Aug. 7, 1951 J. J. TOTH 2,563,436

STEP-LADDER STOOL

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Fig. 1

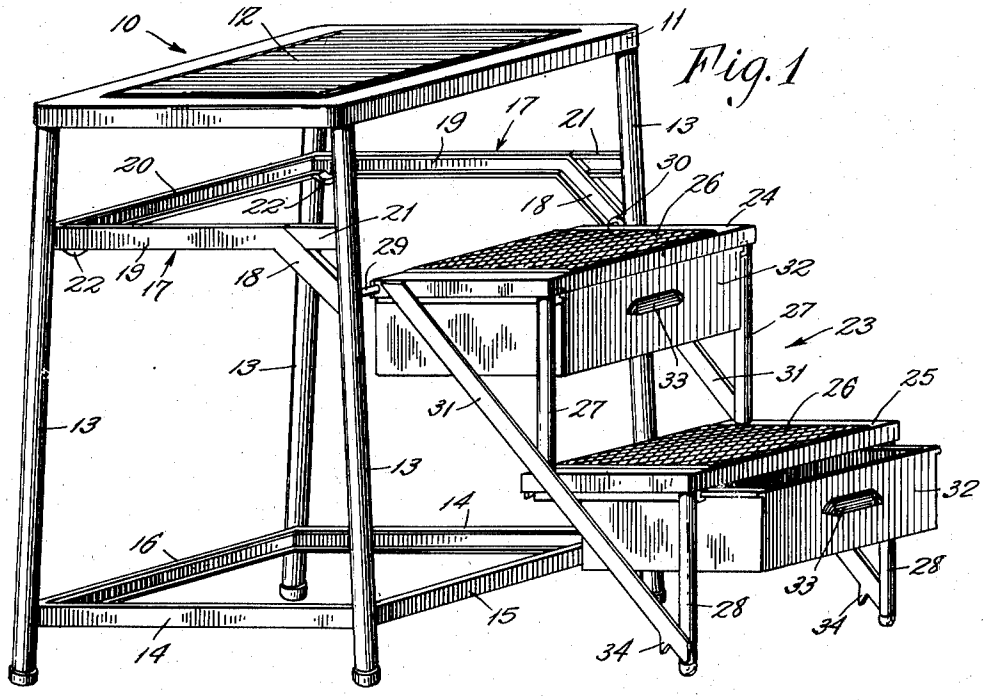


Fig. 2

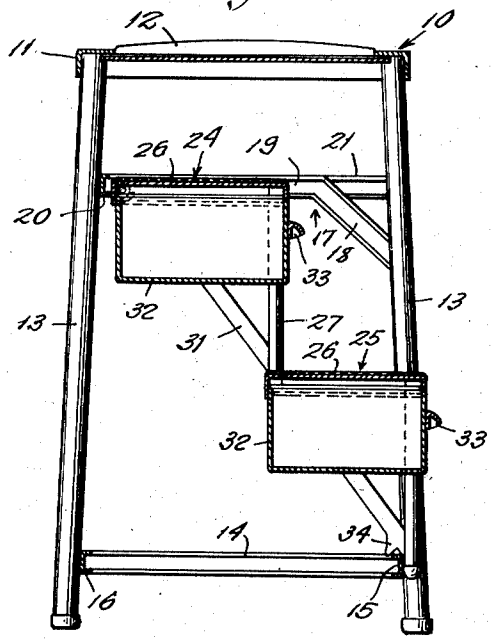
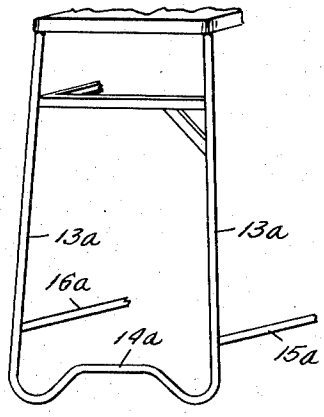


Fig. 3



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STEPLADDER STOOL

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This invention relates to improvement in step ladders, particularly of the type having a top and supporting leg structure suitable for use as a stool, and a ladder or step structure extensible from and retractable within the stool portion.

Numerous constructions have been proposed for step ladders having a ladder portion retractable within the framework of a stool. Most of these structures include slidable guide means or pivots interconnecting the ladder with the stool, requiring angular displacement of the ladder when it is moved between retracted and extended position. In view of the limited space available for storage in modern dwellings, it is desirable to utilize the space occupied by step ladder stools for storage. For this purpose, drawers or other storage compartments can be constructed under the steps of a ladder structure. However, in retractable ladder structures heretofore proposed, angular displacement of the ladder required for retraction or extension thereof tilts the drawers or storage compartments and disarranges the contents thereof.

It is accordingly an object of my invention to provide a foldable step ladder stool having drawers associated with the ladder steps, and wherein the ladder structure is movable between retracted and extended position without angular displacement of the drawers, thus avoiding disarrangement of their contents.

In conjunction with the foregoing objects, it is a further object of my invention to provide a step ladder stool of simple and economical construction, wherein the ladder which includes the drawers is firmly supported in extended position for use, and held against casual displacement in retracted position.

