Aug. 16, 1949. C. E. BURKEY 2,479,035

CAR TOP BOAT RACK

Filed April 25, 1947 2 Sheets-Sheet 1

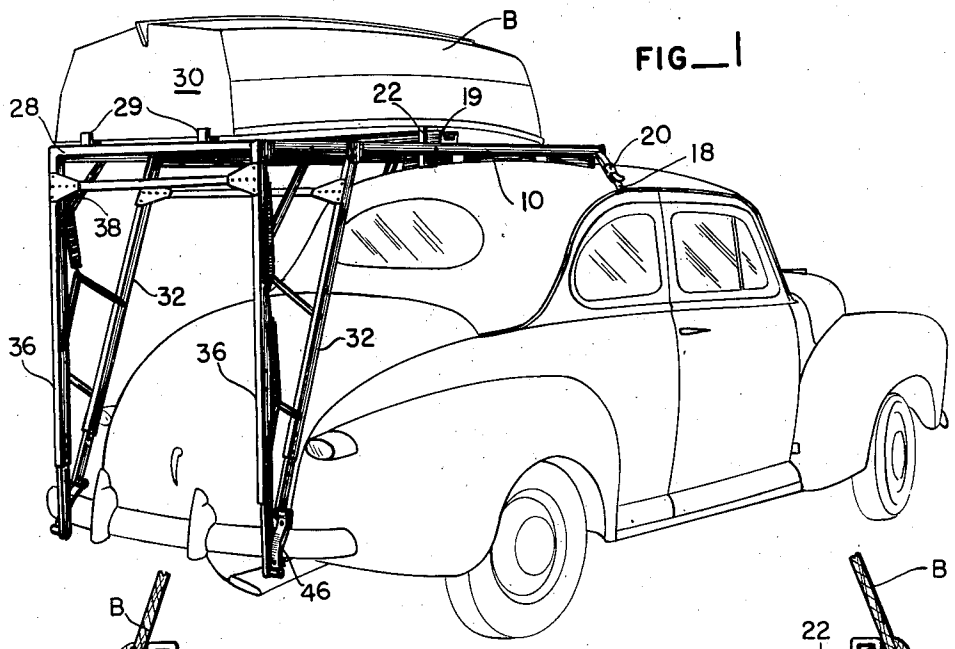


FIG_1

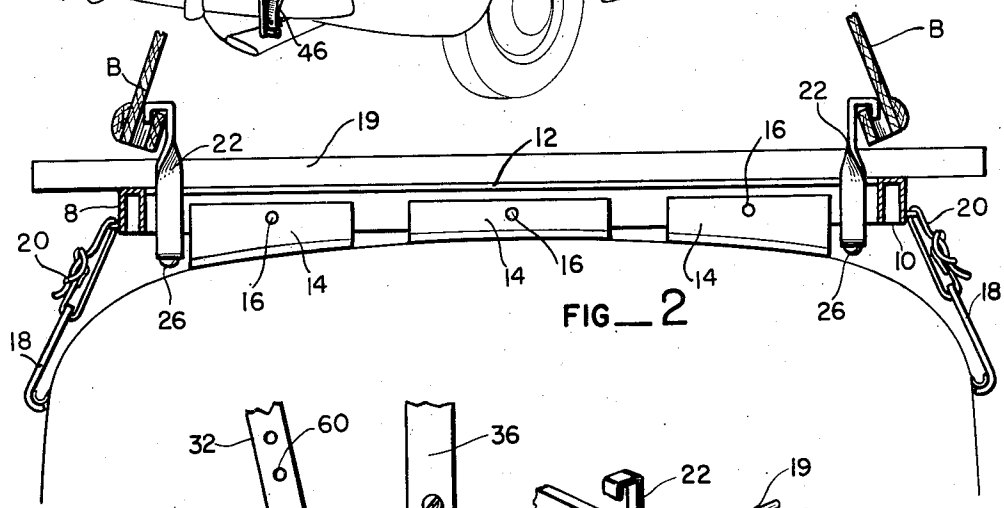


FIG_2

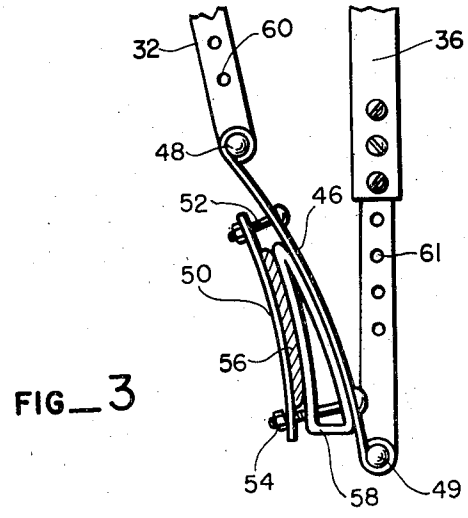


