Oct. 15, 1935. I. S. CANTELO 2,017,563

COMBINED EXTENSION LADDER AND TRESTLE

Filed Dec. 22, 1933 2 Sheets-Sheet 1

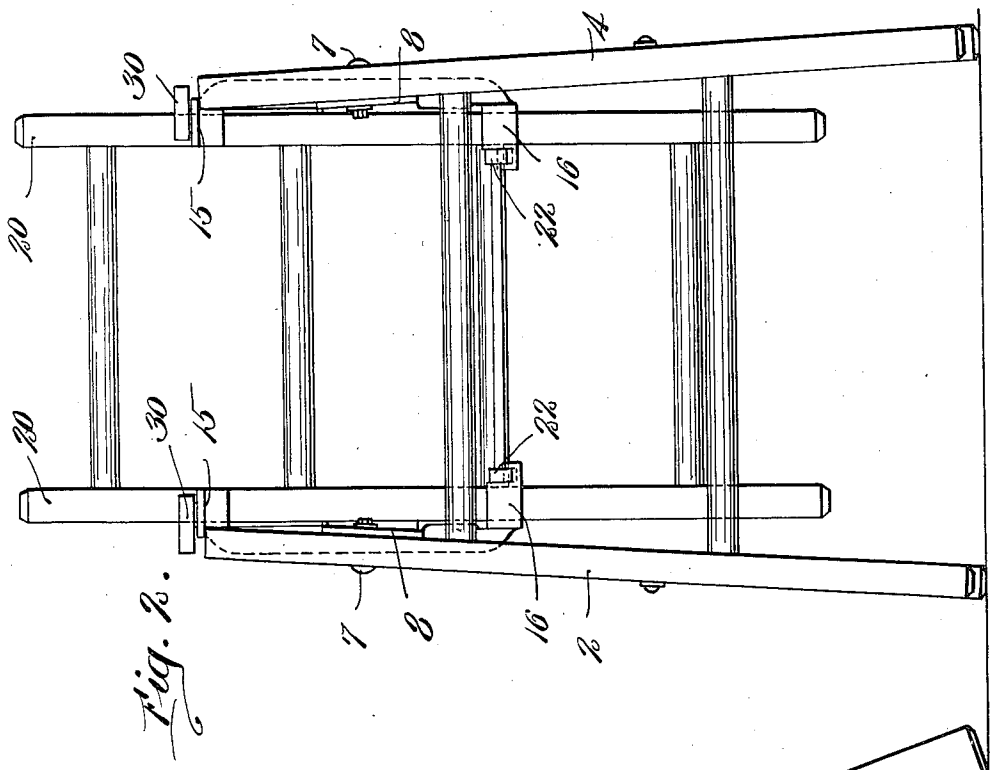

Fig. 2.

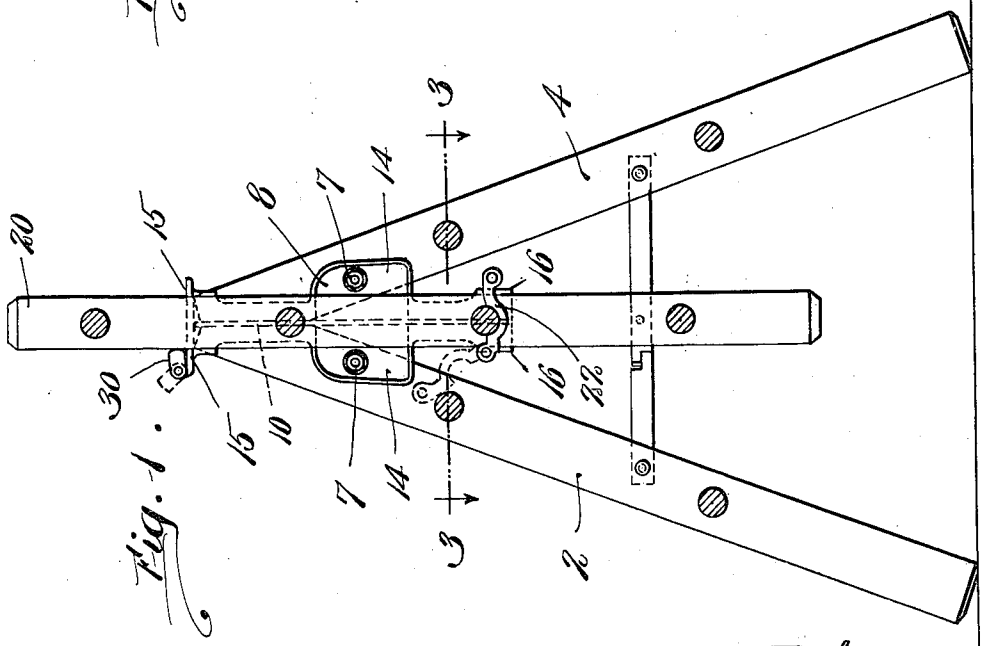

Fig. 1.

