H. B. GAFFERS.

COMBINED EXTENSION LADDER AND TRESTLE.

APPLICATION FILED APR. 2, 1915.

1,207,158.

Patented Dec. 5, 1916.

2 SHEETS—SHEET 1.

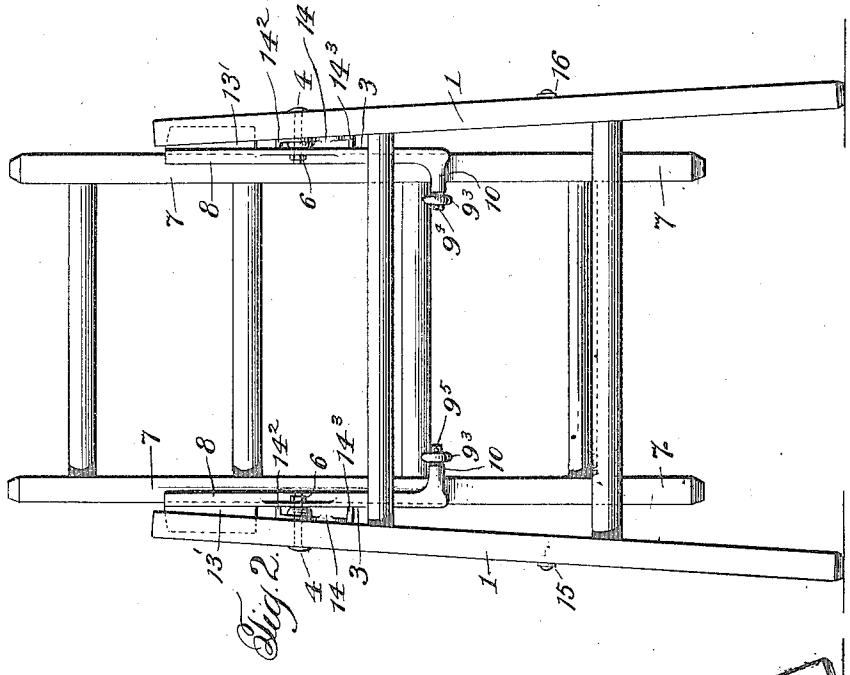


Fig. 2.

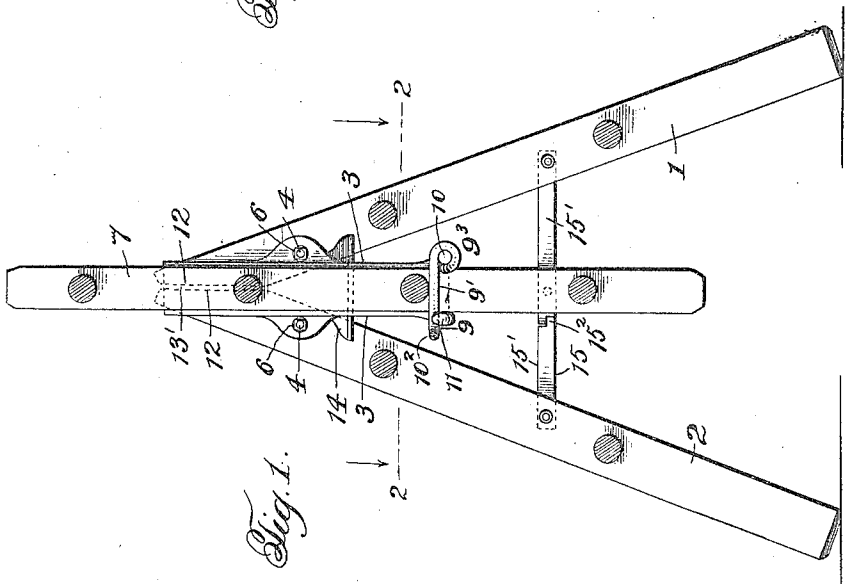


Fig. 1.

Witnesses:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

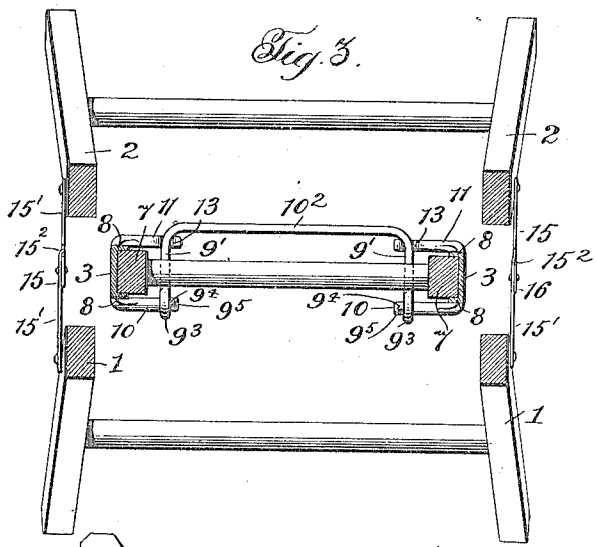


Fig. 4.

