Aug. 4, 1942. J. DE SANTIS 2,291,699

STEPLADDER

Filed June 7, 1941

2 Sheets-Sheet 1

Fig. 1.

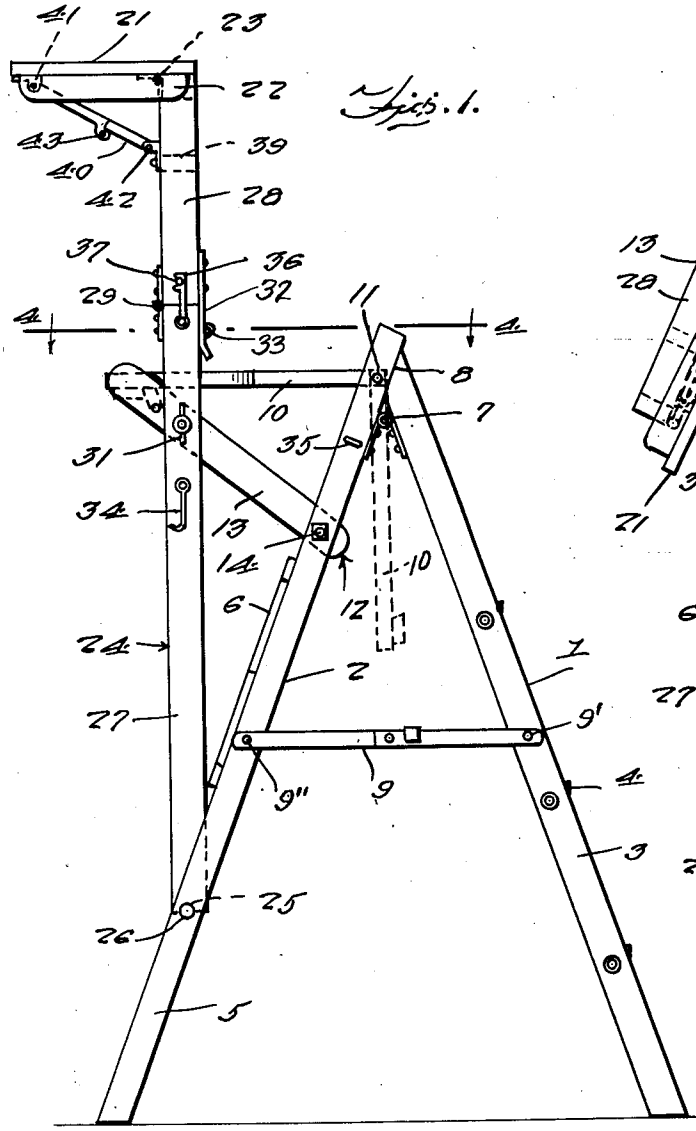
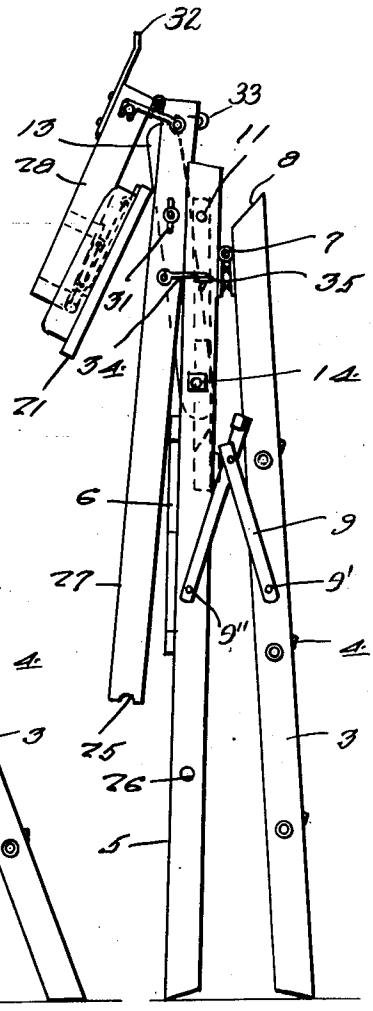


Fig. 2.



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Fig. 3.

