Nov. 10, 1931. H. A. SHAMBAUGH 1,831,143

COMBINED CHAIR AND LADDER

Filed Nov. 5, 1930 2 Sheets-Sheet 1

Fig. 1.

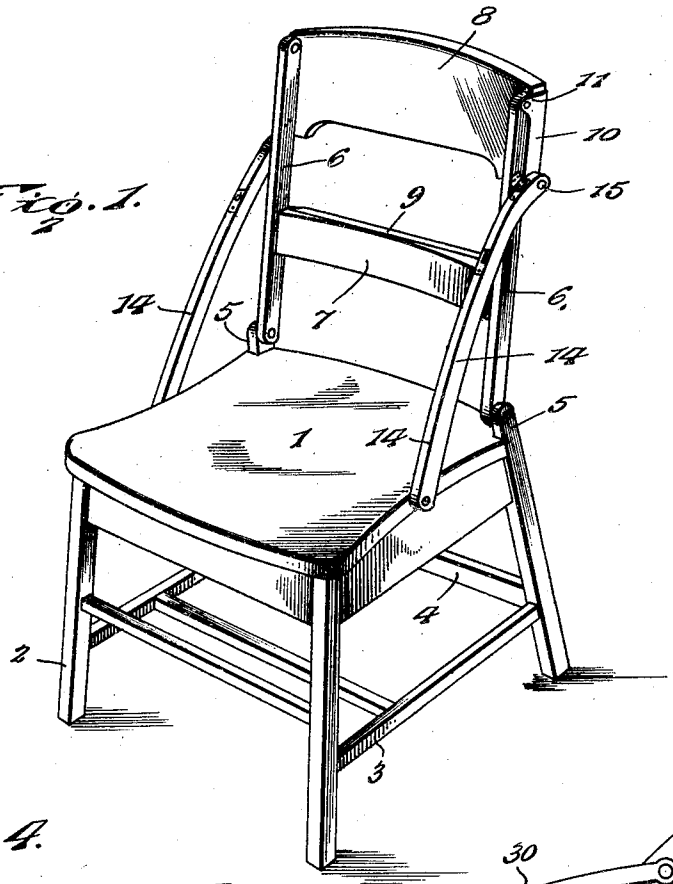


Fig. 4.

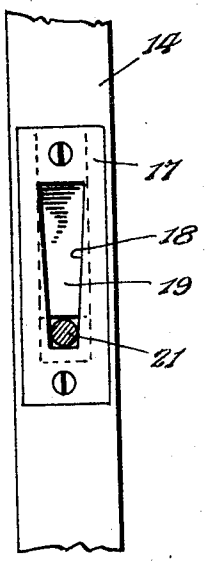
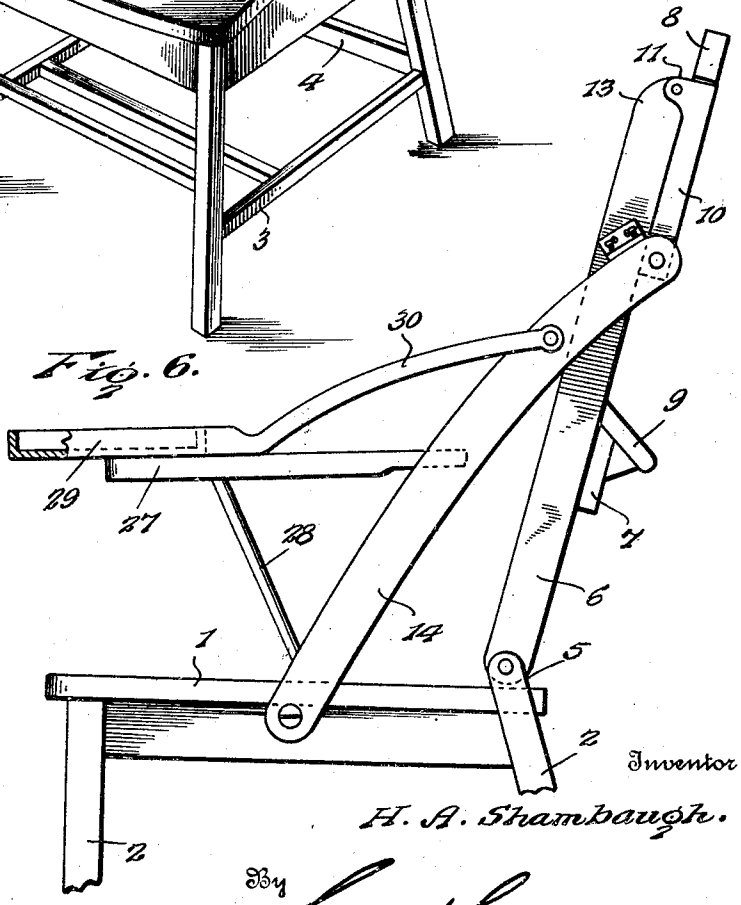


Fig. 6.