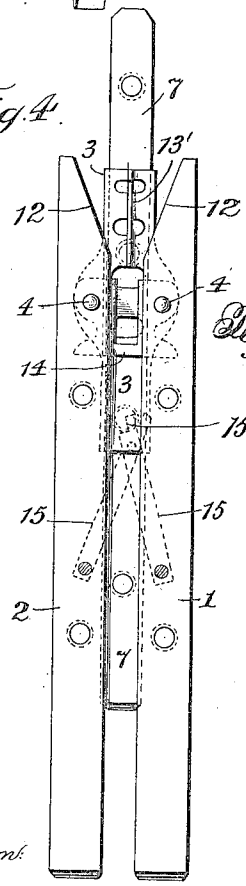


Fig. 5.

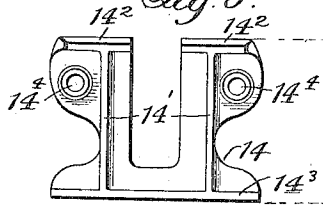


Fig. 6.

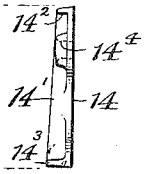


Fig. 7.

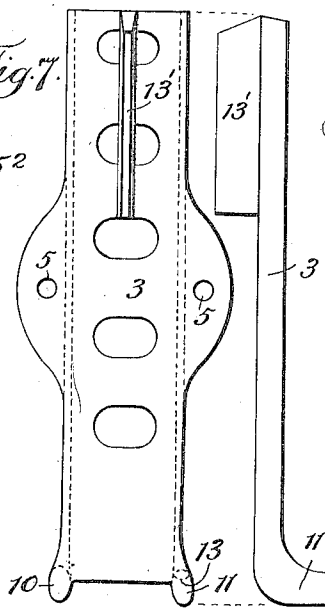
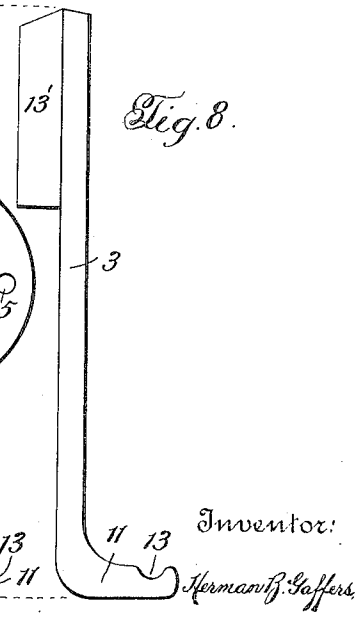


Fig. 8.



Witnesses:

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UNITED STATES PATENT OFFICE.

HERMAN B. GAFFERS, OF WATERVLIET, NEW YORK, ASSIGNOR TO THE JOHN S. TILLEY LADDERS COMPANY, INC., OF WATERVLIET, NEW YORK, A CORPORATION OF NEW YORK.

COMBINED EXTENSION-LADDER AND TRESTLE.

1,207,158. Specification of Letters Patent. Patented Dec. 5, 1916.

Application filed April 2, 1915. Serial No. 18,735.

To all whom it may concern:

Be it known that I, HERMAN B. GAFFERS, a citizen of the United States, residing at Watervliet, in the county of Albany and State of New York, have invented certain new and useful Improvements in Combined Extension-Ladders and Trestles, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in ladders and trestles, and more particularly to combined extension ladder and trestle device of the type to which my prior Patent No. 669,004 of February 26, 1901 relates, comprising oppositely disposed sections hinged together at their upper ends to fold against each other and to be opened out to provide a trestle structure proper, and an extension ladder section connected to said hinged sections for vertical sliding adjustment therebetween.

The primary object of the present invention is to provide improved means entirely independent of the hinged sections and located out of the way of the same for holding the extension section in adjusted position on the hinged sections, and further to provide simple and efficient means of this nature in which the point of support for the extension section will be brought down some distance below the top of the hinged sections.

