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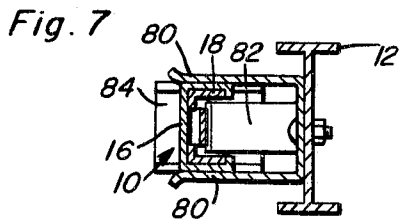
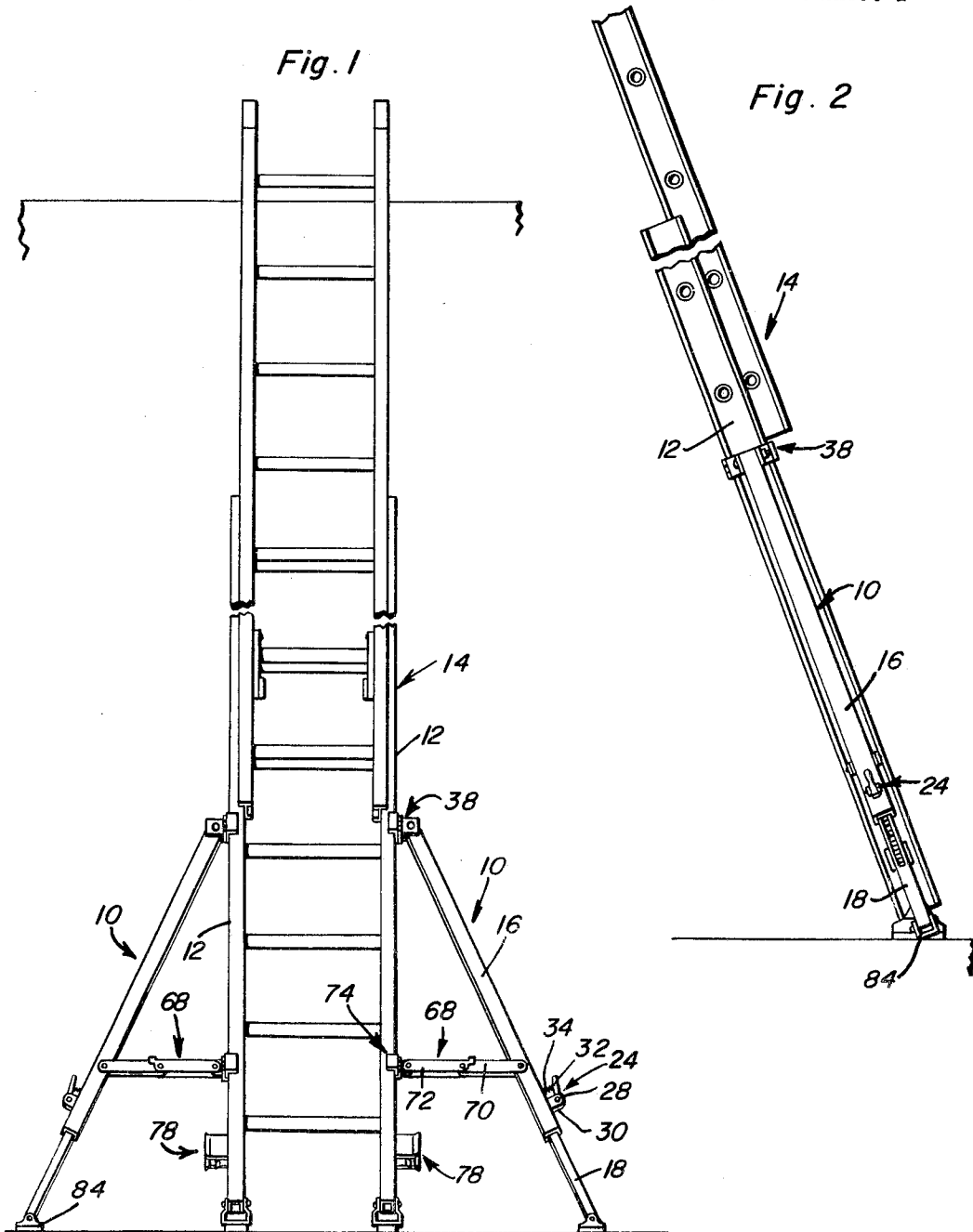
C. J. CONRAD