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COMBINED CHAIR AND LADDER

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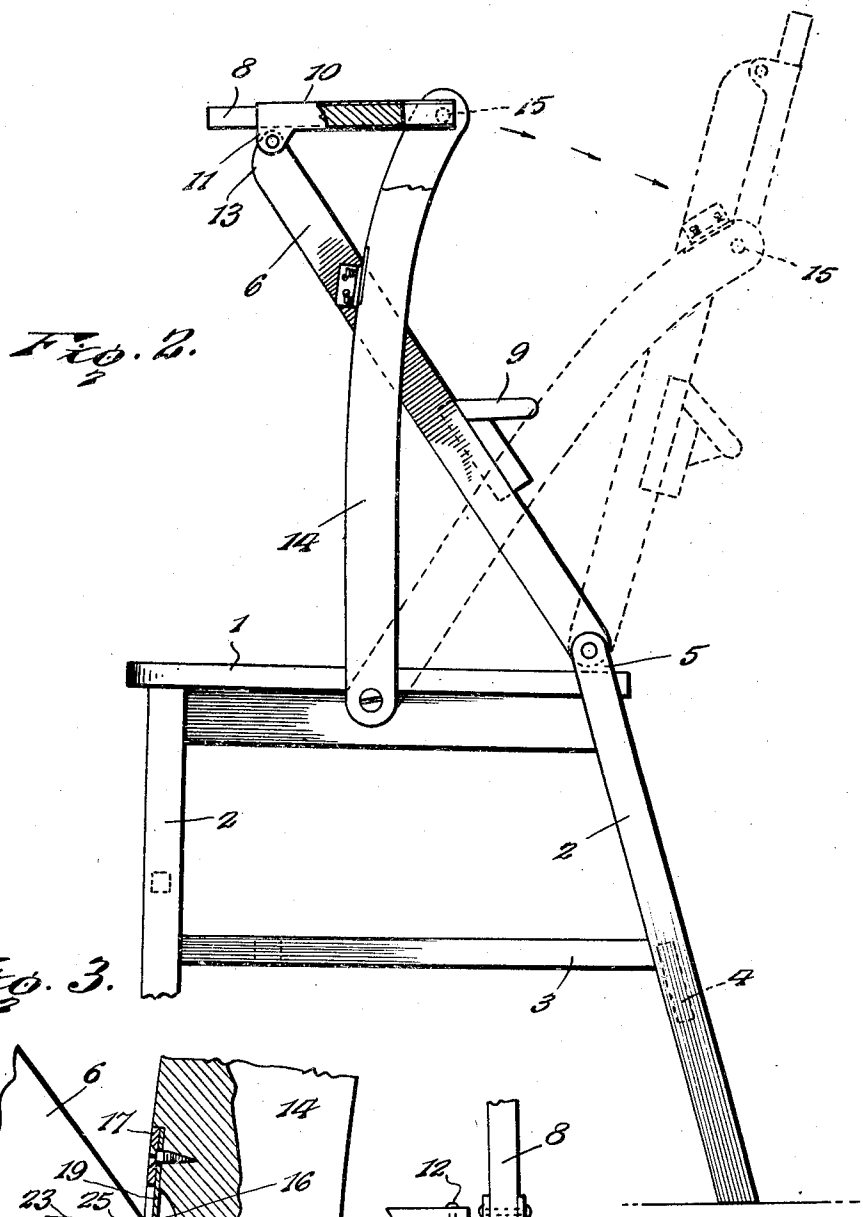


Fig. 2.

Fig. 3.

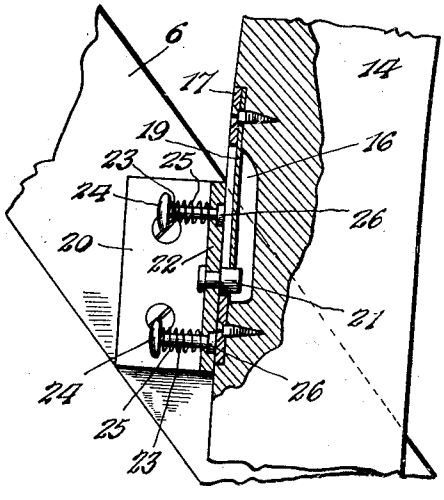


Fig. 5.