The foregoing objects are accomplished according to my invention by providing a stool having a top and supporting leg structure, and a retractable ladder having a series of horizontal steps with a drawer attached to the underside of each step. The lower end of the ladder rests upon the floor when the ladder is extended for use, while the upper end is supported on the stool. Means for supporting the upper end of the stool includes guide means so constructed that for retraction of the ladder, the top of the ladder moves initially diagonally upward and inward on the stool, and then horizontally inward to the back of the stool, such movement permitting the steps to be constantly maintained in horizontal position during movement of the ladder to retracted position. When retracted, the lower portion of the ladder engages support means on the stool,

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for example, a cross brace near the base thereof, whereby the ladder is supported substantially parallel to the position it occupies when extended, so that the steps and drawers remain in horizontal position. Moreover, the guide means includes a detent at the inner end thereof, engaging the top of the ladder when retracted to hold it releasably in retracted position. Preferably a second detent means is provided for interengagement of the lower end of the ladder with the support means on the stool, thus providing a more secure engagement for holding the ladder in retracted position.

A preferred embodiment of the invention is illustrated in the accompanying drawings wherein:

Figure 1 is a perspective view of the step ladder stool, with the ladder extended for use.

Fig. 2 is a central vertical cross section of the step ladder stool with the ladder in retracted position.

Fig. 3 is a fragmentary detail showing an alternative stool construction.

Referring to the drawings, the ladder stool, in accordance with my invention, comprises an oblong rectangular top 10, comprising for example, a frame 11 and a pad 12, supported by four legs 13 interconnected adjacent their lower ends by side braces 14 and front and rear braces 15 and 16, respectively. The top, legs and braces may be of wood or metal fastened together in any conventional manner to provide a rigid, stable construction. Thus, the frame 10 may be of metal and the legs 13 and braces 14 to 16 can be of rolled metal stock, welded or bolted together.

Alternatively, as shown in Fig. 3, the legs 13a can be constructed of metal tubing, the side braces 14a being formed integral with the pair of legs which it connects, while the front and rear braces 15a and 16a are welded at their ends to the legs.

At each side of the stool, below the top 10, a guide member or track 17 of a channel-shaped cross section is secured to the legs 13, each track having an upwardly and inwardly extending diagonal portion 18, and a horizontal portion 19 extending to the rear of the stool. The horizontal portions can be extended, if desired, around the back of the stool to form a rear brace 20, and may have forward extensions 21 attached to the front legs of the stool, so as to form side braces adjacent the top of the stool. At the rear end of horizontal portions 19 of the tracks 17, a depression or notch 22 is formed to provide a detent

for engaging a part on the top of the ladder, hereinafter described.

A ladder 23 is provided having a pair of horizontal steps 24 and 25 (advantageously provided with rubber mats 26), connected by vertical braces 27, and the lower steps 25 being supported by vertical legs 28, the lower ends of which rest upon the floor when the ladder is extended for use. Along rear edge of the top step 24, the ladder comprises a horizontal brace 29 having a roller or trunnion 30 at each end, said rollers being adapted to engage the tracks 17. A pair of diagonal braces 31, one at each side of the ladder, connect the steps 24 and 25 with legs 28, rendering the structure rigid and stable. The steps 24 and 25 can be of sheet metal or wood, and braces 27 and 31 and legs 28 and brace 29 can be of wood, or rolled stock or metal tubing, preferably similar to the material used for the framework of the stool.

A drawer 32 with a handle 33 is fastened to the underside of each of the steps in such a manner as to slide forward and rearward for opening and closing, between vertical braces 27 and legs 28. The drawers may be supported in any conventional manner. In the embodiment shown in the drawings, they are attached at their upper edges by conventional tongue and groove means to permit them to slide back and forth on the steps. They may be advantageously constructed of sheet metal, or, if desired, of wood.

When the steps are extended as shown in Fig. 1, the rollers or trunnions 30 at the ends of the horizontal brace 29 are positioned at the lower end of diagonal portions 18 of the tracks 17, resting against legs 13 and thus firmly supporting the upper end of the ladder 23 while legs 28 rest upon the floor, in such a position that the steps 24 and 25 and the corresponding drawers are in horizontal position.

When it is desired to move the steps to retracted position, the ladder structure is raised upward and inward on the stool, moving rollers 30 to the upper end of diagonal portions 18 of the track 17, the rear lower edge of the drawer attached to the lower step 25 being raised thereby sufficiently to clear front brace 15 of the stool. The ladder is then moved horizontally inward, rollers 30 riding along the horizontal portion 19 of the track 17. When the rollers reach the notches or depressions 22 at the inner ends of the horizontal portions 19 of the tracks, they drop into the notches engaging same as a detent, releasably holding the top of the ladder in retracted position. The side braces 31 of the ladder are supported by front brace 15 of the stool, maintaining the steps and drawers of the ladder in horizontal position.

Advantageously, a pair of downwardly extending projections or hooks 34 are provided on diagonal braces 31 adjacent their lower ends, said projections being adapted to drop behind the brace 15 on the stool when rollers 30 drop into notches 22, thus providing additional detent means for retaining the ladder in retracted position.