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LADDER WITH STABILIZER MEANS

Filed Oct. 17, 1968

2 Sheets-Sheet 1



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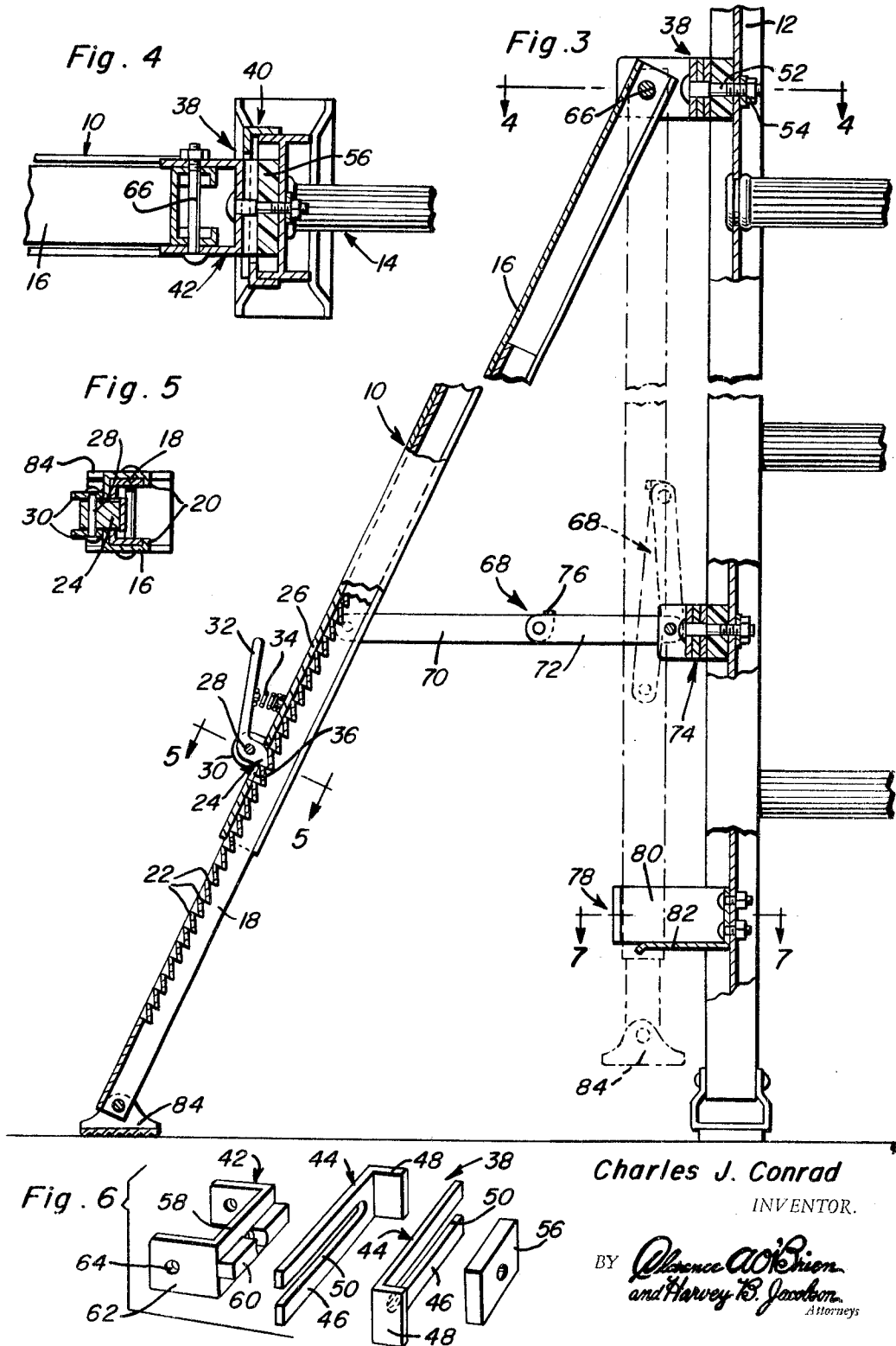
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LADDER WITH STABILIZER MEANS

