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D. GREENE

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STEP STOOL

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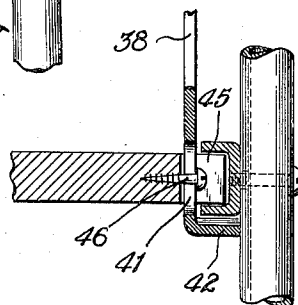
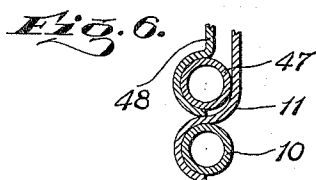
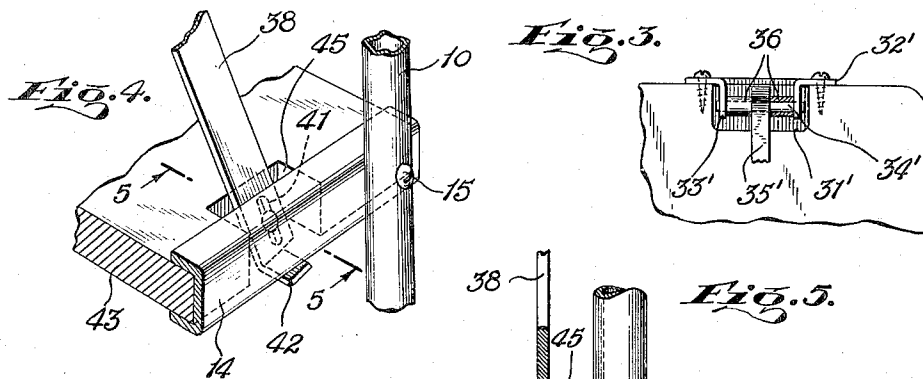
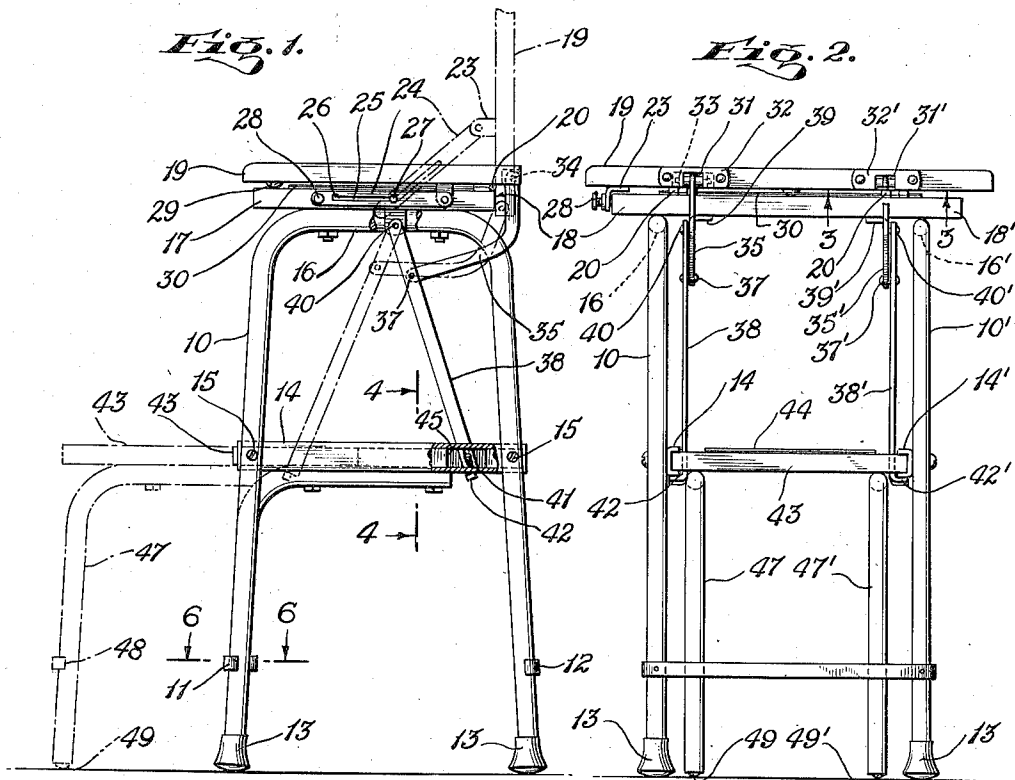


Fig. 5.