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Fig. 3.

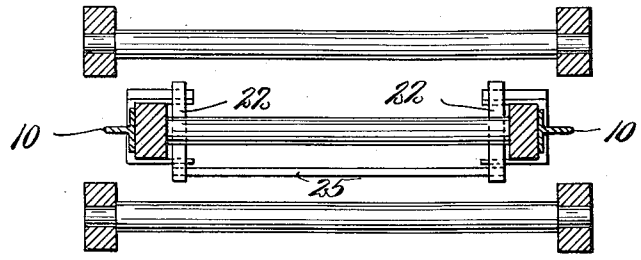


Fig. 4.

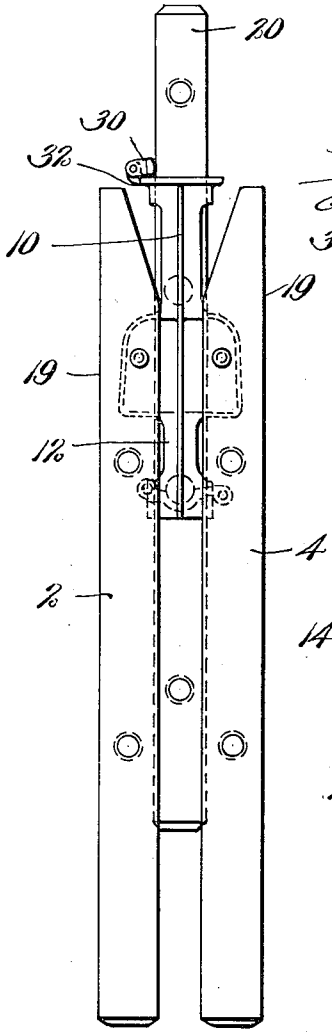


Fig. 5.

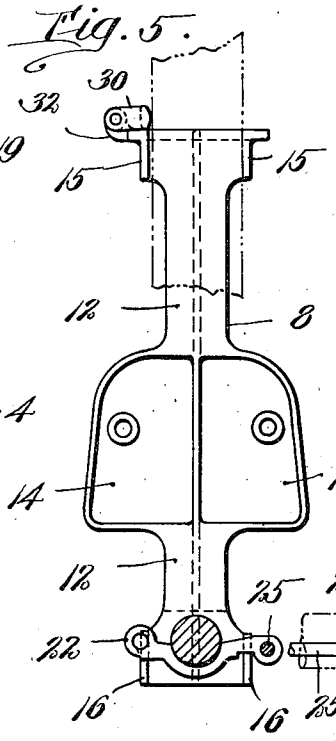


Fig. 7.

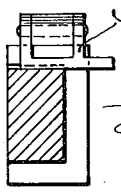
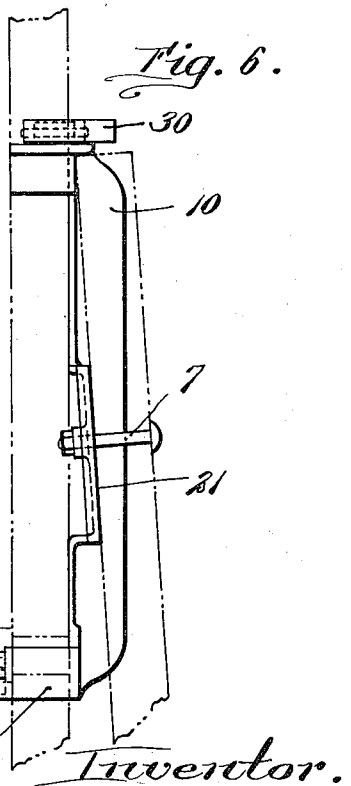


Fig. 6.



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COMBINED EXTENSION LADDER AND TRESTLE

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Application December 22, 1933, Serial No. 703,511

6 Claims. (Cl. 228—22)

This invention relates to ladders and trestles, and particularly to combined extension ladders and trestles.

One object of the present invention is to provide an extension ladder and trestle in which provision is made for increasing the rigidity, stability and strength of the combined unit in a novel and improved manner.

A further object of the present invention is to provide novel and improved means for connecting and positioning the component members making up the ladder proper, and for connecting an extension section in adjustable position between said component members.

A still further object of the present invention is to provide a combined extension ladder and trestle in which provision is made for preventing lateral movement of the extension member.

