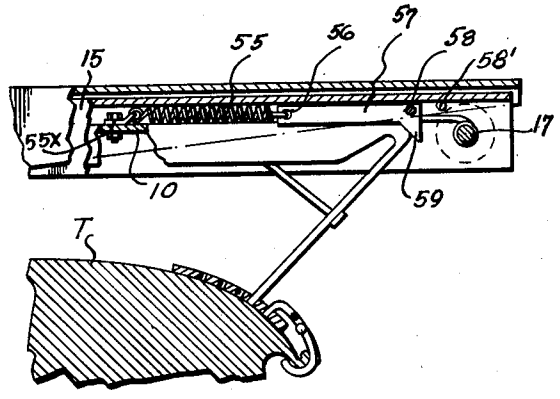


Fig. 12



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CAR TOP BOAT LOADER

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Filed Oct. 30, 1962, Ser. No. 234,035
6 Claims. (Cl. 214—450)

This invention relates to boat loading and carrying equipment, especially as applied to automobiles of present day sedan and station wagon types. More particularly, the present invention relates to what is herein designated as a "car top boat loader" of a type that provides for the loading and unloading of a boat onto and from a car top from a side thereof as differentiated from those kinds that load and unload the boat from the rear end of the vehicle.

It is the principal object of this invention to provide boat loading means of the above stated character that makes it possible to easily and readily load a boat without use of winches, tackles or other kinds of powered means; that embodies a novel combination of levers, slides and springs whereby the boat may be easily manually lifted first to car top level and then manually slid onto cross-supports as fixed in the usual way on the car top and there secured for travel by simplified clamping means; unloading of the boat from the car top being accomplished merely by a reversal of the order of the loading operations.

Another object of the invention is to provide the combination of associated boat loading levers as attachments for the cross-bars of present day types of load carriers as already applied to cars in use or to incorporate them with cross-bars that are to be applied across and secured to car tops.

Further objects and advantages of the present invention reside in the details of construction of the various parts of the loader; in their relationship and combination, and in their mode of use, as hereinafter described.

In accomplishing the above mentioned and other objects and advantages of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

FIG. 1 is a side view showing the top portion of an automobile, typical of present day types, that is equipped with one form of boat loading and carrier mechanism embodied by the present invention.

FIG. 2 is a rear end elevation of an automobile equipped with boat loading and carrier mechanism embodied by this invention, disclosing the sequence of boat loading operations.

FIG. 3 is an enlarged side view of one end portion of a cross-bar assembly of the boat loader of FIG. 1 with the parts thereof shown in normal boat carrying position.

FIG. 4 is a cross-section, taken on line 4—4 in FIG. 3.

FIG. 5 is a cross-section taken on line 5—5 in FIG. 3.

FIG. 6 is a side view of one of the cross-bar assemblies with parts partly extended for explanatory purposes.

FIG. 7 is a perspective view showing the parts comprised by one of the cross-bar assemblies in separated relationship for purpose of better explanation; the medial portions of the assembly being broken away in order to shorten the view.

FIG. 8 is an elevation of a typical present day form of load supporting cross-bar to which boat loading parts are attached in accordance with the present invention.

FIG. 9 is an enlarged cross-sectional view taken on line 9—9 in FIG. 8, showing a swing bar and its supporting leg in nested relationship and as supported by the hinge pin by which the swing bar is secured.

FIG. 10 is a similar elevational view showing another form of anchored cross-bar as equipped with boat loading and unloading means.

FIG. 11 shows the boat loading mechanism as equipped with an alternative type of lifting spring.

FIG. 12 is an enlarged fragmental view of parts shown in FIG. 11.

Referring more in detail to the drawings:

In FIGS. 1 through 6 of the present drawings, I have shown one form of construction which anticipates the use of anchored load supporting cross-bars of metal. However, it is to be understood that materials used therein and their cross-sectional shapes and proportionate dimensions may be altered to suit conditions of use or to accommodate the various designs of cars and boats. I do not wish to limit the structure to those specific forms of the various parts herein illustrated. Furthermore, it is to be explained that the boat loading levers of this invention may be applied to various shapes and forms of load carrying cross-bars already in existence and designed for carrying various objects in various ways. FIGS. 9, 10 and 11 are herein included to disclose the present invention as applied to different present day types of load carrying cross-bars of wood and metal.