FIG_3

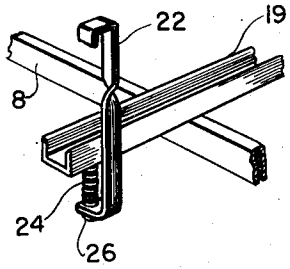


FIG_7

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CAR TOP BOAT RACK

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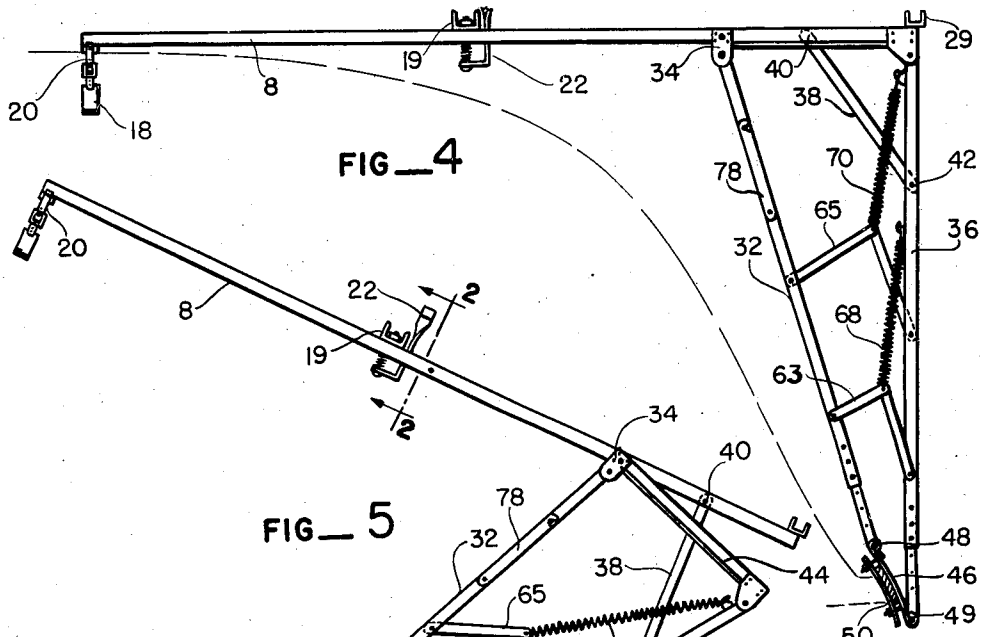