With these general objects in view and such others as may hereinafter appear, the invention consists in the combined extension ladder and trestle and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the present invention, Fig. 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 taken on the line 3—3 of Fig. 1; Fig. 4 is an end elevation of the device in folded position; and Figs. 5, 6 and 7 are detail views showing the connecting members and locking and wedging mechanisms.

In general, the present invention is an improvement in combined extension ladders and trestles of the type disclosed in the patent to Gaffers, No. 1,207,158, issued December 5, 1916, and in which means are provided for pivotally connecting together oppositely disposed ladder members to provide a trestle structure and for connecting an extension section between said ladder members and in sliding adjustment therewith.

The present invention contemplates the provision of a combined extension ladder and trestle of the type above referred to in which the members connecting together the oppositely disposed ladder members comprise novel unitary reenforced structures adapted to position the ladder members and to slidably receive and positon an extension section between said ladder members. Provision is preferably made for holding the extension section in vertical adjustment and also against lateral movement.

Referring now to the drawings illustrating the preferred embodiment of the present invention and particularly to Figs. 1, 2 and 4, oppositely disposed ladder members 2, 4 are pivotally secured by bolts 7 to connecting members 8 and are adapted when opened into the position shown in Fig. 1 to provide a trestle, or to be folded together, as shown in Fig. 4, to constitute a section of an extension ladder. The connecting members 8 comprise unitary structures and consist of a supporting web 10 having integral guiding surfaces 12 formed at right angles thereto, integral wing members 14 formed as a part of said supporting member, and upper and lower guide members 15, 16 inward from the guiding surfaces 12. In the preferred embodiment of the present invention the ladder sections 2 and 4 are pivoted to the wing members 14 by the bolts 7 and the wing members 14 are provided with an inclined outer surface 21, as shown in Fig. 6, so that the rails 19 of each of the ladder sections 2 and 4 may be arranged to cause their lower ends to incline outwardly, as shown in Fig. 2. The guide members 15, 16 cooperate with the guiding surfaces 12 to slidably receive and position an extension ladder section 20, as shown in Fig. 3.

In practice it is preferred to cast each connecting member as an integral structure with the continuously extending supporting web 10 arranged to extend from one end of the connecting member to the other and which with the laterally extended guides 12 and integral wing members 14 impart to the structure the shape and section of a T-beam, whereby maximum strength and rigidity is imparted to the connecting members, and whereby the same may be cast of a minimum amount of metal at minimum expense. The integral wing members, which as above stated are provided with inclined outer surfaces 21, provide an efficient means for positioning the ladder sections 2 and 4 to cause the ladder sections to incline outwardly and downwardly at their bases.

In order that the extension section 20 of the ladder may be held in different vertical positions on the ladder sections 2 and 4, the lower guide members 16 are extended inwardly beyond the side rails of the ladder extension 20, and a locking member 22 which preferably takes the form shown in Figs. 1 and 3 is arranged to extend across the path of the rungs 23 of the extension ladder section 20 and to rest upon the opposite guide member. The locking member 22 is preferably pivoted to one of the guide members 16

of each connecting member 8 to be capable of movement from the full to the dotted line positions illustrated in Fig. 1. The two locking members are preferably connected together by a rod 25 to pivot as a unit. The locking member 22 is adapted to permit the passage of the rungs of the extension ladder section and to engage behind or beneath a rung of the extension to hold the extension against downward movement.

In order to prevent wabbling and lateral movement of the extension section 20 of the ladder, it is preferred to provide an additional device for wedging the ladder section 20 against one of the upper guide members 15. As illustrated herein, a bearing member 30 is pivotally mounted upon a supporting plate 32 cast as a part of one of the upper guide members 15 and is adapted, when pivotally moved into the position shown in full lines in Fig. 1, to engage the rails of the extension section 20 of the ladder so that under the influence of the weight of the ladder section 20 the bearing member tends to wedge or force the ladder section 20 between the bearing member and the opposite guide member and thus operates to securely position the ladder section 20 within the guide members and to impart rigidity to the entire structure and prevent wabbling and undesirable lateral motion.

From the description thus far, it will be observed that the present invention provides a novel and superior construction of ladder and combined ladder and trestle which may be economically manufactured, is strong, and adapted to withstand severe usage without becoming loose and in which the extension section of the ladder is operatively supported in a novel and highly efficient and stable manner.

