

Nov. 20, 1934.

J. WORLEY, JR., ET AL

1,981,017

STOOL

Filed May 19, 1930

2 Sheets-Sheet 1

Fig. 1.

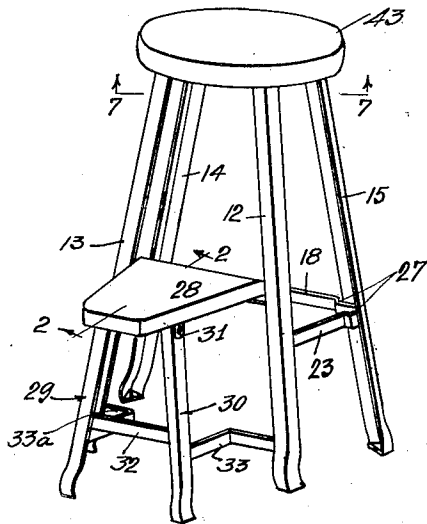


Fig. 2.

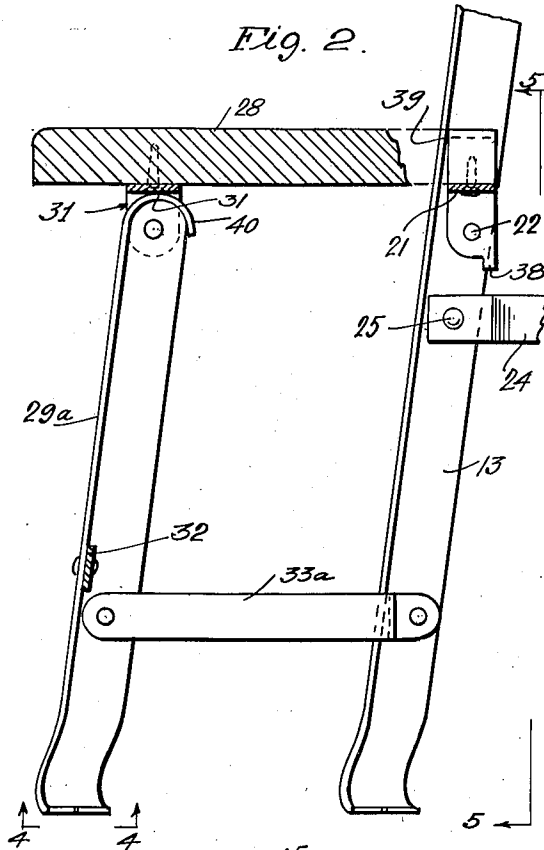


Fig. 3.

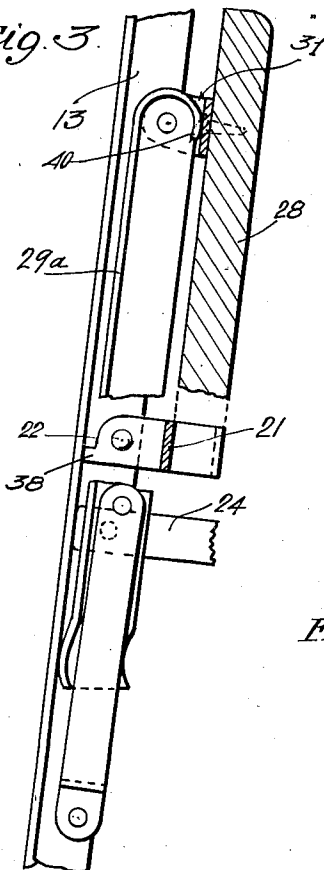


Fig. 9.

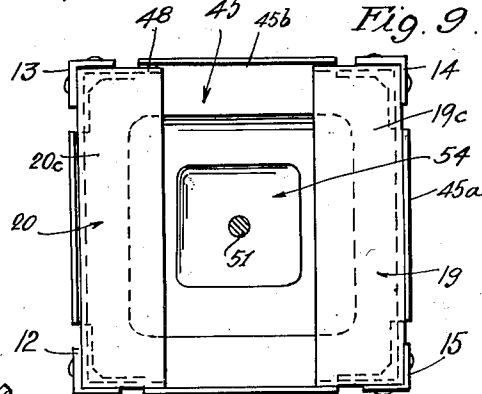
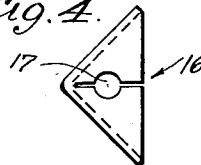


Fig. 4.