FIG_4

FIG_5

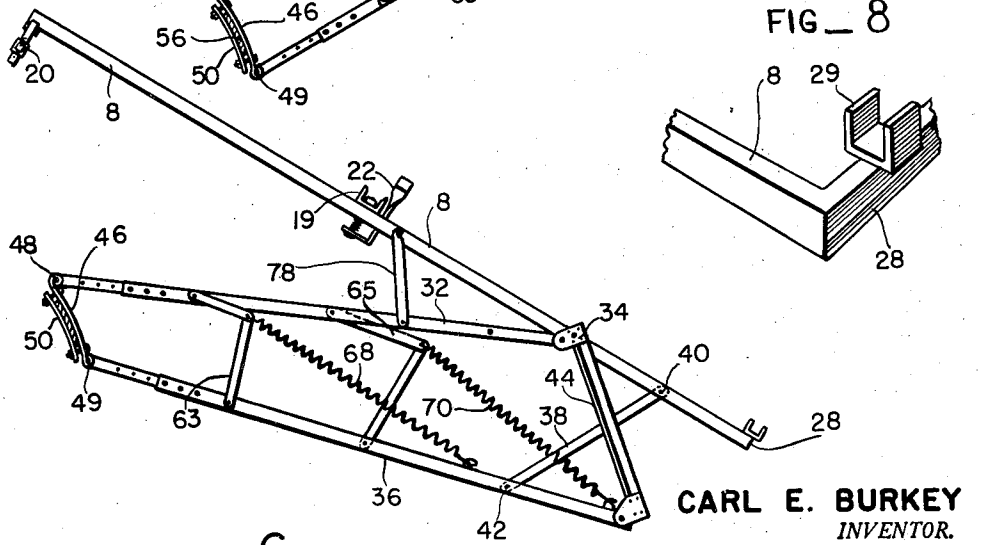


FIG_6

FIG_8

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CAR TOP BOAT RACK

Carl E. Burkey, Seattle, Wash.

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5 Claims. (Cl. 214—77)

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My present invention relates to the general class of devices which are used to transport articles on the top of passenger automobiles and, more particularly, to a car-top boat-rack.

In recent years, the very general use of automobiles, together with greatly improved road nets, have given great impetus to the use of the general class of boats usually referred to as car-top boats. Such boats are made of either light-weight wood, or some of the light-weight metals, such as aluminum and its alloys, or magnesium, and it is only a natural consequence that people desire to have a convenient means for transporting their light-weight boats from point to point. Early in this field, use was made of the already developed equipment used for carrying skis on the top of a car. This proved to be unhandy, however, and many devices have been produced which are designed specifically for the purpose of carrying boats on the top of cars. It has been my observation, however, that a large majority of the devices arranged for car-top cartage of boats are of such design that it still requires two or three persons to load a boat on top of a car, and then many and devious means are employed to securely hold the boat in place.

With this problem needing a proper solution, I have provided a car-top boat-carrier which is so arranged that a number of counter-balancing springs can be employed, to the end that in loading the boat on the rack, the springs of my carrier are under tension, and when the boat is loaded, a fraction of the weight of the boat only has to be moved in raising the boat to the car-top position. With my arrangement, therefore, it is easily possible for a single person to load a boat of such a weight that otherwise he could not lift it, but which, due to my counter-balancing spring arrangement, can be handled just as easily as a very light craft.

The principal object of my present invention, therefore, is to provide a car-top boat-rack which is provided with counter-balancing springs so that only a portion of the actual weight of the boat has to be overcome in raising the boat to the car-top position.

A further object of my invention is to provide a car-top rack that makes it possible to easily raise a boat into the car-top position and have it accurately and definitely positioned each time it is so raised.

A further object of my present invention is to provide a car-top boat-rack, in which the boat itself is firmly secured to the supporting bars of my rack, while the boat is resting with one end

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on the ground, so that it is convenient to secure the boat, and inspection is made possible to further insure that definite and positive engagement of the clamping device is provided.

A further object of my invention is to provide means whereby, with the minimum of alteration or adjustment, my car-top rack may be applied to a wide range of cars with their widely different bumper arrangements.

A further object of my present invention is to provide means whereby a boat may be easily and quickly loaded to the car-top position and, when loaded, will be secure in position so that even high-speed operation of the car will in no instance dislodge the boat, with the resultant damage and risk that that would entail.

Further objects, advantages and capabilities will be apparent from the description and disclosure in the drawings, or may be comprehended or are inherent in the device.

In the drawings:

Fig. 1 is a perspective view showing my car rack in place on an automobile and with a boat carried on the same.

Fig. 2 is a cross-sectional view through the holding-down means I employ, first to hold the boat to the rack, and secondly to hold the rack in place on the top of the car.

Fig. 3 is a cross-sectional view through an automobile bumper and showing the means I employ to make my rack readily adjustable to various types of bumper construction.