The use of the present combination of boat loading and unloading levers as used with an inverted T form of metal cross-bar will first be described. As shown in FIGS. 1 through 6, the present boat loading equipment comprises two substantially identical cross-bar assemblies, designated respectively, in their entireties, in FIG. 1 by reference characters A and A'. In use, these two units are disposed transversely on the top T of a carrier vehicle V as has been shown in FIGS. 1 and 2. The spacing of the two assemblies in the direction lengthwise of the vehicle top, depends to some extent on the length of the vehicle body; on the size of the boat to be carried and on other circumstances or conditions of vehicle and boat. However, as a general rule, this spacing is approximately five feet. Since the two assemblies as usually employed are alike, the following description applied to one of them as shown in FIG. 1 is given with the understanding that it applies equally to the other.

Each assembly comprises a load carrying cross-bar **10** of iron, of an inverted T-form in cross-section and having a length substantially equal to the width of the car top to which it is to be applied as in FIG. 2. This bar **10** may be curved or crowned if required to conform to the transverse curvature of the car top or it may be straight from end to end. As shown best in FIGS. 3 and 6, bar **10** is equipped near its opposite ends with supports **11** which may be of a well known present day kind and these are equipped with suitable securing or anchoring ties here shown to be of strap form and to be designated by numerals **12**—**12**. However, these also may be of other suitable kinds depending on the type of vehicle employed.

The top edge surfaces of the T-bars **10** preferably are straight from end to end, and the bars may be of the proportional cross-sectional dimensions shown in FIG. 4 or of other proportions if such is desired or required.

Extending along the cross-bar **10**, and preferably to its full length or slightly longer and fitted thereover as shown, is an inverted channel bar formation **15** which, as illustrated best in FIGS. 4 and 7 has a flat, closed top wall **15***a* with vertical opposite side flanges **15***b*—**15***b* with inturned, spaced lower edges **15***c* extending to its full length. This channel bar formation **15**, applied over bar **10** as shown in FIG. 4, is pivoted at one end to the T-bar **10** closely adjacent its right hand end, by a horizontal pivot pin **17** that is shown best in FIGS. 2 and 5, thus providing for an upwardly and transverse swinging movement of the free end of bar **15** as indicated by the arcuately curved, double pointed arrow X in FIG. 2.

The opposite side flanges **15***a*—**15***a* of the channel member **15** are formed with coextensive longitudinal slots

20—20 extending substantially to full length of the bar, and overlying the bar 15 is an inverted channel-like bar 25, later referred to as a leg, which is slidable on and along channel member 15 when they are in the relationship of FIGS. 1 and 3 and at its right hand end, as shown in FIG. 2, the bar 25 has transversely aligned pivot members 27—27 fixed in its opposite sidewalls and these are slidably contained for movement in and along the slots 20—20 as formed in the opposite sidewalls 15*a*—15*a* of channel bar 15.

The member 25 of this unit is designed to serve during loading and unloading of a boat, as a supporting leg for the outer end of channel member 15 after the latter has been swung about its pin 17 from a position extending along and overlying the cross-bar 10 to a position, extending laterally from the side of the vehicle, as shown, for example, in FIG. 2. When this member 25 is in use as a supporting leg for the outer end of laterally extending bar 15, it will ordinarily be rested on the ground at an outwardly inclined angle, as in FIG. 2. The outward inclination of leg 25 is limited by the engagement of a roller 30 that is mounted transversely thereon near its pivoted end between laterally spaced ears 31—31, and is so positioned as to engage in rolling contact against the closed top wall 15*a* of the then inverted channel member 15 when the parts are in the boat loading position of FIG. 2.

Fixed to the outside wall of the leg member 25 near its lower end, as in FIG. 2, is a clamp bracket 35 designed for use as a supporting rest for one edge of the boat during its loading or unloading, as presently will be explained.

It is also a feature of this invention that spiral torsion springs 40 are applied within the end portions of both channel members 15, as seen in FIGS. 3 and 5, about the hinge pins 17 to act on the channel bars 15 to urge them, during a boat loading operation, toward their normal positions of rest nested over the corresponding bars 10. With this return or inward swinging of bars 15 to their normal positions of rest, the channel or leg members 25 may be slid endwise thereon across the rollers 18 between extended and retracted or normal positions, thus to center the boat as carried on parts 25 on the top of the vehicle. The parts 25 and 15 may then be suitably secured to the bar 10 and the boat is properly secured to the leg members 25 at opposite edges by the gunwale clamps 35 at their outer ends and similarly applied clamps 35′ at their inner ends, as shown in FIG. 7.