Another object of the invention is to provide an improved device of the general character pointed out in which provision is made in a simple and inexpensive manner for increased rigidity and firmness of support of the hinged sections.

The invention, with other objects and advantages thereof will be understood from the following detailed description when considered in connection with the accompanying drawings forming a part hereof and illustrating one embodiment of the invention.

In the drawings, Figure 1 is a vertical sectional view of a combined extension ladder and trestle constructed in accordance with the present invention. Fig. 2 is a front elevation of the same. Fig. 3 is a horizontal section on line 2—2 of Fig. 1 looking in the direction of the arrow. Fig. 4 is an end elevation with the device shown in folded position. Figs. 5 and 6 are detailed views of one of the connecting plates. Figs. 7 and 8 are detailed views of one of the bearing plates for the inner side faces of the upper ends of the rails of the hinged sections.

I have illustrated in the drawing a preferred embodiment of the invention and in this connection I desire it to be understood that minor changes and variations in the particular construction shown as will appeal to those skilled in the art, may be made without departing from the invention in its broader aspect.

In the construction illustrated in the drawings, 1 and 2 designate the oppositely disposed hinged ladder sections adapted to be adjusted to open position as indicated in Fig. 1 of the drawings to provide a trestle or to be folded together to constitute a section of an ordinary extension ladder in the well known manner.

3 designates connecting plates at opposite sides of the sections to which the sections near their upper ends are pivotally connected by bolts 4, which extend through the side rails of the sections and through apertures 5 in the said plates to the inner sides thereof, the bolts having threaded inner ends to receive securing nuts 6. The connecting plates are provided at their inner sides with parallel guides adapted to be engaged by and to support the ladder extension 7 for vertical adjustment relative to the hinged sections. The parallel guides may take various forms but I prefer to construct the same as illustrated in the drawing, each of the plates 3 having spaced lateral flanges 8 providing a channel or way adapted to receive within the same the side rails of the extension 7.

My improved means for holding the extension section in adjusted position on the hinged sections comprises a latch or locking member mounted on the connecting plates 3 at one side of the parallel guides and adapted to extend across the path of the rungs of the extension and rest upon the plates 3 at the opposite sides of the guides to form a support for the extension, said latch being adapted to readily permit the passage of the rungs of the extension in the upward adjustment of the extension and to engage behind or beneath a rung of the extension to hold the extension against downward movement. In the drawing, the latch or locking member is designated by the nu-

meral 9 and preferably takes the form shown, namely that of a pivoted bail having straight sides 9′ and a straight transverse rod 10^2 connecting the sides, the sides 9′ at their inner ends being provided with eyes 9^3 pivotally engaging the inner ends of arms 10, which extend inwardly from the lower ends of the plates 3 at one side of the parallel guides. Cotter pins 9^4 engaging openings 9^5 in the outer ends of the arms 10 serve to retain the eyes in position on the said arms. At the opposite side of the guides, the plates 3 are provided with arms 11 extending inwardly in the same horizontal plane and parallel with the first mentioned arms 10 and upon which the free end of the latch is adapted to rest when in supporting position. The arms 11 near their outer ends are provided with recesses or depressions 13 adapted to receive therein the forward portions of the straight sides 9′ of the locking bail, said recesses or depressions constituting seats for the sides 9′ of the bail. The sets of arms 10 and 11 preferably extend inwardly from the flanges 8 as shown, forming substantial continuations of the said guide flanges and serving as additional guiding means. As will be understood the weight of the bail normally tends to maintain the same in horizontal position with its straight sides resting in the seats of the arms 11, the bail being adapted to be forced upwardly out of the path of the rungs of the extension when the same is moved upwardly and to automatically return to horizontal position after the rung has moved upwardly out of engagement therewith.

It will be observed that by the special arrangement of the parts set forth, the means for adjustably supporting the extension is entirely independent of the hinged sections and is located completely out of the way of the same. The construction is simple and effective, and the point of support for the extension is brought down some distance below the top of the hinged sections, which as will be understood is desirable.

Each of the connecting plates 3 at its outer side is provided with a vertically extending rib 13′ of substantial length adapted to be engaged by the upper inclined end faces 12 of the rails of the hinged sections when the sections are opened to form a trestle, said ribs serving as stops to limit the separating movement of the sections and also as bearings for the upper ends of the rails of the sections.

The rails of each of the hinged sections 1 and 2 are preferably arranged to extend from their lower ends at an inward inclination to each other.