Fig. 4 shows my car-top boat rack in the normal position employed while transporting a boat; the outline of an automobile is shown in dashed lines so as to show the relationship more clearly between the rack and the car.

Fig. 5 shows my car rack in an intermediate position of its raising or lowering cycle.

Fig. 6 shows my car rack in its lowermost position where the rack is locked by a latch so as to hold the springs under compression.

Fig. 7 is a fragmentary perspective view showing one of the boat-securing, spring clamp members.

Fig. 8 is an enlarged perspective view of a portion of Figure 6.

Referring more particularly to the disclosure in the drawings, the numerals 8 and 10 designate the boat-supporting bars of my carrier. These bars, which may be of any suitable materials, have an overall length normally equal to the horizontal distance from the rear bumper to the high point in the top curvature of the car with which the device is to be used. In certain instances it

may be desirable to have the bars extend forward of the high point in order that they will provide the basis for a frame that will support longer boats or, possibly, for the transportation of longer items, such as sheet materials, carriers for relatively light materials, or for ladders and the like. Bars 8 and 10 are joined together by the forward spacing bar 12. This bar serves to space the bars 8 and 10 apart and should be of a length equal to at least the overall width of any equipment that is to be carried on the rack. I provide a plurality of removable pads as 14 which engage the car top and resiliently support bar 12. I prefer that pads 14 be centrally pivoted as at 16 so that the pads can thus more easily conform to the transverse curvature of the car-top, and thus come to a firm bearing which will have the least tendency to disfigure the finish of the car.

To hold bar 12 and its parts in position, I provide a plurality of holding-down clip members 18. These are adjustably secured to bars 8 and 10 as by the adjustable straps 20 shown. When my carrier is to be used with its principal object in mind, namely carrying boats, I provide a plurality of holding-down hook members 22 normally secured to transverse bar 19 which are arranged at the upper end with a hook, or other means, so as to suitably and securely engage preferably the gunwales of boat B. Bar 10 is required where the boat to be carried is wider than the spacing of bars 8 and 10. At their lower ends, hook members 22 are provided with a bent portion, to provide a seat for springs 24. These springs have their normal free compression controlled by the securing bolts 26, and should be of such size stock, and the coils so spaced, that they will at all times have a resilient, downwardly-directed thrust on the boat and thus hold the boat in engagement with bar 12, even though the whole assembly may be jarred more or less continuously, as for instance, when a car is passing over unimproved roads.

At their rear ends, bars 8 and 10 are connected together preferably by a channel-shaped bar 28. I have found it practical to use short sections of an upwardly faced channel 29, secured to bar 28, wherein the leg portions are spaced apart sufficiently so that the transom 30 of a boat may be seated inside the channel, and thus a very definite forward and rear stop is provided which locates the boat definitely and prevents its longitudinal shifting.

The rear support for bars 8 and 10 is provided in what I prefer to term a truss arrangement. I provide, on each side of the car, a truss support means for bars 8 and 10, respectively, which consists essentially of the forward truss members 32, which are pivoted at 34 to bars 8 or 10, and the rear truss members 36.

Truss member 36 is pivotably connected to bars 8 or 10 by the link members 38, which are pivoted at their upper ends as at 40 to the boat supporting bars 8 or 10, and at their lower ends to the rear truss member 36, at 42. The upper ends of the truss members 32 and 36 are connected together by the pivoted strut 44, connecting bars 32 and 36 by pivots at each end of the strut, which are free to revolve.

At their lower ends, bars 32 and 36 are pivotably secured to the bumper bracket member 46 as at 48 and 49, respectively.

The clearest understanding of the bumper bracket arrangement will probably be gained from the showing of Fig. 3. The bumper bracket 46 is held in place by the clamp member 50 which has, at each of its ends, the clamping bolts 52 and 54. This provides a secure clamping arrangement so that the car bumper 56 can be positively and securely gripped. In Fig. 3, attention is invited to the filler piece 58 which is employed between the bumper and bracket 46. These filler pieces must of necessity be varied in order to accommodate the bracket member to various types of bumpers as employed on the different makes of automobiles, it being quite essential that the positioning of bracket 46 be capable of reasonable adjustment, in that its positioning has a very important effect on the operation of my truss means. To further make my equipment adaptable, without structural changes, to different types of installation, I have provided adjustable end pieces for bars 32 and 36, each having a plurality of adjustment holes as 60 in bar 32, and 61 in bar 36.