In order to extend the ladder for use, it is first lifted slightly to disengage rollers 30 and hooks 34 from notches 22 and cross brace 15 respectively; then forwardly, and finally diagonally downward, to move rollers 30 along tracks 17 to the lower ends of their diagonal portions 18, wherein the upper end of the ladder is supported for extension of the ladder.

It will be seen that in retracted and extended positions, the steps 24 and 25 of the ladder, and the corresponding drawers 32 are supported in horizontal position; while during movement of the ladder between the two positions, no tilting movement is required so that the drawers can be constantly maintained horizontal, thus avoiding any disarrangement of their contents. Movement of the steps between retracted and extended position requires a minimum amount of effort, involving a simple upward and inward pull to retract the ladder, and an outward pull to extend the ladder for use.

Variations and modifications may be made within the scope of this invention, and portions of the improvements may be used without others.

I claim:

1. A step ladder stool comprising a top and supporting leg structure; a retractable ladder having a plurality of horizontal steps, and a drawer attached to the underside of each step, said ladder being diagonally extensible from said stool with its lower end resting on the floor; guide means interconnecting the upper end of the ladder with the stool, said guide means supporting the upper end of the ladder adjacent the front of the stool when the ladder is extended for use and restricting movement of the upper end of the ladder for retraction thereof within the leg structure of the stool to an initial diagonal upward and inward direction followed by horizontal inward movement; and means on the stool for supporting the ladder when retracted with its legs supported above the level of the floor, and in a diagonal position substantially parallel to its position when extended for use.

2. A step ladder stool comprising a top and supporting leg structure; a retractable ladder having a plurality of horizontal steps and a drawer attached to the underside of each step, said ladder being diagonally extensible from said stool with its lower end resting on the floor; guide means interconnecting the upper end of the ladder with the stool, said guide means supporting the upper end of the ladder adjacent the front of the stool when the ladder is extended for use and restricting movement of the upper end of the ladder for retraction thereof within the leg structure of the stool to an initial diagonal upward and inward direction followed by horizontal inward movement, and including detent means for releasably holding the upper end of the ladder in retracted position; and means on the stool engaging the lower end of the ladder for supporting same when retracted in a diagonal position substantially parallel to its position when extended for use.

3. A step ladder stool comprising a top and supporting leg structure; a retractable ladder having a plurality of horizontal steps and a drawer attached to the underside of each step, said ladder being diagonally extensible from said stool with its lower end resting on the floor; guide means interconnecting the upper end of the ladder with the stool, said guide means including a channel member supporting the upper end of the ladder adjacent the front of the stool when the ladder is extended for use and restricting movement of the upper end of the ladder for retraction thereof within the leg structure of the stool to an initial diagonal upward and inward direction followed by horizontal inward movement, and including detent means in one

wall of the channel for releasably holding the upper end of the ladder in retracted position; and means on the stool engaging the lower end of the ladder for supporting same when retracted in a diagonal position substantially parallel to its position when extended for use, said last-named means including a detent for releasably holding the lower end of the ladder in engagement therewith as long as the upper end of the ladder remains in engagement with the detent included by said guide means.

4. A step ladder stool comprising a top and supporting leg structure; a retractable ladder having a plurality of horizontal steps, and a drawer attached to the underside of each step, said ladder being diagonally extensible from said stool with its lower end resting on the floor; a pair of closed tracks at the sides of the stool below its top, each having a front portion slanting diagonally upward and inward from the front of the stool, a horizontal rear portion extending to the rear of the stool, and a depression at the rear end thereof; a pair of rollers on the top of said ladder engaging said tracks, said rollers when positioned at the front end of said tracks supporting the ladder in a diagonal extended position for use, said tracks guiding the rollers on the upper end of the ladder diagonally upward and inward and then horizontally inward for retraction of the ladder within the stool, said depressions releasably engaging said rollers when the ladder is fully retracted for holding the upper end of the ladder in retracted position; and means on the stool for supporting the lower end of the ladder when retracted within the stool so as to maintain the ladder in diagonal position substantially parallel to its position when extended.

5. A step ladder stool comprising a top and supporting leg structure; a retractable ladder having a plurality of horizontal steps, and a drawer attached to the underside of each step, said ladder being diagonally extensible from said stool with its lower end resting on the floor; a pair of tracks at the sides of the stool below its

top, each having a front portion slanting diagonally upward and inward from the front of the stool, a horizontal rear portion extending to the rear of the stool, and a depression at the rear end thereof; a pair of rollers on the top of said ladder engaging said tracks, said rollers when positioned at the front end of said tracks supporting the ladder in diagonal extended position for use, said tracks guiding the rollers on the upper end of the ladder diagonally upward and inward and then horizontally inward for retraction of the ladder within the stool, said depressions releasably engaging said rollers when the ladder is fully retracted for holding the upper end of the ladder in retracted position; a transverse brace connecting the front legs of the stool; and hook means on the ladder for releasably engaging said brace to hold the lower end of the ladder when retracted against displacement on the stool, and for supporting the ladder in retracted position above the level of the floor substantially parallel to its position when extended for use.

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