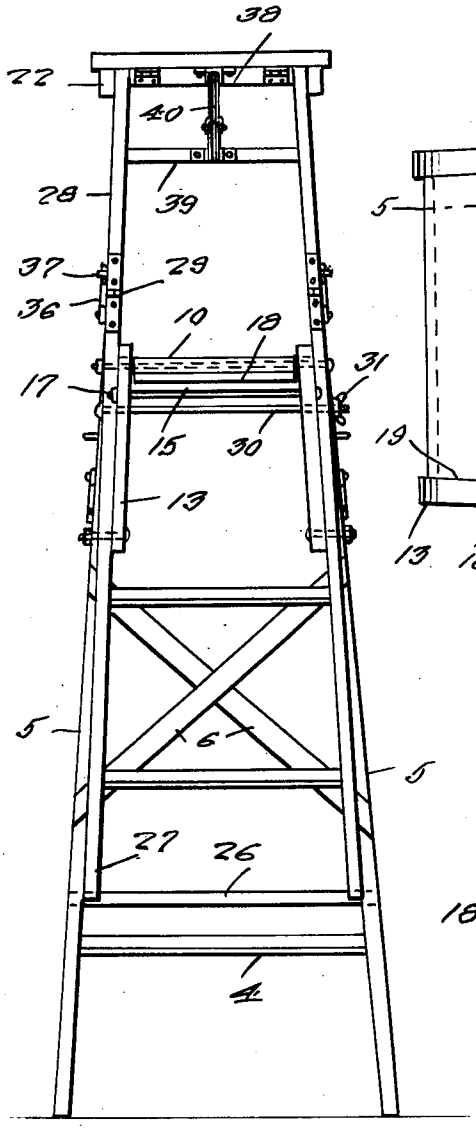


Fig. 4.

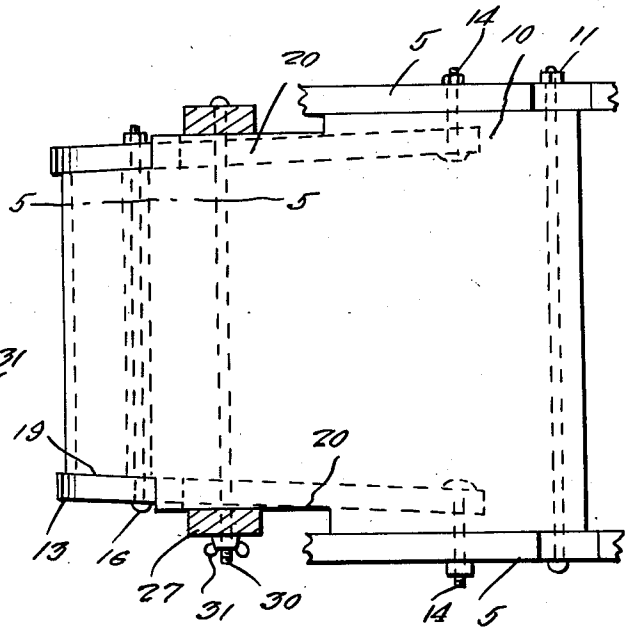
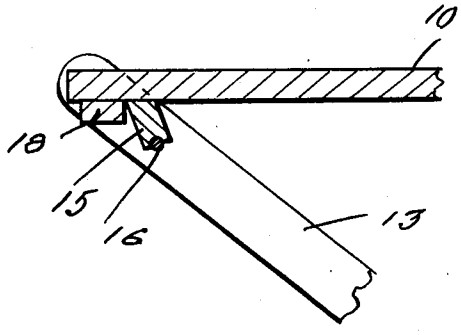


Fig. 5.



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2,291,699

STEPLADDER

James De Santis, Long Branch, N. J.

Application June 7, 1941, Serial No. 397,112

3 Claims. (Cl. 228—17)

My invention relates to improvements in step ladders.

The invention is designed with the primary objects in view of providing a simply constructed, inexpensive, and exceptionally strong step ladder equipped with a relatively large workman's platform, and a higher utensil platform, and which is foldable into a compact, balanced, unit adapted to stand upright unsupported and which is furthermore safe and stable when unfolded.

Other and subordinate objects are also comprehended by my invention, all of which, together with the precise nature of my improvements, will be readily understood when the succeeding description and claims are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in side elevation of my improved step ladder unfolded,

Figure 2 is a similar view of the step ladder folded,

Figure 3 is a view in rear elevation with the parts unfolded,

Figure 4 is a view in horizontal section taken on the line 4—4 of Figure 1 and drawn to an enlarged scale, and

Figure 5 is a fragmentary view in transverse section taken on the line 5—5 of Figure 4.