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UNITED STATES PATENT OFFICE

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COMBINED CHAIR AND LADDER

Application filed November 5, 1930. Serial No. 493,623.

The object of this invention is to provide an article of furniture for household use which may be utilized as an ordinary chair and which by slight adjustment may serve efficiently as a step ladder. The invention is illustrated in the accompanying drawings and consists in certain novel features which will be hereinafter first fully described and then more particularly defined in the appended claims.

In the drawings:

Figure 1 is a perspective view of the device adjusted for use as a chair,

Fig. 2 is an enlarged elevation, partly in section, of the device arranged as a step ladder.

Fig. 3 is an enlarged detail section taken longitudinally through one of the side supports and showing more particularly a locking means which is employed,

Fig. 4 is an enlarged plan view of the strike plate which forms a part of the locking means,

Fig. 5 is a detail view of a corner fastening, and

Fig. 6 is a side elevation showing modifications or additional attachments.

In carrying out the invention, I employ a chair which includes a seat 1 and legs 2 of any usual or approved construction, the legs being thoroughly braced, as indicated at 3, and the back cross bar 4 being of greater dimensions than ordinarily is the case in order to be utilized as the lowest step of the ladder. The rear legs are extended slightly above the seat, as shown at 5, and to the upper projecting ends of the legs are pivoted the lower ends of side arms 6 of the chair back, the said arms being connected intermediate their ends by a cross bar 7 which is concave on its front surface so that it will fit comfortably against the back of a sitter. Pivotally connected to the upper extremities of the side arms 6 is a step 8 which, when the device is arranged for use as a chair, will fit close against the back edges of the side arms and constitute the upper member of the back rest but when the device is arranged as a ladder this step will assume a horizontal position, as shown in Figure 2, and constitute the top step of the ladder. The cross bar 7 also carries a step 9 which is ordinarily disposed at its rear side and is rigidly secured thereto, being disposed at the rear of the back when the device is arranged as a chair, as shown clearly in Fig. 6, and being disposed horizontally above the chair seat and approximately midway between the seat and step 8 when the device is arranged as a ladder, as shown in Fig. 2. The step 8 is not pivoted directly to the upper ends of the side arms 6 but is connected therewith through the intermediary of brackets 10 which are disposed at the opposite ends of the step and pivotally connected with the respective arms. As shown most clearly in Fig. 5, each bracket comprises a substantially U-shaped portion which spans the end edge of the step and is riveted or otherwise secured thereto and at its upper extremity is provided with a forwardly projecting lug or ear 11 which lies against the outer side of the arm 6 at the upper extremity of the same and is pivotally secured thereto through a pivot bolt or pin 12. The end of the arm is also made convex, as shown at 13, whereby it will permit a free swinging movement of the step without any interference from the arm.

In order to further support the top step 8 in the ladder and to brace the back rest of the chair, I provide pivoted bracing arms 14 which are pivoted at their lower ends to the side edges of the chair seat or to the braces immediately under the seat at points approximately midway between the front and the back of the chair. These bracing arms are pivoted at their upper ends to the rear corners of the step 8, as shown at 15, and normally extend upwardly and rearwardly to support the back, as shown in Figs. 1 and 6. When the article is to be employed as a step ladder, the back is swung forward to the position shown in Fig. 2 and the pivotal connection between the bracing arms and the top step 8 will cause the arms to swing forwardly and at the same time turn the step into the horizontal position shown in Fig. 2, the rear edge of the step being firmly supported by these bracing arms, and it will be noted upon reference to Fig. 2 that said arms extend ap-

proximately perpendicularly from the chair seat to the step.