By reference to Fig. 1 it will be observed that the locking members 22 above referred to are each provided with a depressed or hollow portion 40 into which the rung of the ladder may fit and which serves to prevent undesirable lateral movement of the extension ladder section 20, and in cooperation with the wedging member 30 the particular form of locking member cooperates to successfully hold the ladder section from substantially all lateral movement. This feature of the invention is regarded as of importance in contributing to the safety with which the ladders may be used for supporting stagings.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:—

1. An extension ladder and trestle having in combination two cooperating ladder members, means for pivotally connecting said ladder members comprising a pair of oppositely disposed connecting members, each connecting member comprising unitary metal structure, having in combination upper and lower guide members extending inwardly and between which the rails of an extension ladder section are adapted to be slidably received, each connecting member provided with an outwardly extending fin beginning at the upper end thereof, continuing down and passing through central of inclined wings terminating at the lower end of said connecting members forming T-shaped sections below and above the inclined wings, said wing members being integral with each connecting member to which said ladder members are secured, the outside surface of said wings forming bearing members for the rails of said ladder and bearing incline to cause the rails to assume a divergent relation.

2. An extension ladder and trestle having, in combination, two cooperating ladder members, means for pivotally connecting said ladder members comprising a pair of oppositely disposed connecting members, each connecting member comprising a unitary cast metal structure having upper and lower guide members extending inwardly and between which the rails of an extension ladder section are adapted to be slidably received, each connecting member being provided with an outwardly extending reenforcing web, said web extending the entire length of each connecting member to impart to each connecting member a T-shaped section for the entire length thereof, wing members integral with each connecting member to which said ladder members are secured, the outer surface of said wings forming bearing members for the rails of said ladder members and being inclined to cause the ladder to assume a divergent relation, and a supporting and holding member pivotally secured to one of the guide members of each section for engaging and supporting the rungs of the extension section of the ladder, said supporting member being shaped to hold the ladder section from lateral movement.

3. An extension ladder and trestle having, in combination, two cooperating ladder members, means for pivotally connecting said ladder members comprising a pair of oppositely disposed connecting members, each connecting member comprising a unitary cast metal structure having upper and lower guide members extending inwardly and between which the rails of an extension ladder section are adapted to be slidably received, each connecting member being provided with an outwardly extending reenforcing web, said web extending the entire length of each connecting member to impart to each connecting member a T-shaped section for the entire length thereof, wing members integral with each connecting member to which said ladder members are secured, the outer surface of said wings forming bearing members for the rails of said ladder members and being inclined to cause the rails to assume a divergent relation, and means mounted upon one of the upper guide members of each connecting member for wedging the rails of the extension section of the ladder against the remaining of the upper guide members to prevent undesired lateral movement of the extension section.

4. An extension ladder and trestle having, in combination, two cooperating ladder members, means for pivotally connecting said ladder members comprising a pair of oppositely disposed connecting members, each connecting member comprising a unitary cast metal structure having upper and lower guide members extending inwardly and between which the rails of an extension ladder section are adapted to be slidably received, each connecting member being provided with an outwardly extending reenforcing web, said web extending the entire length of each connecting member to impart to each connecting member a T-shaped section for the entire length thereof, wing members integral with each connecting member to which said ladder members are secured, the outer surface of said wings forming

bearing members for the rails of said ladder members and being inclined to cause the ladder to assume a divergent relation, a supporting and holding member pivotally secured to one of the guide members of each section for engaging and supporting the rungs of the extension section of the ladder, and a bearing member pivotally mounted upon one of the upper guide members of each connecting member and adapted to be pivotally moved to engage and wedge the rail member of the extension section of the ladder against the remaining upper guide members to prevent undesired lateral movement of the extension section.

5. A ladder having in combination a pair of oppositely disposed ladder members, connecting members for said sections, each connecting member comprising a unitary structure having cooperating upper and lower inwardly projecting guide members from the inner surface thereof adapted to slidably receive an extension ladder section, an outward extending reenforcing member the entire length of said connecting members, and means formed integral with said connecting members to which the ladder members may be secured, said means comprising inclined wings forming a bearing and positioning surface for said section whereby the rails of said ladder members are caused to assume a divergent relation, and means mounted upon one of the upper guide members of each connecting member for pressing the rails of the extension section of the ladder against the opposite projecting guide members to prevent undesired lateral movement of the extension section as shown and described.

6. An extension ladder and trestle having in combination two cooperating ladder members, means for pivotally connecting said ladder members comprising a pair of oppositely disposed connecting members each connecting member comprising a unitary metal structure, said metal structures each having two upper and two lower guide members extending inwardly therefrom between which the rails of an extension ladder section are vertically received and seated by its rungs upon the locking members which are transversely seated near their ends on said lower guide members, said locking member being hinged to one of the lower projecting guide members and seated upon and across both guide members, the central portion thereof being sagged downward to a sufficient depth to approximately conform and centrally locate the rungs of said extension ladder when seating thereon, the free end of said locking member is united at right angles to the end of a rod member, said rod member extending to the oppositely disposed locking member of the same construction, uniting therewith at its free end in the same manner for the purpose of cooperating with each other when seating and unseating said extension ladder by the up and down movements of said ladder as set forth and described.

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