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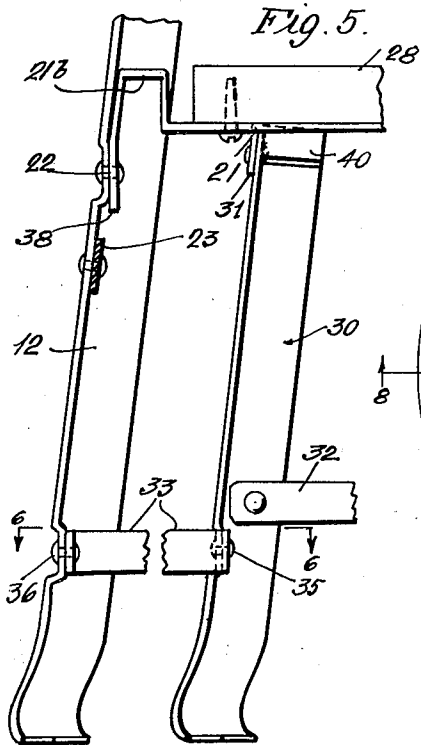
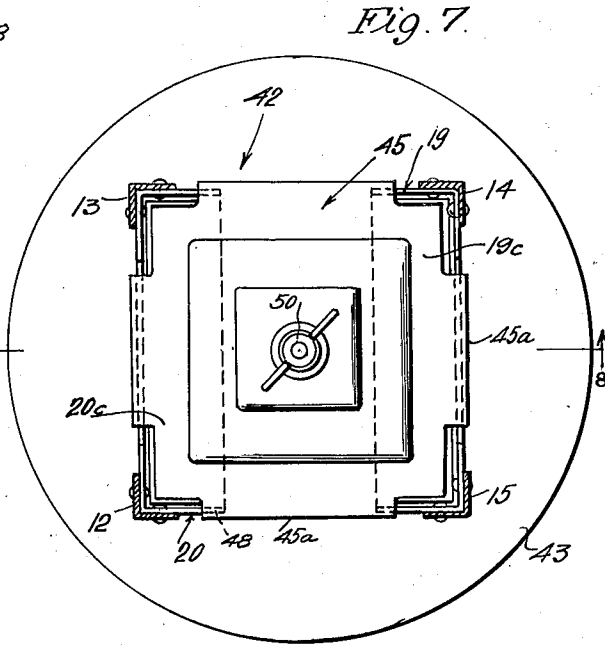
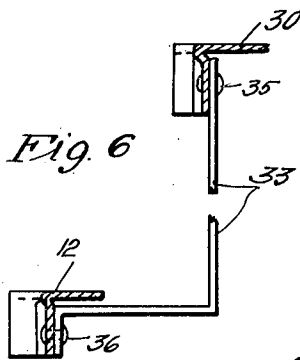
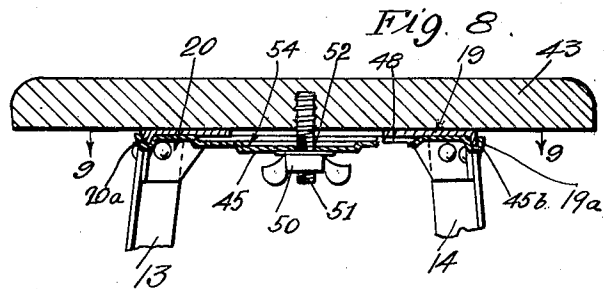
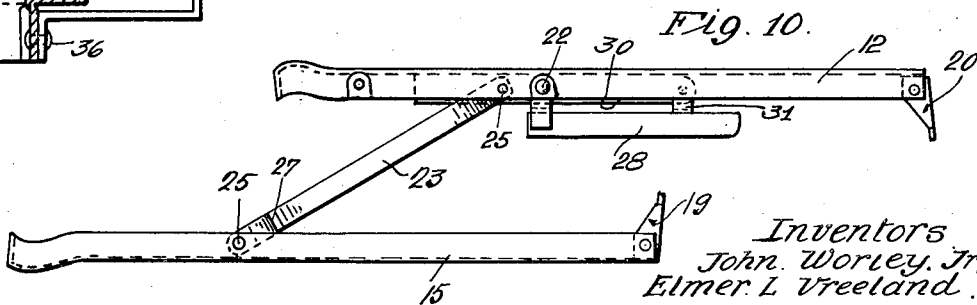
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STOOL

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

1,981,017

## STOOL

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Application May 19, 1930, Serial No. 453,602

9 Claims. (Cl. 155—42)

This invention has reference to stools of a type particularly suited for use in kitchens and other places where, ordinarily, the limited space renders a chair more or less undesirable because of its larger size. And the invention further has to do with stools provided with an attached step or foot rest which, when not in use, may be moved to out-of-the-way position directly beneath the stool. The combined step thus gives the stool ladder characteristics with resultant additional utility as will be readily understood.