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STEP STOOL

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5 Claims. (Cl. 155—42)

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This invention relates to step-stools of the type and kind incorporating step treads normally arranged within boundary walls of a collapsed stool, and wherein the raising of a top seat member will automatically extend a step from the stool frame to form a stepladder having vertically disposed steps. More particularly, the invention deals with an article of manufacture of the kind defined wherein dual linkage is provided at side portions of the stool coupling the seat member with the step member in providing smooth action between the seat and step, and further wherein this linkage is maintained within boundaries of the collapsed stool and without interference with the tread area of the lower step or the surface of the main seat or the upper tread and supplemental seat. Still more particularly, the invention deals with a linkage having means at end portions of each step actuating link for checking extended and contracted movements of the step with respect to the chair frame. The novel features of the invention will be best understood from the following description when taken together with the accompanying drawing in which certain embodiments of the invention are disclosed, and in which the separate parts are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a side view of a chair made according to my invention with parts of the construction broken away and in section and indicating the parts in extended position in dot and dash lines.

Fig. 2 is a rear view of the structure shown in Fig. 1.

Fig. 3 is a bottom plan view of the top seat taken substantially on the line 3—3 of Fig. 2 with part in section and showing part in forwardly extended position.

Fig. 4 is a perspective section substantially on the line 4—4 of Fig. 1 showing one link coupling with one side of the step structure.

Fig. 5 is a section on the line 5—5 of Fig. 4; and

Fig. 6 is a section on the line 6—6 of Fig. 1, on an enlarged scale.

My improved chair comprises two substantially similar U-shaped leg frames 10—10', these frames being joined near their lower ends by front and rear tie-straps or rods 11 and 12, the ends of the legs of each frame having rubber or other finishing feet, as at 13, to protect a surface upon which the chair is arranged.

The leg members of the separate frames are joined substantially centrally thereof by forwardly and backwardly extending channel strips 14—14', the channels of which are directed in-

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wardly, as clearly seen in Fig. 2, the ends of the strips being secured to the frames by screws or rivets, as at 15. Secured to the upper cross head ends 16—16' of the frames 10—10', is an upper step or supplemental seat 17, the sides 18—18' of which extend beyond the frames 10—10', note Fig. 2, whereas this seat, considered forwardly and backwardly is substantially within the limits of the front and rear ends of the leg frames.

Arranged above the step or supplemental seat 17 is a primary seat 19 which is both wider and longer than the step or seat 17, as will be seen in consideration of Figs. 1 and 2, the primary seat 19 being hinged to the step or seat 17, as at 20, thereby permitting the primary seat 19 to be moved into the raised position shown in dotted lines in Fig. 1, in which position the rear end of the seat strikes against the rear end of the step or supplemental seat.

Secured to the under-surface of the primary seat 19 adjacent the side 18 of the step 17 is a bracket 23 to which is pivoted a bracing link 24 having an elongated aperture 25 with an offset 26 in one end thereof. On the side 18 of the step-seat 17 is a pin 27 operating in the aperture 25 and adapted to extend into the offset 26 when the primary seat is in raised position to lock the primary seat against downward movement and maintaining the same in what is termed a back-rest position. Secured to the free end of the link 24 is a fingerpiece or knob 28 by means of which the link 24 may be moved into an unlocked position with respect to the pin 27 in retaining the primary seat 19 to its lowered or normal position. Also secured to the lower surface of the primary seat 20 is a rounded cushion or bumper member 29 adapted to compensate for the hinge and to support the primary seat above the tread surface 30 of the step seat 17. The rear end of the primary seat 19 has two recesses 31—31', and secured to said rear end are two plates 32—32', each having a pair of inwardly extending ears 33—33', one of these structures being clearly shown in Fig. 3. Supported in each pair of ears is a pivot pin 34—34' on which is pivotally supported an offset link 35—35', bushings being arranged on the pins 34 to maintain the position of the links on the pins and one pair of these bushings is clearly illustrated at 36 in Fig. 3 of the drawing.

The lower and inwardly offset end portions of the links 35—35' are pivoted, as seen at 37—37' to step actuating links 38—38', the latter being pivoted to brackets 39—39' secured to the lower surfaces of the step seat 17, as seen at 40—40'.

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The lower end portions of the links 38—38' have elongated apertures, and one of these apertures is shown at 41 on the link 38 in Figs. 1 and 4 and 5 of the drawing. It will be, however, noted that both links 38—38' are of the same construction. The ends of the links 38—38' terminate in outwardly offset stop members 42—42' adapted to cooperate with the lower surface of the rails 14—14' in limiting swinging movement of the links 38—38' in both directions.

