

July 10, 1962

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3,043,398

WHEELED VEHICLES HAVING A LADDER ASSEMBLY

Filed Oct. 15, 1959

3 Sheets-Sheet 1

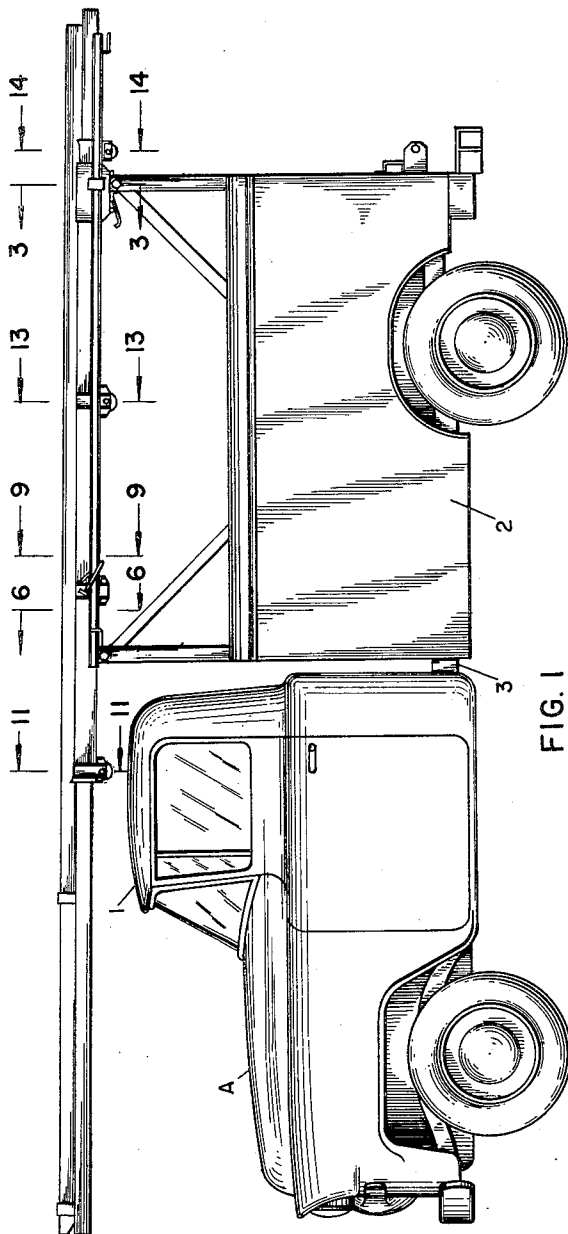


FIG. 1

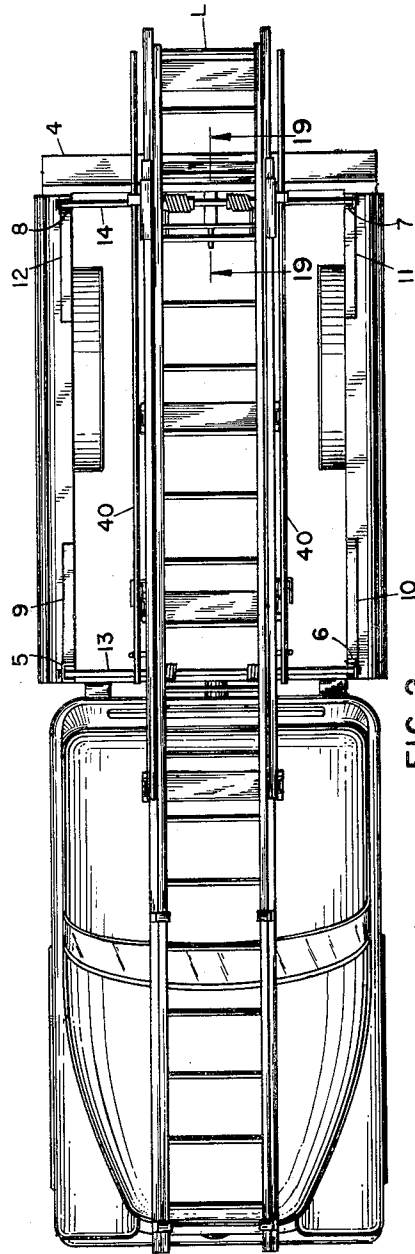


FIG. 2

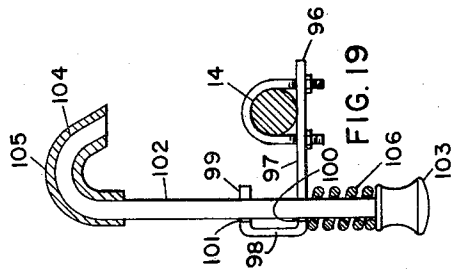


FIG. 19

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3 Sheets-Sheet 2

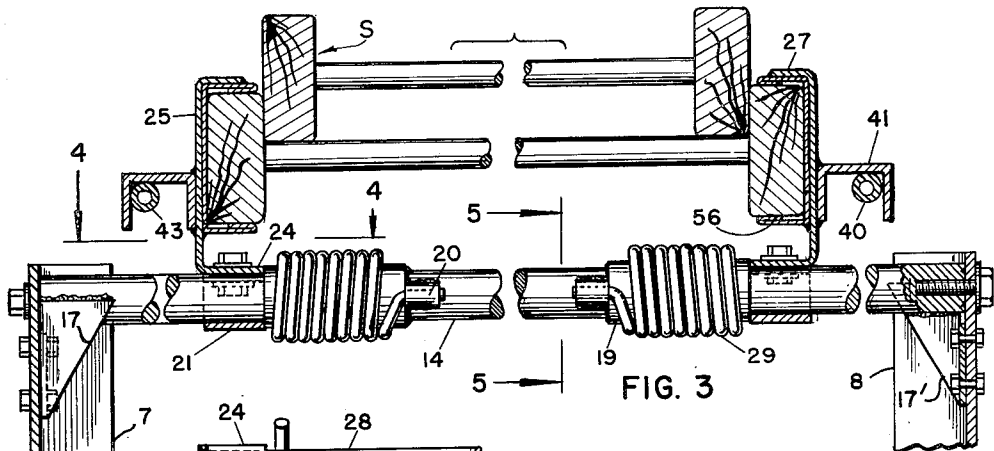


FIG. 3

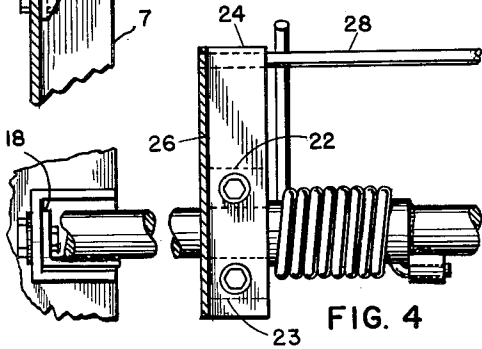


FIG. 4

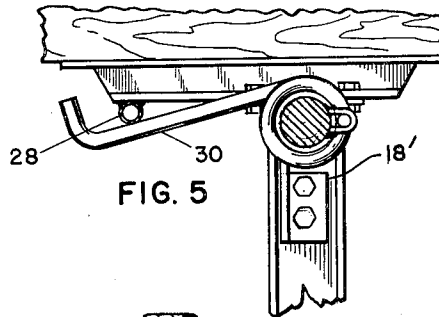


FIG. 5

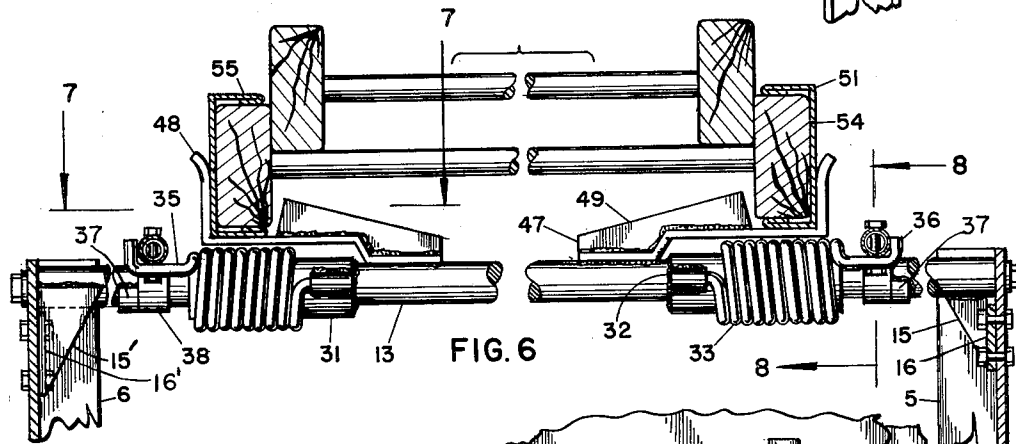


FIG. 6

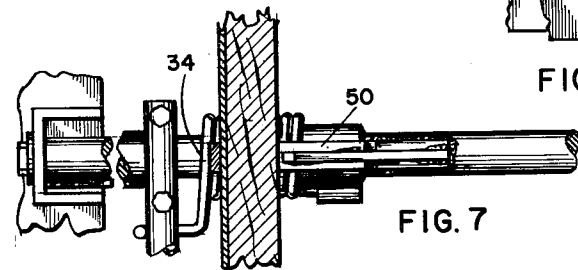


FIG. 7

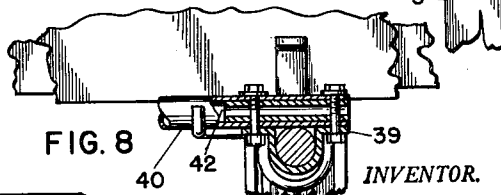


FIG. 8

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3,043,398

WHEELED VEHICLES HAVING A LADDER ASSEMBLY

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Filed Oct. 15, 1959, Ser. No. 846,614
7 Claims. (Cl. 182-127)