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ABSTRACT OF THE DISCLOSURE

A laterally extending telescopic stabilizing brace for a ladder including upper and lower ratchet controlled sections, the upper section being pivotally engaged with a side rail of a ladder for a swinging of the brace between a collapsed clamp held position against the side rail and an extended outwardly moved bracing position. An adjustable hinge-type connector is used to mount the upper end of the brace to the ladder side rail regardless of variations in the width of the side rail, a similar hinge-type connector being utilized in securing a folding brace bar.

The instant invention is generally concerned with ladders, and more particular relates to a unique stabilizer for ladders, the stabilizer normally being provided in pairs, one to each side of the ladder, whereby lateral swaying or slipping of the ladder is effectively resisted.

A particularly significant object of the instant invention resides in the provision of a stabilizer which is adjustable so as to accommodate variations in ground conditions, and incorporates mounting means which enable it to be accommodated to ladders regardless of the widths of the side rails thereof to which the stabilizer is to be secured.

Also of significance with regard to the instant invention is the fact that the stabilizer is of a relatively simple easy to manipulate nature, while at the same time being of an extremely sturdy construction providing the ultimate in safety.

Basically, in achieving the objects of the instant invention, the stabilizer, normally one of two provided with each ladder, includes upper and lower telescopic sections with the lower section being in the nature of a ratch, the extension and retraction of which is controlled by a spring-loaded pawl. The upper section is hingedly engaged with a side rail of a ladder through a connector which includes an adjustable ladder-engaging bracket and a stabilizer-engaging bracket which interlocks with the ladder bracket so as to provide a positive non-rotating engagement therewith while at the same time providing for the lateral swinging of the stabilizer, this swinging being controlled by means of a folding brace which locks the stabilizer in its outmost position and allows an inward swinging of the stabilizer to a clip-mounted position adjacent the side rail.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a front elevational view of an inclined ladder having two stabilizers mounted thereon and cooperating therewith;

FIGURE 2 is a side elevational view of the stabilizer braced ladder of FIGURE 1;

FIGURE 3 is an enlarged front elevational view of a portion of the ladder with a stabilizer mounted thereon, various sections being broken away for purposes of illustration;

FIGURE 4 is a cross-sectional detail taken substantially on a plane passing along line 4—4 in FIGURE 3;

FIGURE 5 is a cross-sectional view taken substantially on a plane passing along line 5—5 in FIGURE 3;

FIGURE 6 is an exploded perspective view of the connector utilized in pivotally mounting the stabilizer on the ladder side rail; and

FIGURE 7 is a cross-sectional detail taken substantially on a plane passing along line 7—7 in FIGURE 3.

Referring now more specifically to the drawings, reference numeral 10 is used to generally designate the stabilizer comprising the instant invention, such being mountable on the side rail 12 of any conventional ladder 14, for example the sectional ladder illustrated in FIGURES 1 and 2. As will be appreciated from FIGURE 1, in the normal situation, two of the stabilizers 10 will be utilized, one to each side of the ladder 14.

The stabilizer 10 itself consists of upper and lower telescopic sections 16 and 18. With reference to the cross-sectional view of FIGURE 5 in particular, it will be noted that the inner section 18 is in the nature of a channel bar slidably received within the section 16 which is slightly larger than the section 18 and incorporates inward flanges 20 for a retention of the section 18 therein while still allowing for a free sliding or telescopic movement of the section 18 within the section 16.