It is a general purpose of the invention to provide a stool of this nature, having such structural characteristics as to enable it to be packed and shipped in knocked-down condition, and to render it, when in this condition, capable of being put compactly into a small container. In addition, the invention contemplates the provision of a stool of knock-down construction which may be assembled from collapsed condition by a simple operation which requires but a few readily understood instructions.

Without mentioning at this point further objects and aspects of the invention, the present type of stool may be characterized in general as having a removable top structure, which when removed, enables the legs and attached parts to be collapsed. The cross members or braces interconnecting the legs of the stool are connected with the legs in a manner such as will permit the latter to be collapsed or brought together as the stool is knocked down. When the parts are in assembled position, the legs are held against relative movement by elements which also serve as means for securing the top on the stool, to the end that a simple operation required to remove the top will also release the legs so that they may be collapsed. Preferably, though not necessarily in certain broad aspects of the invention, a step structure will be incorporated in the stool, and as will later be seen, the construction and mounting of the step are such that it may be collapsed with the stool parts without interfering with the compactness of the known-down structure.

The above aspects and characteristics, as well as additional aspects of the invention, will be understood most readily and discussed to best advantage in the following detailed description of a typical and preferred embodiment of the invention. Reference is had to the accompanying drawings, in which:

Fig. 1 is a general perspective view of the herein described preferred form of stool;

Fig. 2 is an enlarged fragmentary section as

indicated by line 2—2 of Fig. 1, and showing particularly the step mounting and connection with the stool legs;

Fig. 3 is a view similar to Fig. 2, showing the step swung to collapsed position;

Fig. 4 is a bottom view of one of the legs as indicated by line 4—4 of Fig. 2;

Fig. 5 is a fragmentary view taken as indicated by line 5—5 of Fig. 2, but showing the parts at the side of the step adjacent stool leg

Fig. 6 is a plan view on line 6—6 of Fig. 5;

Fig. 7 is a bottom view of the combined top mounting and leg clamping structure, looking upward on line 7—7 of Fig. 1;

Fig. 8 is a section on line 8—8 of Fig. 7;

Fig. 9 is a plan view of the parts directly beneath the top as indicated on line 9—9 of Fig. 8; and

Fig. 10 is a view on reduced scale, showing the stool legs and step in semi-collapsed positions.

Referring to the drawings, the stool proper comprises the four legs 12, 13, 14 and 15, which preferably are arranged so as to diverge downwardly in order to lend stability to the stool. Preferably, the legs will be formed of angle iron with the sides of the angles turned under and brought together at the bottoms of the legs, as at 16, see Fig. 4, to form the feet. The turned-under portions of the legs may be drilled as at 17 to provide openings for the purpose of attaching additional footings, for instance rubber feet, should it be desirable.

In the form of stool shown, the front and rear pairs of legs 12, 13 and 14, 15, respectively, are interconnected in a manner such that the pairs are capable of relative movement whereby they may be brought together to collapsed position, the legs of the respective pairs however being relatively immovable. Legs 14 and 15 are rigidly joined together at an intermediate point by cross brace 18, and at their upper ends by means of plate 19, see Figs. 8 and 9, the details of which will be described later. Legs 12 and 13 are interconnected at their upper ends by means of a similar member 20, and at an intermediate point by brace 21, which, as will be seen, may conveniently serve as a support for the step at its rear. Brace 21 is pivoted to the legs as at 22 so as to be capable of turning to accommodate swinging of the step. The front and rear pairs of legs are interconnected by braces 23 and 24 which are terminally pivoted as at 25 to the inner sides of the legs. By their pivotal connections, braces 23 and 24 permit the

front and rear pairs of legs, when the latter are released at their upper ends as will be described, to be moved relatively longitudinally and together in the manner indicated in Fig. 10. In order to prevent binding between these cross braces and the legs as the latter are collapsed, due to the fact that in the particular form of stool shown the legs diverge downwardly, the braces may be bent near their ends, for example as shown at 27 in Fig. 1, in order to clear the legs. It will be understood that any suitable collapsible brace construction may be used for braces 23 and 24, that is any suitable form that will permit the forward and rear pairs of legs to be brought together when released.