This invention relates to mobile extension ladders, and, more particularly, to an extension ladder adapted to be mounted on a vehicle or similar mobile platform.

It is the primary object of the present invention to provide a mobile extension ladder which can be readily shifted from a transport position to an operative position with minimum effort.

It is also an object of the present invention to provide a mobile ladder of the type stated which may be readily extended to various heights when in operative position.

It is a further object of the present invention to provide a mobile ladder of the type stated which is partially self-erecting and which is uniquely braced for strength and safety when in operative position.

It is an additional object of the present invention to provide a mobile ladder of the type stated which is supported entirely from a wheeled vehicle or other similar mobile platform.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings—

FIG. 1 is a side elevational view of a motor vehicle or truck equipped with a mobile extension ladder constructed in accordance with and embodying the present invention;

FIG. 2 is a plan view of the truck of FIG. 1;

FIG. 3 is a fragmentary sectional view taken along line 3-3 of FIG. 1;

FIG. 4 is a fragmentary sectional view taken along line 4-4 of FIG. 3;

FIG. 5 is a fragmentary sectional view taken along line 5-5 of FIG. 3;

FIG. 6 is a fragmentary sectional view taken along line 6-6 of FIG. 1;

FIG. 7 is a fragmentary sectional view taken along line 7-7 of FIG. 6;

FIG. 8 is a fragmentary sectional view taken along line 8-8 of FIG. 6;

FIG. 9 is a fragmentary sectional view taken along line 9-9 of FIG. 1;

FIG. 10 is a fragmentary sectional view taken along line 10-10 of FIG. 2;

FIG. 11 is a fragmentary sectional view taken along line 11-11 of FIG. 1;

FIG. 12 is a fragmentary sectional view taken along line 12-12 of FIG. 11;