Slidably mounted in the channel strips 14—14' is a lower step member or foot-rest 43 having a tread 44 on the upper surface thereof. Side portions of the step 43 near the rear ends thereof have recesses, one of which is shown at 45, in Fig. 4 of the drawing, in which the ends of the links 38—38' operate. The recessed portions of the step have screw pins 46 which operate in the elongated apertures 41 in the forward extension and inward retraction of the step, as will be apparent.

Secured to side portions of the lower surface of the step 43 are downwardly extending L-shaped supporting legs 47—47' joined near their lower ends in a cross strap 48 arranged in alignment with the strap 11. Supported in the lower ends of the legs 47—47' are domes 49—49' providing free as well as non-marring movement of the step frame over a floor or other surface in the movement thereof into extended and contracted positions.

In Fig. 6 of the drawing, I have shown the strap mountings on the leg frame 10 and on the leg member 47. It will appear from this figure that the strap 11 is inwardly offset so as to allow the leg member 47 to house itself within the boundary of the frame 10, the strap member 48 also being offset to maintain this snug environment. The strap ends may be secured by welding or otherwise to the respective supports, as will be apparent.

One of the features of my invention lies in the fact that the complete chair assemblage is maintained substantially within the boundaries of the chair frame except for the slight side extensions at the upper portion of the frame. This procedure simplifies packaging of the complete chair unit. For purposes of description, either seat may be considered the primary seat, and in like manner the supplemental seat.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A stool of the class described comprising a pair of U-shaped leg frames, inwardly directed channels joining leg members of each frame, a seat secured to and joining upper cross head ends of the leg frames, means spacing and bracing lower end portions of the leg frames, a supplemental seat hingedly coupled with the rear portion of the first named seat, a step slidably engaging the channel strips and normally contained within the boundaries of the leg frames when the step is in retracted position, said step having a pair of downwardly extending L-shaped leg members, levers pivoted to the first named seat inwardly of and adjacent the leg frames and having sliding pivotal connections directly with side portions of said step, and links pivoted to the supplemental seat and said levers whereby swinging movement of the supplemental seat into raised position will automatically move the step into projected position with respect to the frame.

2. A stool of the class described comprising a pair of U-shaped leg frames, inwardly directed

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channels joining leg members of each frame, a seat secured to and joining upper cross head ends of the leg frames, means spacing and bracing lower end portions of the leg frames, a supplemental seat hingedly coupled with the rear portion of the first named seat, a step slidably engaging the channel strips and normally contained within the boundaries of the leg frames when the step is in retracted position, said step having a pair of downwardly extending L-shaped leg members, levers pivoted to the first named seat inwardly of and adjacent the leg frames and having a sliding pivotal connection with side portions of said step, links pivoted to the supplemental seat and said levers whereby swinging movement of the supplemental seat into raised position will automatically move the step into projecting position with respect to the frame, means movably coupled with the first named supplemental seat for bracing and retaining the supplemental seat in raised position, means at the lower ends of the leg members of said step for guiding the step over a surface in extending and retracting said step, and lower end portions of the levers having means checking movement of the step in both directions.

3. In step-stools of the class described, a stool frame, a main seat at the upper end of the frame, a supplemental seat swingably mounted in connection with the main seat, a legged step member slidably mounted in the frame, said step member having recesses in the sides thereof, a pair of levers pivoted in the frame, free end portions of said levers having a sliding pivotal mounting with side portions of the step member within said recesses, and links pivoted to the supplemental seat and to said levers for advancing the step member in movement of the supplemental seat into raised position.

4. In step-stools of the class described, a stool frame, a main seat at the upper end of the frame, a supplemental seat swingably mounted in connection with the main seat, a legged step member slidably mounted in the frame, a pair of levers pivoted in the frame, free end portions of said levers having a sliding pivotal mounting with said portions of the step member, links pivoted to the supplemental seat and to said levers for advancing the step member in movement of the supplemental seat into raised position, free end portions of said levers having means checking movement of the step member in both directions, means movably coupled with the first named and supplemental seat for bracing and retaining the supplemental seat in raised position, and means housing pivot end portions of the links in the rear end portion of the supplemental seat.

5. In step-stools comprising a frame and a swingable seat member, a step slidably engaging the frame, a link and lever structure for coupling the swingable seat with the step whereby movement of the swingable seat to raised position will advance the step in the frame, the lever having a fixed pivot in the frame and a free pivotal coupling directly with the step, said link being pivoted to the swingable seat member and said lever, the step having depending means for supporting the same when in extended position, and the lever having means adjacent the coupling with said step for checking movement of the step in both directions.

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