In the upper edge of each side arm at the upper end thereof and at a point between the upper end and the central point of the arm are recesses 16 and secured in the arm over each recess is a strike plate 17 having a longitudinal slot 18 therein which alines with the recess 16 in the arm. Disposed under the upper end of the strike plate is the end of a spring plate 19 which extends over the recess to a point near the lower end of the same and of the slot. Secured to the outer side of the adjacent side arm 6 of the chair back is a bracket 20 which has a web projecting outwardly over the supporting arm 14 and through this web is inserted a stud or locking pin 21 which is fixed in the web and is adapted to enter the slot 18 and the recess 16 to be engaged by the lower end of the spring retainer plate 19. Slidably mounted in the web 22 at opposite sides of the stud 21 are push pins 23 provided at their upper ends with buttons or finger-holds 24 and normally held yieldably in their outer positions by springs 25 disposed around the pins between the web 22 and the heads 24, as will be understood upon reference to Fig. 3. The inner or lower ends of these pins are provided with small heads 26 which normally are seated within the web 22 but may be pushed therefrom to bear against the retainer spring 19 and depress the same out of engagement with the locking stud 21. It will now be understood that, when the article is arranged for use as a chair, the studs 21 will engage the retainer springs or keepers 19 at the upper ends of the supporting arms 14 and will thereby maintain the chair back in the position in which it is set. When the device is to be arranged for use as a ladder, the lower push pin is pressed inwardly or downwardly so as to disengage the keeper from the locking stud, whereupon the chair back may be swung forwardly into the position shown in Fig. 2 and the locking stud will automatically ride into engagement with the lower keeper or retaining spring. It will be noted that the brackets 20 are duplicates so that they may be used at either side of the chair structure without requiring any identification marks or special construction and as the push buttons or pins are provided in duplicate it makes no difference which end of the bracket is uppermost so that the parts may be assembled very rapidly. It will also be noted upon reference to Fig. 3 that, if the spring 19 should be broken, the removal of the upper securing screw will loosen the upper end of the strike plate and the spring may then be easily withdrawn without requiring the entire strike plate to be removed and the brackets to be readjusted.

In Fig. 6, I have shown side arms 27 which may be attached at their rear ends to the supporting arms 14 and supported at their forward free ends by props 28 disposed between them and the chair seat. These arms are useful when it is desired to use the chair as an arm chair rather than a side chair and may be very easily and quickly attached to the other parts. I also illustrate a tray 29 which may be pivoted at the rear ends of its arms 30 to the supporting arms 14 and extended forwardly and rested upon the side arms 27 so that the article may be utilized as a child's chair, the tray being used to support toys or food in a well known manner.

It will be seen from the foregoing description, taken in connection with the accompanying drawings, that I have provided an exceedingly simple and useful article of furniture which may be employed in various capacities around a house. When arranged as a chair, the article will prove as comfortable and as durable as kitchen chairs of the usual construction and it has the additional advantage that it may be very quickly converted into a step ladder. When arranged for use as a step ladder, the lowest rear brace 4 will be utilized as the bottom step and the back portion of the chair seat will be utilized as the second step while the third step is provided by the step 9 secured to the cross bar 7 and the top step and support is, of course, the element 8.

The device may be so easily manipulated that it may be arranged as a ladder while the user is standing on the chair seat and it is not necessary for him to step to the floor.

Having thus described the invention, I claim:

1. A combined chair and ladder comprising a chair seat structure, a back pivotally secured at the rear corners of said structure, a step pivoted at one edge to the upper end of the back, supporting arms pivoted to the seat structure and to the rear edge of said step, and means for locking the supporting arms in a set position.

2. In a combined chair and ladder, a chair seat structure, side arms pivotally connected to the rear corners of the seat structure, supporting arms pivotally connected to the seat structure intermediate the front and rear sides of the same, a step carried by the side arms between the ends thereof, and a step pivotally connected to the upper extremities of the side arms and to the upper extremities of the supporting arms whereby when said arms are swung rearwardly the step will be disposed at the rear of the side arms and when the arms are swung forwardly the step will be disposed in a horizontal position and supported in said position by the side arms and the supporting arms.

3. In a combined chair and ladder, a chair seat structure including rear legs having their upper ends projecting above the seat, side arms pivoted at their lower ends to the

projecting upper ends of said legs, supporting arms pivoted to the seat structure at points in advance of said legs, a step element, and brackets secured to the ends of said step element and provided at their front ends with forwardly projecting ears pivoted to the upper extremities of the side arms and having their rear ends pivoted to the upper ends of the supporting arms.

4. In a combined chair and ladder, a seat structure, a back pivotally connected to the seat structure at the rear corners thereof and including side arms, a step member pivoted to the upper ends of the side arms, supporting arms pivoted to the seat structure in advance of the rear edge thereof having their upper ends pivoted to the rear end of said step element, keepers on the supporting arms at and below the upper ends thereof, and locking elements mounted on the side arms of the back and engageable with said keepers.

5. In a combined chair and ladder, a seat structure, a back pivoted to the seat structure, supporting arms pivoted to the seat structure in advance of the back, a step element pivoted to the upper end of the back and to the upper ends of said supporting arms, brackets secured on the back and having portions projecting over the supporting arms, keepers on the supporting arms, locking studs mounted in said brackets and arranged to engage said keepers, and push pins mounted in the brackets to release the keepers from said locking studs.

In testimony whereof I affix my signature.

HOWARD A. SHAMBAUGH. [L. S.]