FIG. 13 is a fragmentary sectional view taken along line 13-13 of FIG. 1;

FIG. 14 is a fragmentary sectional view taken along line 14-14 of FIG. 1;

FIG. 15 is a fragmentary side elevational view of the truck showing the mobile extension ladder in the elevated and extended position;

FIG. 16 is an enlarged fragmentary side elevational view of the means for locking the tubular support-brace in operative position;

FIG. 17 is a fragmentary sectional view taken along line 17-17 of FIG. 16;

FIG. 18 is a fragmentary sectional view taken along line 18-18 of FIG. 2; and

FIG. 19 is a fragmentary sectional view taken along line 19-19 of FIG. 2.

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Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of the present invention, A designates a wheeled vehicle including a cab portion 1, and a body 2, supported upon a chassis 3. The body 2 includes a rear-step 4 and is provided at its four corners with upwardly extending vertical posts 5, 6, 7, and 8, which are respectively reinforced by angular braces 9, 10, 11, and 12. Bolted at its ends to, and extending horizontally between, posts 5 and 6 is a solid rod 13, and, similarly bolted at its ends to an extending horizontally between the posts 7 and 8 is a solid rod 14. Welded to opposite ends of the rod 13 are gusset plates 15, 15' integrally provided with laterally projecting flanges 16, 16' respectively, which are, in turn, bolted to the upper ends of the posts 5, 6, thereby reinforcing the structural connection between the rod 13 and the posts 5, 6, and, also preventing rotation from the rod 13 with respect to the posts 5, 6. Similarly welded to the opposite ends of the rod 14 are gusset plates 17, 17', having integral flanges 18, 18', respectively, which are bolted to the upper ends of the posts 7, 8, and serve substantially the same purpose as the gusset plates 15, 15'.

Welded or otherwise rigidly secured to the rod 14 intermediate the posts 7, 8, is a pair of axially spaced sleeves 19. Also welded to the rod 14, in sidewise abutment with and inwardly of each of the sleeves 19, is a hollow U-shaped channel 20. Rockably mounted on the rod 14 in endwise abutment against the outer end faces of the sleeves 19 are U-shaped bearing members 21 having lateral flanges 22, 23, which are bolted to lower flanges 24 of U-shaped channel frames 25. Each of the channel frames 25 also integrally includes a vertical web 26 and an upper flange 27 which is parallel to the lower flange 24. The channel frames 25 are, moreover, aligned with each other transversely along the rod 14 and face inwardly toward each other, being cross-connected by a rod 28. Since the channel frames 25 are thus connected to each other, the two sleeves 19 prevent axial shifting thereof along the rod 14, and, furthermore, the channel frames 25 are constrained to rock as a unit around the rod 14. Coiled about each of the sleeves 19 is a cylindrical spring 29, one end of which extends axially into the adjacent U-shaped channel 20. The other end of each spring 29 is radially elongated in the formation of a biasing arm 30 which is hooked under the rod 28, as best seen in FIG. 5.

Similarly welded to the rod 13 is a pair of axially spaced sleeves 31 each having an outwardly projecting U-shaped channel 32. Coiled about each of the sleeves 31 is a cylindrical spring 33, one end of which extends axially into the adjacent U-shaped channel 32. The other end of each spring 33 is radially elongated in the formation of a biasing arm 34 which is bent laterally at its outer end in the provision of an offset section 35, the outer end of which is bent upwardly in the provision of a hook-like terminal portion 36.

Rigidly secured to the rod 13 intermediate the sleeves 31 and the posts 5, 6, is a pair of lateral stops 37. Rockably mounted upon the rod 13 between the stops 37 and the sleeves 31 is a pair of U-shaped clips 38, each having a pair of lateral flanges 39 which are bolted to the underside of tubular brace members 40. The tubular brace members 40 normally extend rearwardly beyond the posts 7, 8 and are resiliently hooked beneath downwardly opening U-shaped retainer clips 41 which are welded to the outwardly presented faces of the webs 26 of the channel frames 25, all as best seen in FIG. 3 and for purposes presently more fully appearing.