A step 28, the sides of which preferably are tapered toward the front in accordance with the angularity between legs 12 and 13, is supported near its front end by means of legs 29 and 30, pivoted at their upper ends to hinge plates 31 secured to the underside of the step. The latter is supported at its rear end on the pivotally movable cross brace 21, as shown in Figs. 2 and 5. The step legs are rigidly interconnected by cross rail 32 and are joined to stool legs 12 and 13 by means of angular braces 33, the front portions of which extend substantially in parallel with the sides of the step, and the rear portions being in line with legs 12 and 13. As shown in Figs. 2 and 5, braces 33 are pivotally joined to both the step and stool legs, as at 35 and 36, respectively, thereby permitting the step legs to be swung upwardly and toward the stool legs to the collapsed position shown in Fig. 3.

Relative pivotal movement between the step and its supporting legs, and between the step and legs 12 and 13 is permitted by the hinge joints 31, and the pivotal connections 22 between cross brace 21 and the stool legs, respectively. Thus the step may be grasped beneath its forward edge and swung upwardly to the position shown in Fig. 3, substantially in parallel with the stool legs. Preferably the position to which the step may be swung is limited by suitable stop means, for instance by lugs 38 projecting from the pivoted ends of brace 21, so that the lugs engage the inner face of legs 12 and 13 when the step is swung parallel therewith, to prevent further swinging movement of the step. Means may also be provided for limiting the position to which the step may be swung downward, suitable stop means for this purpose being typically shown as comprising the upwardly bent end portions 21b of brace 21, see Fig. 5, which are brought into engagement with the inner sides of legs 12 and 13, as at 39 in Fig. 2, when the step is in a position substantially parallel with the stool top, described hereinafter.

The step legs also preferably are formed of angle iron similar to the stool legs and diverge downwardly at a corresponding angle. As shown in Fig. 2, the front sides 29a and 30a of the step legs are bent backward at their upper ends, as indicated at 40, the bent portions bearing against the under side of hinges 31. The radius of curvature of the bend preferably is in excess of the radial distance of the sides 29a, 30a, from pivots 31, so that as the step is swung toward collapsed position, a certain amount of binding will occur between the bent or curved parts of the legs and the underside of hinges 31. A two-fold advantage is gained by this construction in that it prevents

the fingers of the person grasping the step from being caught between the upper end of the leg and the step, and also in that the step is prevented from dropping from collapsed position, by virtue of the binding in the joints as described.

The top structure assembly generally indicated at 42, see Figs. 7 and 8, may be characterized generally as comprising a removable top 43, and means in combination with the top for releasably clamping the front and rear pairs of stool legs together. As will later be seen, the construction of the top assembly is such that the parts which serve to releasably interconnect the pairs of legs at their upper ends when the stool is assembled, serve also as a means for releasably mounting the top on the legs.

The upper cross members or plates 19 and 20, interconnecting the respective pairs of legs, are generally angularly shaped, their top sides 19c 20c, being of substantial width in order to provide suitable bearing for the top 43. As shown in Fig. 8, the sides of members 19 and 20 are cut so as to provide comparatively narrow depending flanges 19a and 20a which widen diagonally at the ends of the members and at the points of connection with the legs. Bearing against the under sides of members 19 and 20 is a clamping plate 45 having projecting lips 45a on its four sides intermediate the legs, portions 45a being shaped as shown in Fig. 8, to form channels 45b. One opposing pair of channels 45b fits upward around the bottom edge of the depending flange portions 19a and 20a of the cross members, the other pair of channels 45b receiving the horizontally projecting and depending flanges 48 on both ends of the cross members, flanges 48 having a certain amount of overlap with the side lips 45a of the clamping plate. Thus the distance between an opposing pair of channels 45b will be substantially the length of cross members 19 and 20 between the outer sides of flanges 48, so that an opposing pair of the channel lips on the clamping plate will fit these flanges fairly closely.

Plate 45 is held in clamping engagement with the depending flanges on the cross members, by means of thumb nut 50 threaded on a screw 51 carried on the top 43, the screw depending through a central opening 52 in the plate. It will be noted that the clamping plate is dish shaped somewhat at its center, as indicated at 54, so as to give the plate flexible characteristics and thereby enable its central portion to yield upwardly as pressure is applied thereto. Thus as thumb nut 50 is tightened, the tendency is for the plate to bow upwardly at its center and thereby permit an appreciable range of adjustment of the nut, to the end that the latter, once adjusted, will not become loosened upon jarring of the stool, since the plate is in itself, by virtue of its flexibility and resiliency, capable of taking up any looseness that may occur.