It is contemplated that a ratchet type arrangement be utilized for effecting a locking of the lower section 18 in any desired extended position. As such, the lower section is provided, on the rear or web surface thereof, with a series of teeth or notches 22, the section 18 thus in effect constituting a ratch. The pawl 24 operably engageable therewith is mounted on the web or back portion 26 of the outer section 16 by means of a pivot pin 28 extending through the pawl 24 and engaged with a pair of upstanding ears 30 welded to the upper section web 26. An elongated handle 32 extends laterally from the pawl 24 and an expanded coiled biasing spring 34 is engaged between the handle 32 and the web portion 26 so as to effect an outward biasing of the handle 32 and a corresponding inward biasing of the pawl 24 into the engagement with the ratch or lower section 18. It will of course be appreciated that an appropriate opening 36 is provided through the web portion 26 of the outer section 16 so as to enable a passage of the pawl 24 therethrough. The pawl 24 is provided with a camming face and in effect acts as a one-way stop whereby the lower section 18 can be extended relative to the upper section 16 with the pawl 24 automatically riding over the teeth or notches, while a retraction of the lower section 18 into the upper section 16 is specifically precluded by the spring-biased pawl 24. When a retraction of the section 18 is desired, the pawl 24 must be manually released by moving the handle 32 against the spring 34, thereby raising the pawl 24 and allowing for a free movement of the teeth inwardly thereby.

The upper end of the stabilizer 10 is engaged or engageable with an adjoining ladder side rail 12 by means of a connector 38. This connector 38 is uniquely adapted to accommodate ladder side rails 12 of varying widths, as well as rails of different materials, such as metal or wood rails. Noting FIGURES 4 and 6 in particular, the connector 38 includes a first rail engaging two piece or two section bracket 40 and a second generally U-shaped stabilizer engaging bracket 42. The two sections 44, which comprise the rail engaging bracket 38, consist of, in each instance, an elongated plate 46 which engages across the outer side of the side rail 12, one plate 46 overlapping the other, and a laterally directed flange 48 integral with one end of the plate 46 and positionable against either the front or rear edge of the side rail 12,

the two flanges 48 engaging the opposite edges of the side rail 12 so as to in effect sandwich the side rail 12 therebetween. In addition, each of the plates 46 includes a centrally located longitudinally elongated bolt receiving slot 50 therein through which an elongated mounting bolt 52 is engaged. This bolt 52, noting FIGURES 3 and 4, extends through the overlapped plates 46 and through an aperture in the side rail 12 for a clamping of the connector 38 thereagainst by means of an appropriate nut 54 threaded on the rail piercing end of the bolt 52. Inasmuch as the particular ladder 14 illustrated in the drawings is a metal ladder of the type wherein the side rails 12 are in the nature of I-beams, as will be best noted in FIGURE 4, an appropriate spacer 56 is provided between the front and rear flanges of the I-beam ladder rail, this spacer being of sufficient thickness so as to bear against the web of the rail and project outwardly therefrom to the outer extremity of the rail flanges whereby a positive seat for the overlapped bracket plates 46 is provided. In using the connector 38 for a mounting of the stabilizer 10 on a wooden ladder, it will of course be appreciated that the spacer 56 will not be required.

The stabilizer engaging bracket 42 itself includes a transversely elongated web 58 which seats against the outermost slotted plate 46 and which in turn includes an elongated centrally located projecting rib or aligned pair of ribs 60 which are of a size so as to snugly seat within the aligned slots 50 whereby a positive non-rotational engagement of the bracket 42 with the bracket 40 will be effected. In addition, the bracket web 58 is centrally apertured, such in fact extending centrally through the rib 60 so as to define two rib sections, for the reception of the mounting bolt 52 therethrough, the head of the bolt 52 engaging against the face of the web 58 opposed from the rib 60. In this manner, it will be appreciated that the bolt 52 extends through both brackets 40 and 42 as well as through the side rail so as to, upon a proper mounting of the nut 54, fixedly mount the entire connector 38. With further reference to the stabilizer mounting bracket 42, such includes a pair of laterally projecting parallel ear-like flanges 62 provided with a pair of aligned apertures 64 therethrough for the reception of an appropriate pivot pin or bolt 66 which is received through the upper portion of the upper stabilizer section 16 which is in turn positioned between the pin receiving ears 62 on the bracket 42 whereby a pivotal mounting of the stabilizer 10 is effected.