The brace members 40 are provided at their forward ends with tight-fitting internal tubular liners 42 of substantial length which serve to give the brace members 40 additional strength where they are bolted to the U-shaped clips 38. At their rearward ends, the brace members 40

are provided with second internally disposed tubular members 43 which extend diametrically therethrough in substantially perpendicular relationship to the axis thereof. Also attached to the rearward end of the brace members 40, by means of chains 44, are headed pins 45, each having a rod-like body 46 sized for insertion into tubular members 43. The brace members 40 are hooked over the offset section 35 of the spring 33 and are, thereby, biased upwardly.

Welded, or otherwise rigidly secured, to the top of the rod 13, and extending upwardly and outwardly therefrom, is a pair of upwardly formed brackets 47 having vertical flanges 48 and vertical reinforcing plates 49, the latter being provided with angularly positioned margins 50.

Welded in and carried by the U-shaped channel frames 25 is a pair of complementary elongated U-shaped channels 51 each having flared ends 52 and 53. Each channel 51 integrally includes a web-section 54, an upper flange 55 and a lower flange 56. The flanges 55 and 56 are bent back flatwise along their margins so that the flanges 55, 56, are of double thickness for approximately the outer half of their width. The channels extend forwardly and, when in transport position, rest in the brackets 47 between the flanges 48, as best seen in FIGS. 1 and 6.

Welded to the underfaces of the flanges 56 of the channels 51, adjacent to and extending horizontally between the flared ends 52 thereof is a cross-channel 57 which is also butt-welded at its transverse ends to upright outwardly-facing channel-sections 58, the latter extending across the outer faces of the web-sections 54 of the channels 51 and being also tack-welded thereto. The flanges 56 and the cross-channel 57, in the area of mutual overlap, are cut out to form rectangular apertures 59, and, the cross-channel 57 is provided with pairs of spaced parallel depending ears 60, 61, located along opposite longitudinal margins of each apertures 59 for supporting horizontal bolts 62 which function as axles for rubber roller-wheels 63, the latter being of sufficient outside diametral size to extend freely upwardly through the apertures 59. Also disposed within the channels 51, adjacent the flared ends 56 thereof, are guide plates 64 having angular flanges 65 integrally connected by a flat web-section 66, the flanges being welded along their vertical margins to the web-section 54 of the channels 51 and being of such dimension as to hold the web-section in outwardly spaced parallel relation to the inner face of the web-section 54.

Similarly welded to the underfaces of the flanges 56 of the channels 51, approximately midway between the flared ends 52, 53, is a cross-channel 67 which is also butt-welded at its transverse ends to upright outwardly-facing channel-sections 68, the latter extending across the outer faces of the web-sections 54 of the channels 51 and being also tack-welded thereto. The flanges 56 and the cross-channel 67, in the area of mutual overlap are cut out to form rectangular apertures 69, and the cross-channel 67 is provided with pairs of spaced parallel depending ears 70, 71, located along opposite longitudinal margins of each aperture 69 for supporting horizontal bolts 72 which function as axles for rubber roller-wheels 73, the latter being of sufficient outside diametral size to extend freely upwardly through the apertures 69.

Similarly welded to the underfaces of the flanges 56 of the channels 51 adjacent the flared end 53 is a cross-channel 74. The flanges 56 and the cross-channel 74, in the area of mutual overlap, are cut out to form rectangular apertures 75, substantially similar in size and shape to the apertures 59, and the cross-channel 74 is provided with pairs of spaced parallel depending ears 76, 77, located along opposite longitudinal margins of each aperture 75 for supporting horizontal bolts 78 which function as axles for rubber roller-wheels 79 of substantially the same size as the roller-wheels 63.