Referring particularly to Figs. 4, 5 and 6, it is to be noted that I employ two sets of toggle connectors 63 and 65 which are pivoted together and, in turn, pivoted respectively to truss members 32 and to truss members 36. I further provide at the central connecting pivot the tension springs as 68 and 70. These springs are connected at their other ends to the rear truss member 36.

Method of operation

The operation of my rack will best be understood, it is believed, from a study of Figs. 4, 5 and 6. Referring to Fig. 4, the rack is normally carried in its uppermost position and clamped to the top of the car by means of hooks 18. When it is desired, for instance, to load a boat, hooks 18 must be released, normally by slacking off on the adjustable strap 20, until they can be released from their point of engagement with the car body, as for instance, the gutter illustrated in Fig. 2. As soon as hooks 18 are released, a single individual can grasp one of the truss members, or the central connecting members between the trusses, and pull the rack downwardly against the compression of springs 68 and 70. If a boat of 100 pounds weight is to be carried, it is desirable that the tensioning of these springs should be such that, when the framework is in the position shown in Fig. 5, it should take about a 50-pound applied force to bring the carrier down to the grounded position, as shown in Fig. 6. When the rack is fully grounded, it is then usually found desirable to latch the same in its down position by means of the pivoted latches 78, which are pivoted to members 32 and have hooked engaging arrangements to hook over a projecting pin or bolt in the side supporting frame members 8 and 10.

When the frame is in its grounded position, the boat, or other material that it is desired to carry, can then be easily applied to the load-supporting bars and at that time, while every part of the carrier is in the easily reached position, the boat should be made secure to the frame, as for instance, by means of the hook members 22. If it were desired to make secure the boat, or other materials, by tying the same in place, it will be apparent, it is believed, that this is the most convenient position for such final securing.

As soon as the boat is in place, it will normally have a weight greater than the upper thrust of the various springs, so at this time latch 78 can be released and the boat raised at any future time desired.

In the actual raising of the boat by use of my frame, it is believed it will be apparent from a study of Figs. 4, 5 and 6 that in effect the boat is raised as though it were being shoved up an inclined plane without friction. This effect results through the fact that the truss arrangement tends to transfer the load from one member to the other and the boat is moved through quite a long distance in order to raise it a relatively small amount, it being remembered that the center of gravity of the boat, when it reposes on the frame in the position shown in Fig. 6, is about waist-high on the ordinary individual, and it is actually only necessary to raise the center of gravity another couple feet or so in order to get it into its uppermost position. If this principle is understood, it is believed it will be apparent that relatively little effort is required, so that a device of this order can be easily operated by children or women or persons who are not accustomed to doing heavy lifting.

In Figs. 4, 5 and 6, the various springs have been shown with their coils at different spacings, so as to illustrate the positions of the springs where they have their maximum extension. It should thus be apparent then that the maximum lifting of the springs occurs in moving from the position of Fig. 6 to that of Fig. 5, and that in moving from the position of Fig. 5 to that of Fig. 4, the springs become less extended until, when they are in the uppermost position, they are under very little tension.

It is believed that it will be clearly apparent from the above description and disclosure in the drawings that the invention comprehends a novel construction of a car-top boat rack.