Referring to the drawings by numerals, the basic elements of my improved step ladder are a front step section 1, and a rear brace section 2. The step section 1 includes the usual pair of side uprights 3 and steps 4, and the brace section the usual pair of side uprights 5 connected together by a pair of diagonal, crossed braces 6 intermediate the ends of the section. A pair of strap hinges 7 pivotally connect the sections 1, 2 together adjacent the upper ends thereof, the hinges being secured to the confronting edges of the sections 1, 2 and the upper ends of the uprights of the section 1 being beveled, as at 8, to bear against the inner edges of the uprights 5 of section 2 and establish the unfolded position of the sections as best shown in Figure 1. The usual pair of rule joint braces 9 are pivoted, as at 9', 9, to the sides of the uprights 3, 5 to also establish the unfolded position of said sections 1, 2, said braces 9 being foldable upwardly so as to permit folding of the sections 1, 2 together. In this connection, it will be noted that said braces 9 when folded permit folding of sections 1, 2 into slightly downwardly diverging relation so that the ladder when folded can be stood upright without leaning the same against a wall or other support, the divergence being sufficient to prevent the folded ladder from toppling over.

The workman's platform 10 comprises a panel of suitable gauge material fitting between the side uprights 5 of the brace section 2 and having a rear edge hinged, on a transverse rod 11 suitably secured at its ends in said uprights adjacent the upper ends of the uprights 5, said platform being arranged to swing downwardly into pendent position when folded between said uprights and in the approximate vertical center of the unfolded ladder sections 1, 2 as best shown in Figure 1 in dotted lines. A subjacent yoke 12 is provided for supporting the front edge of the platform section in horizontal position when the latter is unfolded, said yoke comprising a pair of side arms 13 pivotally mounted for vertical swinging movement at inner ends thereof by bolts 14 to the side uprights 5 immediately above the upper ends of the cross-braces 6 and on the inner sides of said uprights. The outer ends of the side arms 13 are connected by a cross-bar 15 clamped between the arms by a headed cross-rod 16 extended through said arms and having a nut 17 thereon. The cross-bar 15 is arranged so that when the yoke 12 is swung upwardly into a forwardly and upwardly inclined position relative to said uprights 5, said bar supports the platform 10 and bears against a cross-cleat 18 on the bottom of the platform whereby the yoke 12 is blocked by the cleat against downward swinging and said platform 10 held in unfolded forwardly extending position on the uprights 5. As best shown in Figures 2, 4 and 5, the front end of the platform 10 is reduced in width, as at 19, to fit between the front ends of the arms 13 when unfolded, and also reduced in width, as at 20, to clear the pivoted ends of the arms 13 when said platform is unfolded into the position already described. The described yoke 12 is designed to be swung upwardly, as will presently more clearly appear, when folded, in between the uprights 5 of the brace section 2.

The utensil platform comprises a panel 21 having a pair of bottom side cleats 22 thereon hinged, as at 23, to a pair of uprights 24 having lower notched ends, as at 25, adapted to rest on a cross-round 26 extending between the side uprights 5 of the brace section 2 adjacent the lower ends of said uprights.

The uprights 24 comprise, respectively, a pair of lower, and relatively shorter, upper sections 27,

28 hinged together, as at 29, at front edges thereof so that the section 28 may be folded upwardly in end-to-end aligned relation with respect to the section 27, or, unfolded forwardly and downwardly alongside the section 27. Sections 27 extend upwardly alongside the arms 13 and platform 10 and in the rear of the bar 15. A headed rod 30 is removably extended through the section 27 and arms 13 with a ring nut 31 thereon, whereby said sections are held in upright position on the round 26. A hasp 32 is provided on the rear edge of each section 28 for receiving a staple 33 on the section 27, whereby and by means of a pin, not shown, for insertion in the staple, the sections 28 may be latched to the sections 27 in unfolded position. A pair of hooks, as at 34, are provided on the sections 27, at suitable points, and a pair of eyes, as at 35, on the upper ends of the uprights 5, whereby the sections 27 may be suspended on the uprights 5 when the ladder is folded. Hooks and studs, as at 36, 37, are provided on the sections 27, 28 upon opposite sides of the axis of the hinges 29, whereby, when the sections 28 are folded, the same may be latched in folded position to the sections 27. A cross-bar 38 extends between the free ends of the sections 28, and a similar bar 39 between said sections intermediate the ends thereof and for the purpose presently seen.