Similarly welded to the underfaces of the flanges 56 and extending horizontally beneath the channels 51, approximately midway between the cross-channel 57 and

the cross-channel 74, is a cross-channel 80 which is butt-welded at its transverse ends to upright outwardly-facing channel-sections 81 extending across the outer faces of the web-sections 54 and being tack-welded thereto. Welded within the channel-sections 81 and projecting outwardly therefrom are ears 82 having apertures 83. Also welded to the outer faces of the web-sections 54, adjacent to the channel-sections 81, are angularly disposed spacer-rods 84 which are somewhat greater in diametral size than the flange-width of the channel-sections 81 and welded to the underfaces of the flanges 56 adjacent to the lower ends of the spacer rods 84 are L-shaped guide-members 85 having leg-elements 86 which are disposed in outwardly spaced parallel relation to the web-sections 54 and terminating adjacent to the ears 80 as best seen in FIGS. 9 and 10. It will be noted in this connection that the brace members 40 are slidably guided between the guide-members 85 and the spacer-rods 84 so as to clear the channel-sections 58, 68, and 81.

Slidably disposed within and extending between the complementary channels 51 is an extension ladder L having rails 87 which are cross-connected by rungs 88 and are edgewise supported by the wheels 63, 73, 79, within the channels 51. Shiftably mounted upon the rails 87 is an extensible ladder section S having rails 89 cross-connected by rungs 90. Rockably pivoted upon the inner faces of the rails 89 adjacent the lower ends thereof are conventional extension-ladder catch-hooks 91 which are adapted for optional engagement with any one of the rungs 88 of the lower ladder section, as best seen in FIG. 18. Rigidly secured to the underfaces of the rails 87 adjacent to the rearward ends thereof are plates 92 each having a rearwardly and downwardly presented hook portion 93 welded thereto for purposes presently more fully appearing and as best seen in FIG. 18.

Welded to the lower ends of the posts 7, 8, and projecting rearwardly therefrom are plates 94 which are cross-connected by a horizontal rod 95 held in outwardly spaced relation to the rear end of the chassis 3.

Clamped around the brace 14 intermediate the sleeves 31 is a bracket 96 including a horizontal leg 97, a vertical leg 98 and a reversely bent tab 99. The leg 97 and tab 99 are provided with vertically aligned apertures 100, 101, respectively, for slidably receiving an elongated rod-like member 102 provided at its lower end with a knob 103 and on its upper end with a semi-circular hook 104 encased within a resilient cushioning sleeve 105. Coiled around the depending end of the rod-like member 102 and interposed between the leg 97 and the knob 103 is a spring 106. Thus, when the ladder L is in transport position, as shown in FIG. 1, the knob 103 may be manually pushed upwardly so that the hook 104 will engage one of the ladder rungs 90 and thus hold the entire ladder L against shifting within the channels 51 during transit. When it is desired that the ladder L be swung into upright or operative position, it is merely necessary to push the knob 103 upwardly to release the hook 104 and shift the lower end of the ladder L rearwardly in the channels 51 to clear the hook-engaged rung 90. The knob 103 is then released and the spring 106 will push the rod-like member 102 and the hook 104 downwardly out of the way.

It should be noted that, when the ladder L is in transport position, as shown in FIG. 1, the weight and center of gravity thereof is such that the upward swing bias of the springs 29, 33, is overcome or overbalanced and the ladder L will not swing into upright position when the hook 104 is released.

The ladder L is erected in the following manner: the hook 104 is disengaged as above-described and the brace members 40 are pushed downwardly and outwardly to release them from engagement with the retainer clips 41. Thereupon, the ladder L is manually shifted rearwardly until a portion of its weight overhangs to the rear of rod 14 and becomes a downward component of force which is additive to the bias of the springs 29, 33. The ladder then

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can be swung upwardly to the operative position shown in FIG. 15 with a very little or, in fact, almost no manual effort. As the ladder L reaches fully erect position, the lower end is hooked over the rod 95 as shown in FIG. 18. At the same time, the brace members swing upwardly to the position shown in FIG. 15 and come into abutment with the ears 82 when the springs in the tubular members 43 are in alignment with the apertures 83. It will be noted in this connection that the ears 82 are positioned at an angle with respect to the channel-sections 81 so as to abut flatwise against the brace-members 40 when the latter are in erected position.