Having thus described my invention, I claim:

1. A car-top boat rack comprising: spaced, substantially parallel boat-supporting bars extending from the vertical plane including the rear bumper of an automobile to or beyond the high point of the car top; a forward spacing bar secured to said supporting bars near the front ends of said supporting bars; a removable pad pivotably secured to said forward bar; a rear spacing bar secured to the rear ends of said supporting bars; means secured to said rear bar adapted to position the transom of a boat and secure it against either forward or rearward movement; a transverse support bar secured to said boat supporting bars intermediate their ends; resiliently mounted hook members secured to said transverse bar and adapted to hold a boat to said supporting bars; forward truss members pivotably secured to said boat supporting bars intermediate their rear ends and the transverse bar; rear truss members lying in the same fore and aft plane as the forward truss members and pivotably connected to them by a pivoted strut; a bumper bracket adapted for attachment to a car rear bumper and providing pivot securing means for said truss members; toggle connectors pivotally secured to said forward and rear truss members; and tension means secured at the central pivots of said toggle connectors and to the rear truss members.

2. A car-top boat rack, comprising: spaced, boat-supporting bars extending substantially from the vertical plane including the rear bumper of an automobile to or beyond the high point of the car top; a forward spacing bar secured to said supporting bars near the front ends of said supporting bars; a pad secured to said forward bar and adapted to rest on the car top; a rear spacing bar secured to the rear ends of said supporting bars; means secured to said rear bar adapted to position the transom of a boat and secure it against either forward or rearward movement; a transverse support bar secured to said boat-supporting bars intermediate their ends; resiliently mounted hook members secured to said transverse bar and adapted to hold a boat to said supporting bars; forward truss members pivotably secured to said boat-supporting bars intermediate their rear ends and the transverse bar; rear truss members lying in the same fore and aft plane as the forward truss members and pivotably connected to them by a pivoted strut; a bumper bracket adapted for attachment to a car rear bumper and providing pivot securing means for said truss members; toggle connectors pivotably secured to said forward and rear truss members; and tension means secured at the central pivots of said toggle connectors and to the rear truss members.

3. A car top boat rack comprising: spaced, boat-supporting bars extending substantially from the vertical plane including the rear bumper of an automobile to or beyond the high point of the car top; a forward spacing bar secured to said supporting bars near the front ends of said supporting bars; a removable pad pivotably secured to said forward bar; a rear spacing bar secured to the rear ends of said supporting bars; means secured to said rear bar adapted to position the transom of a boat and secure it against either forward or rearward movement; resiliently mounted hook members adapted to hold a boat to said supporting bars; forward truss members pivotably secured to said boat supporting bars intermediate their ends; rear truss members lying in the same fore and aft plane as the forward truss members and pivotably connected to them by a pivoted strut; a bumper bracket adapted for attachment to a car rear bumper and providing pivot securing means for said truss members; toggle connectors pivotably secured to said forward and rear truss members; and tension means secured at the central pivots of said toggle connectors and to the rear truss members.

4. A car-top boat rack comprising: spaced, boat-supporting bars extending substantially from the vertical plane including the rear bumper of an automobile to or beyond the high point of the car top; a forward spacing bar secured to said supporting bars near the front ends of said supporting bars; a rear spacing bar secured to the rear ends of said supporting bars; resiliently mounted hook members adapted to hold a boat to said supporting bars; forward truss members pivotably secured to said boat-supporting bars intermediate their rear ends; rear truss members lying in the same fore and aft plane as the forward truss members and pivotably connected to them by a pivoted strut; a bumper bracket adapted for attachment to a car rear bumper and providing two pairs of transversely positioned, axially aligned, pivots and securing means for said struss members; and spring tension means secured between said forward and rear truss members and positioned to be energized in lowering said boat rack and to expand their energy in raising said rack to its carry position.

5. A car-top boat rack comprising: spaced, boat-supporting bars extending substantially from the vertical plane including the rear bumper of an automobile to or beyond the high point of the car top; a forward spacing bar secured to said supporting bars near the front ends of said

supporting bars; a rear spacing bar secured to the rear ends of said supporting bars; resiliently mounted hook members adapted to hold a boat to said supporting bars; forward truss members pivotably secured to said boat-supporting bars intermediate their rear ends; rear truss members lying in the same fore and aft plane as the forward truss members and pivotably connected to them; a bumper bracket adapted for attachment to a car rear bumper and providing two pairs of transversely positioned, axially aligned pivots and securing means for said truss members; the pivot axis of the forward truss members being disposed in front of and above the pivot axis of the rear truss members.

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