Assuming that a car top has been properly equipped with a pair of the boat loading units or assemblies A and A′, applied thereto and spaced as shown in FIG. 1, their use for the loading of a boat onto the car top is as follows:

Starting with the channel bars 15 of both assemblies in positions coextensive with and overlying the corresponding cross-bars 10—10 and with the leg forming channel member 25 of each assembly overlying both the bar 10 and the channel member 15 of the corresponding assembly, as in FIGS. 1 and 4, the leg member 25 of each assembly is first drawn outwardly to its limit across the rollers 18—18 as applied to the outer end portions of the pivot pin 17 and as thus drawn out it is used as a lever arm, fulcrumed on the rollers 18—18 for prying the free end of channel member 15 upwardly about the pivot 17, and swinging it through that position indicated at 15*x* in FIG. 2, outwardly to and through position of 15*y* in the same view and finally to the downwardly inclined position at the side of the vehicle, designated at 15*z*. During this operation, the upper, pivoted end of leg 25 is slid outwardly along the slotted sidewalls of the then inverted lever member 15 to the outer ends of the slots 20 and is supportingly engaged, at its lower end with the ground or a supporting surface as shown at G in FIG. 2. It is to be observed in FIG. 2 that the legs 25 are outwardly and downwardly inclined at a substantial

angle and by reason of the relationship of their mounting pivots 27 and rollers 30 as engaged with bars 15—15 will not slip inwardly along the bars under any weight placed thereon.

With the parts 15 and 25 of both assemblies A and A′ so positioned, the boat B to be loaded is then positioned on the boat supporting brackets 35 as applied to the legs 25 and leaned against the two legs 25 in the manner shown at B1 in FIG. 2, with its open or top side facing inwardly. Then the legs 25 are pushed inwardly along the slots of the channel members 15 to positions closely adjacent the side of the vehicle. This is accomplished without material change in their outward inclination. Then by slight lift, aided by the torsion springs 40, the bars 15 of the assemblies are swung on their pivots 17 upwardly and over the vehicle top to positions extended along and overlying the corresponding bars 10, thereby lifting the boat through the position of B2 of FIG. 2 to car top level. The legs 25 are then slid inwardly across rollers 18—18 and the boat is thus moved to the loaded position of FIG. 1.

To unload the boat, the same sequence of operation as for loading is followed, but in reverse order.

Loading devices as above described may be made in various sizes and of various materials without departing from the spirit of the invention.

In FIG. 8, I have illustrated the mode of application of levers and legs, as used in the assemblies of FIG. 1, to a present day typical form of load carrying cross-bar designated at 10*x* which may be of wood, and equipped at its ends with any suitable car top engaging supporting and anchoring means. The application of the present form of boat loader members thereto would be as follows:

First, a strap metal form of extension bracket 50 is bolted or otherwise secured to an end portion of the bar 10*x*; this bracket being provided at its outer end with a loop or hole 50′ for reception of a horizontal pivot pin 17*x* corresponding to pin 17 of the device previously described. Supported in position by pin 17*x* as applied to the bracket loop, is an inverted channel form of lever arm 15*a*, like or corresponding to the channel bar lever 15 of the device previously described. This channel lever arm 15*d* has its opposite sidewalls provided with longitudinal channels 20′ and a leg forming lever 25*x* of channel formation like that of leg 25 of FIG. 2, is applied thereto in the same manner as was the lever 25 in the device of FIG. 1.

The pin 17*x* has a torsion spring 40*x* arrangement applied thereto preferably as shown in FIG. 9 wherein it is to be observed that the channel 25*x* is relatively shallow and of greater proportionate width than in the showing of FIG. 5 and the torsion spring is applied about one end portion of pin 17*x* to act as an aid in swinging the lever arm 15*d* upwardly and over in a boat loading operation.