The operator may then climb the ladder L and place headed pins 107 through the aperture 83 in ears 82 whereby the brace-members 40 become locked to the channels 51. Thereupon, the extensible ladder sections may be shifted upwardly to any desired position in the conventional manner.

The ladder L is lowered and placed in the transport position by reversing the above-described sequence of steps.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the wheeled vehicles having a ladder assembly may be made and substituted for those herein shown and described without departing from the nature and principles of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above said vehicle, first spring means operatively mounted on said first cross-brace for urging the rearmost ends of said channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, said diagonal braces comprising cylindrical tubes having diametrically aligned apertures substantially near the rearmost ends, second spring means operatively mounted on said second cross-brace for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, said guide means including a solid block having an aperture and a rod-like element attached to the bottom of said channels and extending outwardly and forwardly therefrom to a point where it substantially encloses said diagonal brace between said channel, said block, and said rod-like element, locking means for holding said guide means in locked engagement with said diagonal brace when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal stud, and a second bracket attached to said ladder and sized and located thereon for engagement with said stud when said channels are in the elevated position whereby to retain said ladder in the elevated position.

2. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above

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said vehicle, first spring means operatively mounted on said first cross-brace for urging the rearmost ends of said channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, said diagonal braces comprising cylindrical tubes having diametrically aligned apertures substantially near the rearmost ends, second spring means operatively mounted on said second cross-brace for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, said guide means including a solid block having an aperture and a rod-like element attached to the bottom of said channels and extending outwardly and forwardly therefrom to a point where it substantially encloses said diagonal brace between said channel, said block, and said rod-like element, said block being positioned on said channel in such manner that when said channels are in the extended position said diagonal brace is in flatwise abutment with said block and the apertures in said block and said brace are in substantial alignment, pin means for insertion through said aligned apertures when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal stud, and a second bracket attached to said ladder and sized and located thereon for engagement with said stud when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

3. A device of the class described for mounting to a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said cross-brace and extending forwardly and rearwardly therefrom above said vehicle, first spring means operatively mounted on said first cross-brace for urging the rearmost ends of said channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, said diagonal braces comprising cylindrical tubes having diametrically aligned apertures substantially near the rearmost ends, second spring means operatively mounted on said second cross-brace for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, said guide means including a solid block having an aperture and a rod-like element attached to the bottom of said channels and extending outwardly and forwardly therefrom to a point where it substantially encloses said diagonal brace between said channel, said block, and said rod-like element, locking means for holding said guide means in locked engagement with said diagonal brace when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, said means including a stop operatively mounted to said first cross-brace and extending upwardly therefrom between the rungs of said ladder, means for lowering said stop with respect to said ladder when

the ladder is to be moved, a bracket attached to said vehicles and extending rearwardly therefrom, said bracket including a horizontal stud, and a second bracket attached to said ladder and sized and located thereon for engagement with said stud when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

4. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above said vehicle, a sleeve member mounted on each end of said first cross-brace, a hollow U-shaped element mounted on said first cross-brace inwardly of and in sidewise abutment with the sleeve, flange members rockably mounted on said first cross-brace in endwise abutment with and on the outer end of each of said sleeve members, a rod cross connecting each of said flanges, coiled springs mounted on each of said sleeves, each of said springs having one end extend into said U-shaped channel and the other end hooked under said rod for urging the rearmost ends of said complementary channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, second spring means operatively mounted on said second cross-brace for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, locking means for holding said guide means in locked engagement with said diagonal brace when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal rod, and a second bracket attached to said ladder and sized and located thereon for engagement with said rod when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

5. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above said vehicle, a sleeve member mounted on each end of said first cross-brace, a hollow U-shaped element mounted on said first cross-brace inwardly of and in sidewise abutment with the sleeve, flange members rockably mounted on said first cross-brace in endwise abutment with and on the outer end of each of said sleeve members, a rod cross connecting each of said flanges, coiled springs mounted on each of said sleeves, each of said springs having one end extend into said U-shaped channel and the other end hooked under said rod for urging the rearmost ends of said complementary channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, spaced sleeves mounted on said second cross-brace, each of said sleeves having U-shaped channels associated therewith, coiled springs mounted on each of said sleeves for urging the rear ends of said diag-

nal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, locking means for holding said guide means in locked engagement with said diagonal brace when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal rod, and a second bracket attached to said ladder and sized and located thereon for engagement with said rod when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

6. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above said vehicle, a sleeve member mounted on each end of said first cross-brace, a hollow U-shaped element mounted on said first cross-brace inwardly of and in sidewise abutment with the sleeve, flange members rockably mounted on said first cross-brace in endwise abutment with and on the outer end of each of said sleeve members, a rod cross connecting each of said flanges, coiled springs mounted on each of said sleeves, each of said springs having one end extend into said U-shaped channel and the other end hooked under said rod for urging the rearmost ends of said complementary channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, said diagonal braces comprising cylindrical tubes having diametrically aligned apertures substantially near the rearmost ends, spaced sleeves mounted on said second cross-brace, each of said sleeves having U-shaped channels associated therewith, coiled springs mounted on each of said sleeves for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, locking means for holding said guide means in locked engagement with said diagonal brace when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal rod, and a second bracket attached to said ladder and sized and located thereon for engagement with said rod when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

7. A device of the class described for mounting on a vehicle, said device comprising a rear support fixedly mounted to said vehicle and extending upwardly therefrom, said rear support including a first fixed horizontally disposed cross-brace, a pair of complementary channels pivotally mounted about said first cross-brace and extending forwardly and rearwardly therefrom above said vehicle, a sleeve member mounted on each end of said first cross-brace, a hollow U-shaped element mounted on said first cross-brace inwardly of and in sidewise abutment with the sleeve, flange members rockably mounted on said first cross-brace in endwise abutment with and on the outer end of each of said sleeve members, a rod cross connecting each of said flanges, coiled

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springs mounted on each of said sleeves, each of said springs having one end extend into said U-shaped channel and the other end hooked under said rod for urging the rearmost ends of said complementary channels downwardly, a forward support fixedly mounted to said vehicle and extending upwardly therefrom, said forward support including a second fixed horizontally disposed cross-brace, a pair of diagonal braces pivotally mounted on said second cross-brace and extending rearwardly therefrom, said diagonal braces comprising cylindrical tubes having diametrically aligned apertures substantially near the rearmost ends, spaced sleeves mounted on said second cross-brace, each of said sleeves having U-shaped channels associated therewith, coiled springs mounted on each of said sleeves for urging the rear ends of said diagonal braces upwardly, guide means fixedly mounted on said complementary channels for guiding said diagonal braces as said channels are pivoted about said first cross-brace, said guide means including a solid block having an aperture and a rod-like element attached to the bottom of said channels and extending outwardly and forwardly therefrom to a point where it substantially encloses said diagonal brace between said channel, said block, and said rod-like element, said block being positioned on said channel in such manner that when said channels are in the extended position said diagonal brace is in flatwise

abutment with said block and the apertures in said block and said brace are in substantial alignment, pin means for insertion through said aligned apertures when said channels are in the elevated position, a plurality of wheels operatively mounted within each of said complementary channels, an extension ladder disposed between said channels and movably seated on said wheels, means for holding said ladder in relatively stable position with respect to said channels, a bracket attached to said vehicle and extending rearwardly therefrom, said bracket including a horizontal stud, and a second bracket attached to said ladder and sized and located thereon for engagement with said stud when said channels are in the elevated position, whereby to retain said ladder in the elevated position.

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