Located at approximately mid-height relative to the stabilizer 10 is a folding cross brace 68 formed of a pair of pivotally interconnected sections 70 and 72. The section 70 has the outer end thereof appropriately pinned to the upper stabilizer section 16, while the section 72 has the free or outer end thereof pivotally engaged with the ladder side rail 12 through the utilization of a hinge-type connector 74 which is a duplicate, normally on a smaller scale, of the connector 38, including the adjustable rail engaging bracket and the U-shaped bracket which is mounted thereon through a common mounting bolt and the slot received rib. The brace 68, as will be appreciated from the two positions thereof shown in FIGURE 3, moves between a horizontally extended position, maintained in this position by an appropriate stop lug 76, wherein the stabilizer 10 is positioned in a laterally swung relationship relative to the side rail 12 and rigidly braced in this position, and a collapsed upwardly folded position wherein the stabilizer 10 is swung inwardly parallel to the side rail 12. In the inwardly swung position of the stabilizer 10, the lower ratch section 18 will be retracted upwardly and the lower portion of the stabilizer 10, normally the lower end portion of the upper section 16 of the stabilizer 10, will be secured within an appropriate clip 78 bolted to the ladder side rail 12 so as to project laterally therefrom. This bracket, noting FIGURES 3 and 7 in particular, will include a pair of

opposed spring side flanges 80 which are sprung slightly outward as the stabilizer moves therebetween and which form a clamping effect on the stabilizer. In addition, a horizontal reduced width bottom flange 82 is provided, this flange 82 being received within the generally channel-shaped configurations of the two sections 16 and 18 so as to centrally locate and more firmly clamp the stabilizer 10.

From the foregoing, it will be appreciated that a unique stabilizer construction has been defined, such including telescoping ratchet controlled sections for accommodating itself in a ladder stabilizing manner to various ground irregularities, the lowermost stabilizer section also including an appropriately mounted enlarged foot 84. In addition, unique connector means are utilized so as to positively engage the upper end of the stabilizer with the side rail of a ladder regardless of the width thereof, of course within suitable limits, the connector in effect consisting of two interlockable brackets, one adjustably engaging the ladder side rail, and the other pivotally mounting the stabilizer and non-rotatably engaging the first bracket. This type of connector is also utilized in conjunction with a folding brace provided on the stabilizer so as to also accommodate the brace to the particular side rail on which the stabilizer is mounted.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A ladder stabilizer comprising upper and lower elongated telescopically connected sections, said sections being selectively longitudinally adjustable relative to each other, means for releasably locking said sections in any of a plurality of longitudinally adjusted positions, connector means for pivotally connecting the upper end of said stabilizer to a ladder side rail, said connector means including first bracket means for engagement with a ladder side rail, said first bracket means being adjustable for the accommodation of different width side rails, said first bracket means comprising two members, each member including a flat elongated plate positionable in overlying relation to the other, a laterally directed flange on each of said plates, said laterally directed flanges being positioned in parallel spaced relation to each other for reception of a ladder side rail therebetween, said plates being longitudinally slidable one on the other to vary the spacing between the flanges and thereby provide for the accommodation of different width ladder side rails between said flanges, means for locking said members to each other and to a ladder side rail in an adjusted position, each of said plates including an elongated centrally located slot therethrough, said means for locking said members to each other and to a ladder side rail comprising an elongated bolt engaged through said elongated plate slots for reception through a ladder side rail, said connector means including a second bracket means for engagement with the stabilizer, said second bracket means including means for pivotally suspending said stabilizer therefrom, said bolt engaging through said second bracket means for a locking of said second bracket means to said first bracket means, and positioning means on said second bracket means, said positioning means projecting from said second bracket means and engaging said first bracket means for precluding rotational movement therebetween.