Returning now to the utensil platform 21, the hinges 23 thereof connect the same to the cross-bar 38 so that said platform may be unfolded to extend forwardly of the sections 28 horizontally, or, folded downwardly and forwardly of the latter alongside the same. A suitable brace 40 is pivoted, as at 41, to the under side of the platform 21 and to the cross-bar 39, as at 42, said brace having a rule joint whereby it may be folded to permit folding of the platform 21 in the manner described, or, unfolded to hold said platform 21 in unfolded position.

Preferably, to fold the described step ladder, the uprights 27 are lifted off the round 26 thereby swinging the arms 13 upwardly on the pivots 14 and the platform 10 upwardly on the pivot point 11 sufficiently to break the interlock between the bar 15 and cleat 18. The platform 10 may then be held and the uprights 24 lowered, together with the arms 13, sufficiently to permit the platform 10 to drop into the dotted line folded position shown in Figure 1. The rod 30 is next removed and the arms 13 folded upwardly in between the uprights 5 as shown in Figure 2. The platform 21 may then be folded downwardly by breaking the joint 43 of the brace 40. Next the sections 28 may be folded downwardly, together with the platform 21, as shown in Figure 2, and sections 27 hung on the eyes 36 by means of the hooks 34. The sections 28 may be latched to the sections 27 by means of the hooks 36 and studs 37. The braces 9 may then be folded upwardly to permit the sections 1, 2, to be folded together as will now be clear.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. In a step ladder, a pair of step and brace sections, respectively, hinged together adjacent upper ends thereof for relative swinging toward and from each other into and from folded position, respectively, a platform hinged to the top of the brace section for vertical swinging into forwardly extending position relative thereto and for gravitational folding into pendent position, means to support said platform in forwardly extending position comprising a yoke pivoted on said brace section for upward swinging beneath the platform, said yoke being swingable upwardly into a folded position alongside the brace section when the platform is folded, a second smaller platform, and means to support the second platform above and in front of the first-mentioned platform comprising a lower round on said brace section, a pair of uprights adapted to rest on said round and detachably secured to opposite sides of said yoke, and coacting devices on said uprights and brace sections, respectively, for suspending said uprights from said brace section when said sections, platform and yoke are folded.

2. In a step ladder, a pair of step and brace sections, respectively, hinged together adjacent upper ends thereof for relative swinging toward and from each other into and from folded position, respectively, a platform hinged to the top of the brace section for vertical swinging into forwardly extending position relative thereto and for gravitational folding into pendent position, means to support said platform in forwardly extending position comprising a yoke pivoted on said brace section for upward swinging beneath the platform, said yoke being swingable upwardly into a folded position alongside the brace section when the platform is folded, a second smaller platform, and means to support the second platform above and in front of the first-mentioned platform comprising a lower round on said brace section, a pair of uprights adapted to rest on said round and detachably secured to opposite sides of said yoke, and coacting devices on said uprights and brace sections, respectively, for suspending said uprights from said brace section when said sections, platform and yoke are folded, said uprights having upper hinged end sections foldable forwardly and downwardly.

3. In a step ladder, a pair of step and brace sections, respectively, hinged together adjacent upper ends thereof for relative swinging toward and from each other into and from folded position, respectively, a platform hinged to the top of the brace section for vertical swinging into forwardly extending position relative thereto and for gravitational folding into pendent position, means to support said platform in forwardly extending position comprising a yoke pivoted on said brace section for upward swinging beneath the platform, said yoke being swingable upwardly into a folded position alongside the brace section when the platform is folded, a second smaller platform, and means to support the second platform above and in front of the first-mentioned platform comprising a lower round on said brace section, a pair of uprights adapted to rest on said round and detachably secured to opposite sides of said yoke, and coacting devices on said uprights and brace sections, respectively, for suspending said uprights from said brace section when said sections, platform and yoke are folded, and said smaller platform being foldable on said uprights alongside the same.

JAMES DE SANTIS.