14 designates separate plates interposed between the upper ends of the rails of the hinged sections and the adjacent connecting plates 3. The plates 14 are provided at one side with spaced vertically extending ribs 14′ which taper upwardly, and with horizontally extending ribs 14^2 and 14^3 at the upper and lower ends of the plate, said ribs respectively being of a height to correspond with the height of the vertically tapering ribs at these points. The opposite faces of the plates 14 are flat as shown. The plates 14 are supported in place upon the pivot bolts 4, said plates being provided with apertures 14^4 at each side thereof through which the bolts pass. The plates are arranged with their ribbed faces adjacent the flat side faces of the connecting plates 3 so that the flat faces of the plates 14 will extend at an upward inclination corresponding to the inclination of the upper ends of the rails of the hinged sections, the upper ends of the rails fitting against the flat faces of the plates 14 which thus form a bearing therefor. The plates 14 preferably extend beyond the side edges of the connecting plates and preferably take the form shown of light U-shaped castings.

It will be noted that by the vertically extending bearing ribs 13, and the inclined bearing faces of the plates 14, such an engagement of the parts is provided as will afford a very rigid and firm construction, and further that both the connecting plates 3 and the separate bearing plates 14 can take the form of light castings inexpensive to manufacture.

15 and 16 designate folding brace members, which may be of any approved construction. The folding braces are connected with the hinge sections at opposite sides thereof and are shown in the present instance as comprising link members 15′ connected at their inner ends with each other and having their outer ends connected respectively with the sections, one of said links being provided with the usual stop 15^2 adapted to engage the other link.

What I claim is:

1. In a device of the class described, the combination of oppositely disposed sections, connecting plates at opposite sides of the sections to which the sections are pivoted near their upper ends, vertical guides on the connecting plates, an extension section slidably engaging the guides, each of said connecting plates having a pair of arms formed integrally therewith and extending inwardly therefrom at opposite sides of the guides, and a latch pivotally mounted on the arms located at one side of the guides and adapted to rest upon the arms at the other side of the guides, said latch being adapted to be engaged by a rung of the extension section and to form a support therefor.

2. In a device of the class described, the combination of oppositely disposed sections, connecting plates at opposite sides of the sections to which the sections are pivoted

near their upper ends, vertical guides on the connecting plates, an extension section slidably engaging the guides, each of said plates having a pair of arms formed integral therewith and extending inwardly therefrom at each side of the vertical guides, the arms at one side of the vertical guides being provided with transverse recesses in their upper faces, and a latch comprising side bars and a cross bar rigidly connecting the side bars together, each of the side bars being pivotally connected at one end with one of the arms at one side of the guides, and the free ends of the bars being adapted to fit within the recesses of the arms at the other side of the guides in interlocking engagement therewith, said latch being adapted to be engaged by a rung of the extension section and to form a support therefor.

3. In a device of the class described, the combination of oppositely disposed sections, connecting plates at opposite sides of the sections to which the sections are pivoted near their upper ends, vertical guides on the connecting plates, an extension section slidably engaging the guides, each of said connecting plates having a pair of arms formed integral therewith and extending inwardly therefrom at each side of the vertical guides, the arms at one side of the vertical guides being provided with transverse recesses in their upper faces, and a latch comprising a substantially U-shaped bail, the side portions of the bail being provided with bearing sleeves at their free ends loosely engaging the inner portions of the arms at one side of the vertical guides, and means detachably connected with the said arms for retaining the bearing sleeves in position thereon, the side portions of the bail being adapted to fit within the recesses in the arms at the other side of the guides in interlocking engagement therewith, the latch being adapted to be engaged by a rung of the extension section and to form a support therefor.

4. In a device of the class described, the combination with oppositely disposed ladder sections, the rails of the respective sections being arranged to extend from their lower ends at an inward inclination to each other, connecting plates at opposite sides of the sections, bolts pivotally connecting the sections near their upper ends with the said plates, and separate plates interposed between the connecting plates and the upper portions of the inclined side faces of the rails of the sections, said plates having outer inclined bearing faces corresponding to the inclination of the upper ends of the sections and fitting against the same.

5. In a device of the class described, the combination of oppositely disposed sections, connecting plates at opposite sides of the sections to which the sections are pivotally connected near their upper ends, said connecting plates being provided with ribs at their outer sides extending longitudinally of the plates, said ribs being of substantial length and having flat side faces, the upper ends of the sections having inclined end faces adapted to engage and bear against the side faces of the said ribs when the sections are adjusted to open position.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

HERMAN B. GAFFERS.

Witnesses:

GRACE E. BARBER,

LILLIAN J. LEACH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."