The showing in FIG. 10 is to illustrate the application of boat loading equipment to still another common present day form of load carrying cross-bar. Parts used for boat loading and unloading as previously described in FIGS. 1 and 7 are applied to this cross-bar in the same way and their mode of use is the same and will not be further described.

In FIGS. 11 and 12, I have illustrated boat loading equipment that is substantially like that previously described but employing therein a different spring means for aiding the upward lifting and inward swinging of the levers 15—15 from their outwardly extending positions of FIG. 2 or 11 back to positions across the top of the car.

It has been shown in FIGS. 11 and 12 that a coil spring 55 is secured under tension, at one end to the cross bar 10 at a point 55*x* inwardly from pivot pin 17 and at its outer end is attached as at 56 to the inner end of a short lever arm 57 contained in and extending along channel 15 and which lever arm 57 is pivotally secured at its outer end by a pivot pin 58 as in FIG. 12 that is quite near the

pivot pin 17. With the upward and outward swinging of channel 15 to position of FIG. 12, the lever arm swings therewith, but it is limited in its pivotal action on pin 58 by the contacting of a downwardly projecting toe portion 59 at its pivoted end engaging a stop member 58' fixed in the channel 15 and is caused to be held in an upwardly extending position as in FIG. 11 to place greater tension on spring 55 with the final downward swing of lever 15.

When the boat is to be lifted for loading onto the top of the boat, the spring 55 will operate through lever arm 57 to aid in the lifting of the boat as mounted on the lever or leg portions 25 to return the parts to positions along the top bar 10 where they become nested together as in FIG.12.

In the following claims, the parts 10 will be designated as "cross-bars"; the parts 15 will be designated "swing bars" and the parts 25 will be designated as "legs."

What I claim is:

1. A car top boat loader and carrier mechanism comprising, a pair of cross-bars adapted to be anchored to a car top in longitudinally spaced relationship thereon, a pair of swing bars paired with and normally extending along and supported by said cross-bars, means hingedly securing those ends of said swing bars that are at the boat loading side of the car, to the corresponding ends of said cross-bars for the upward and outward swinging of said swing bars to laterally extending boat loading positions, a leg member for the support of each swing bar when in its laterally extended position, slidingly and hingedly secured at its top end to the swing bar for its inward and outward adjustment therealong, and adapted to be positioned at its lower end on a supporting surface, and means on said legs for the holding support of a boat thereon for loading incident to the inward shifting of said legs to positions inwardly along the extended swing bars and then causing said swing bars to be swung upwardly and across the car top to their normal positions of support on said cross-bars and causing the two legs, with boat as supported thereon, to be slid along said swing bars to positions of rest thereon within their end limits; said swing bars being each mounted by a hinge pin for vertical swinging movement on the corresponding cross-bar and said supporting leg for each swing bar being adapted to be rested between its ends on the corresponding hinge pin for its use as a supporting fulcrum in use of the leg as a lever arm for manually actuating the swing bar from its normal position of rest, through its initial upward and outward swinging movement, and for its control in its return to normal position of rest during a boat loading operation.

2. A car top boat loader according to claim 1 wherein said swing bars are of channel bar formation and are designed to receive the corresponding cross-bars therein with the swinging of said swing bars from extended back to normal positions of rest, and wherein said swing bar supporting legs are of channel formation, and to receive the swing bars therein with the sliding of said legs thereon and the swinging of the swing bars to positions resting on the cross-bars.

3. A combination according to claim 2 wherein the hinge pin is equipped at its opposite ends with rollers and wherein the leg that is associated with the swing lever is designed for its fulcruming support on said rollers.

4. The combination recited in claim 2 wherein a spring is so associated with the hinge pin mounting of each swing bar as to be placed under increased tension with the swinging of the bar from normal to a laterally extended position, to aid in the return of the swing bar from extended back to normal position, in the boat loading action.

5. A car top boat loader according to claim 4 wherein said swing bars are formed lengthwise thereof in opposite side walls with slots that terminate short of the ends of the bars, and wherein said supporting legs have pivotal mountings in their upper end portions that are contained in said slots to anchor the legs to said swing bars for their sliding adjustment therealong.

6. The combination recited in claim 3 wherein a stop member is positioned on each leg in such relationship to said pivotal mountings of the legs as to coact therewith to limit the outward extent of angulation of the leg relative to the swing bar in its support of the laterally extended swing bar.

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