2. The construction of claim 1 wherein said positioning means comprises elongated rib means engageable within the elongated slots provided on the plates of the first bracket means,

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3. The construction of claim 2 including an elongated sectional brace pivotally engaged with said stabilizer and projecting laterally therefrom, and an adjustable connector mounted on the outer end of said brace for selective engagement with a ladder side rail.

4. The construction of claim 3 including clip means mountable on a ladder side rail in conjunction with the stabilizer and selectively engageable with said stabilizer for a releasable securing thereof.

5. A ladder stabilizer comprising upper and lower elongated telescopically connected sections, said sections being selectively longitudinally adjustable relative to each other, means for releasably locking said sections in any of a plurality of longitudinally adjusted positions, connector means for pivotally connecting the upper end of said stabilizer to a ladder side rail, said connector means including first bracket means for engagement with a ladder side rail, said first bracket means being adjustable for the accommodation of different width side rails, said connector means including second bracket means, said second bracket means including means pivotally suspending said stabilizer therefrom, and positioning means rigid therewith and projecting therefrom for a non-rotatable engagement of the second bracket means with the first bracket means.

6. The construction of claim 5 wherein the means for releasably locking the elongated stabilizer sections in longitudinally adjusted positions is in the nature of a ratch and pawl, one of said sections constituting the ratch with the pawl being mounted on the other section and spring-loaded for selective engagement with the ratch section.

7. In combination with a ladder including opposed side rails, at least one ladder stabilizer, connector means pivotally mounting one end of said stabilizer on one of said ladder side rails at an elevated position on said ladder, said stabilizer including a pair of telescopically related sections selectively longitudinally extensible and contractable relative to each other, said sections constituting an upper section and a lower section, said lower section being in the nature of a ratch, pawl means mounted on the upper section and operatively engageable with the ratch for a locking thereof in an adjusted position relative to the upper section, a folding brace pivotally engaged with said stabilizer and the adjoining ladder side rail for a bracing of the stabilizer in an outwardly swung ladder bracing position, said connector means including first and second bracket means, said first bracket means being engaged with said one of said ladder side rails and being adjustable for the accommodation of different width side rails, said second bracket means including means pivotally suspending said stabilizer therefrom, and positioning means rigid with said second bracket means and projecting therefrom into a non-rotatable engagement

with the first bracket means whereby rotational movement between the first bracket means and second bracket means is precluded.

8. An elongated rigid ladder stabilizer, connector means for pivotally connecting the upper end of said stabilizer to a ladder side rail, said connector means including first bracket means for engagement with a ladder side rail, said first bracket means being adjustable for the accommodation of different width side rails, said connector means also including second bracket means, said second bracket means including means pivotally suspending said stabilizer therefrom, and positioning means rigid therewith and projecting therefrom for a non-rotatable engagement of the second bracket means with the first bracket means.

9. The construction of claim 8 wherein said first bracket means comprises two members, each member including a flat elongated plate positionable in overlying relation to the other, a laterally directed flange on each of said plates, said laterally directed flanges being positioned in parallel spaced relation to each other for reception of a ladder side rail therebetween, said plates being longitudinally slidable one on the other to vary the spacing between the flanges and thereby provide for the accommodation of different width ladder side rails between said flanges, and means for locking said members to each other and to a ladder side rail in an adjusted position.

10. The construction of claim 9 wherein each of said plates includes an elongated centrally located slot there-through, said means for locking said members to each other and to a ladder side rail comprising an elongated bolt engaged through said elongated plate slots for reception through a ladder side rail.

11. The construction of claim 10 wherein said positioning means comprises elongated rib means engageable within the elongated slots provided on the plates of the first bracket means.

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