In the operation of assembling the stool, assuming the parts to be in the collapsed position shown in Fig. 10, the legs are first brought to their normal positions, and clamping plate 45 applied to the under side of cross members 19 and 20 so that the channels 45b of one opposing pair of lips 45a will engage and fit upwardly around the end projecting flanges 48 on the cross members. The forward and rear pairs of legs will then be adjusted laterally of the clamping plate, this being permitted by the pivotal connections of braces 23 with the legs, so that

flanges 19a and 20a will be brought to fit within the second pair of channels 45b on the clamping plate. The top 43 may be put in place either before or after applying the clamping plate, and after the latter is fitted to the cross members, thumb nut 50 is tightened so as to bring the plate into secure clamping engagement with the cross members. And as previously mentioned the thumb nut will be taken up to the point of causing the plate to flex somewhat, so that subsequent jarring will not loosen the assembled parts.

It will be understood the drawings and description are to be considered merely as illustrative of and not restrictive on the broader claims appended hereto, for various changes in design, structure and arrangement may be made without departing from the spirit and scope of said claims.

We claim:—

1. A stool comprising four legs, a removable top mounted on the tops of said legs, a pair of brace members terminally pivotally interconnecting pairs of said legs and permitting said pairs of legs to be moved relatively together to collapsed positions, said pairs of legs being relatively longitudinally movable and removable means in combination with said top for locking said pairs of legs against relative longitudinal movement independently of said cross members.

2. A stool comprising four legs, a removable top mounted on said legs, a pair of cross members pivotally interconnecting pairs of said legs and permitting said pairs of legs to be moved relatively longitudinally together to collapsed positions, means in combination with said top for releasably holding said legs against relative longitudinal movement independently of said cross members, a step pivotally mounted on one of said pairs of legs, and a step leg structure pivotally connected to said step, both the step and the step legs structure being adapted to be swung into collapsed position substantially in parallel with the attached stool legs.

3. A stool comprising four legs, a removable top mounted on said legs, a pair of cross members pivotally interconnecting pairs of said legs and permitting said pairs of legs to be moved relatively together to collapsed position, means in combination with said top for releasably holding said legs against relative movement, a step pivotally mounted on one pair of the legs, a pair of step legs pivotally connected to said step and a cross member pivotally connecting the pair of stool legs to the step legs, both the step and the step legs being adapted to be swung into collapsed position substantially in parallel with the attached stool legs.

4. A stool comprising four legs, a pair of cross members interconnecting respective pairs of said legs at their upper ends, means interconnecting said pairs of legs whereby they may be moved relatively together to collapsed positions, a clamping plate adapted to engage the underside of said cross members to prevent their lateral relative movement, a top resting on the upper side

of said cross members, and means for releasably securing the top to said plate.

5. A stool comprising four legs, a pair of cross members interconnecting respective pairs of said legs at their upper ends, said members each having a longitudinal depending flange, a resilient clamping plate having at opposite sides a pair of channels adapted to engage the depending flanges on said cross members to prevent relative lateral movement of the cross members and the attached pairs of legs, a top resting on the upper side of said cross members, a bolt depending from said top through a central opening in the plate, and a nut threaded on said bolt, said nut being adapted to be taken up to bear against the under side of the clamping plate to secure the top in place.

6. A stool embodying, a plurality of legs, a removable top mounted on said legs, cross members pivotally interconnecting said legs and permitting the legs to be moved longitudinally and laterally together to collapsed position, releasable means joining said legs at their upper ends and preventing relative lateral movement of the legs, and means for releasably securing said top to the last mentioned means to prevent relative longitudinal movement of the legs, said securing means being attached to the top exclusively at the underside thereof.

7. A stool embodying, a plurality of legs, a removable top mounted on said legs, cross members pivotally interconnecting said legs and permitting the legs to be moved relatively together to collapsed positions, a pair of top cross members interconnecting pairs of said legs at their upper ends, a releasable clamping plate holding said top cross members against relative movement and a top releasably secured to said clamping plate to cooperate therewith in holding the top cross members against movement.

8. In a stool having a plurality of legs, a step pivotally connected at its rear edge to two of said stool legs, a step leg pivotally connected to the step toward its front edge, said step being adapted to be swung into collapsed position substantially parallel with said stool legs, and a brace pivoted terminally to the step leg and one of the stool legs; said step leg comprising an angle member one side of which is pivoted to the step and the other side of which is bent arcuately to engage frictionally the underside of the step to frictionally hold said step in collapsed position.

9. A stool comprising a top, a plurality of upright leg members, means interconnecting said leg members whereby certain of said leg members may be moved longitudinally relative to others of the leg members to and from collapsed and extended positions and means releasably securing the upper ends of all of said leg members in extended position to said top effective to maintain said leg members in rigid relation to said top and to each other and to lock the certain of said leg members against relative longitudinal movement.

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