

[54] **STEP STOOL STRUCTURE**

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[51] Int. Cl. **A47c 9/02**

[58] Field of Search **182/15, 33, 32, 106; 297/148, 136**

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[57] **ABSTRACT**

A step stool structure having an elongate base with a flat top and a peripheral wall and a floor-engaging member at the bottom of said wall to resist movement when engaging the floor. The base has a plurality of collapsible rollers for rollably supporting the base and step structure under no load conditions and collapsible under the application of relatively slight pressure to the structure to allow said floor-engaging member to engage the floor. An upstanding support on the base member having a platform serving as a seat or step, said base and upstanding structure having multiple steps with the platform being the top step. Supports extending upwardly from the platform are removably mounted on the structure and adapted to be engaged by portions of a person on the structure. A form of the support being elongate posts to be grasped by a person. A shelf may be mounted on the upper portion of two such posts for holding articles.

14 Claims, 12 Drawing Figures

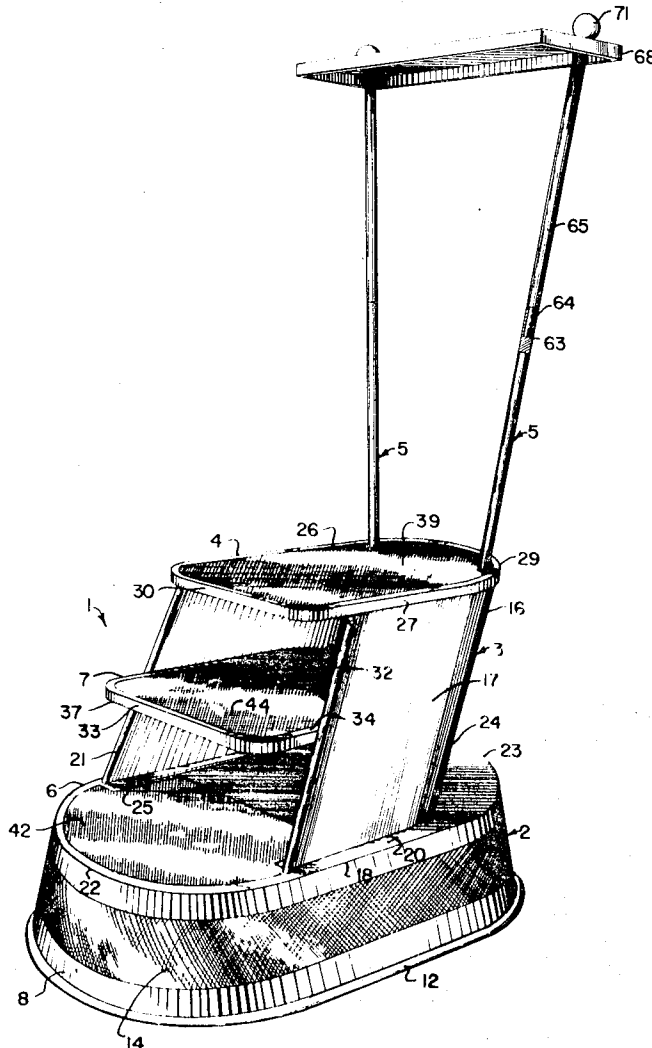


Fig. 1.

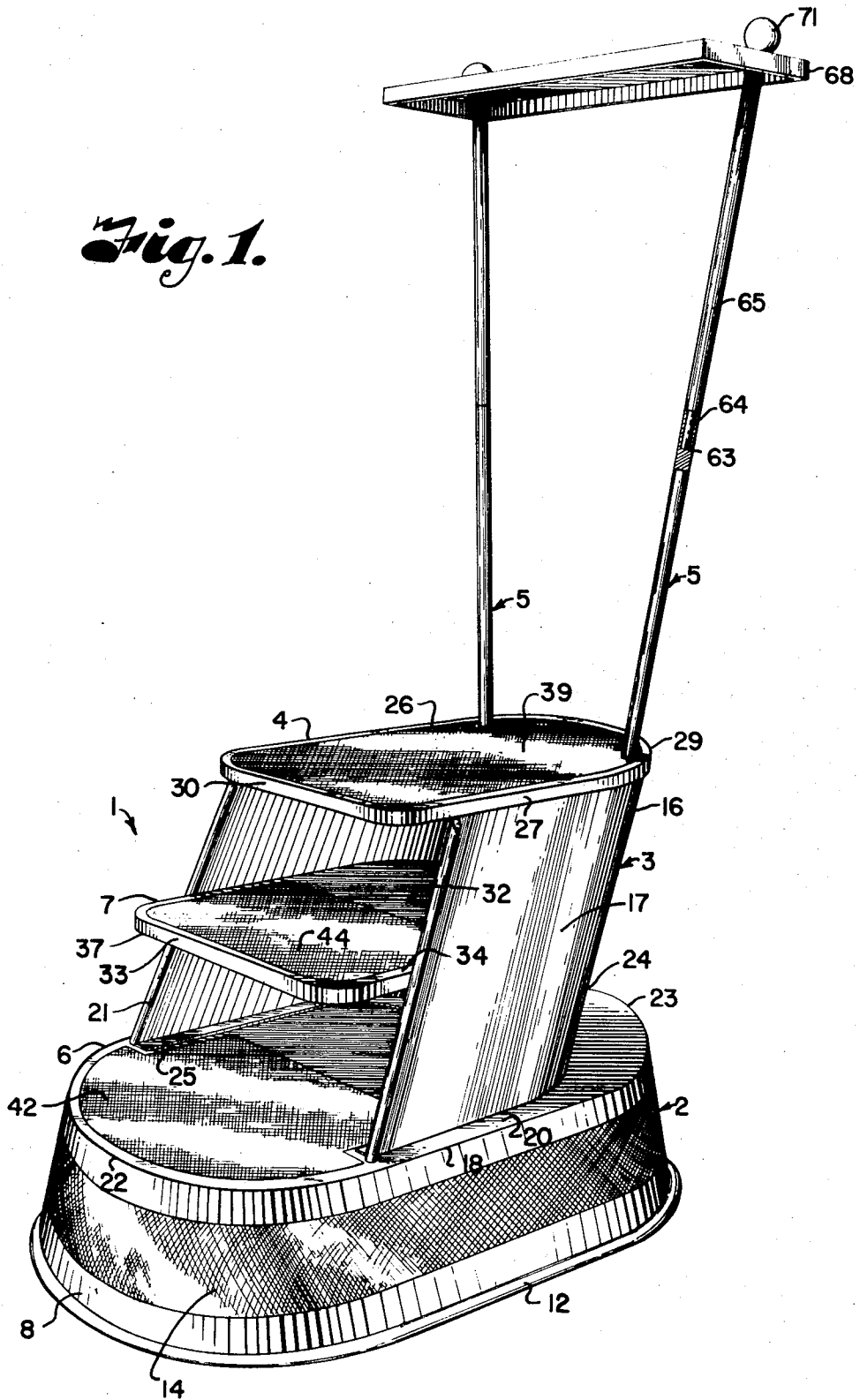


Fig. 4.

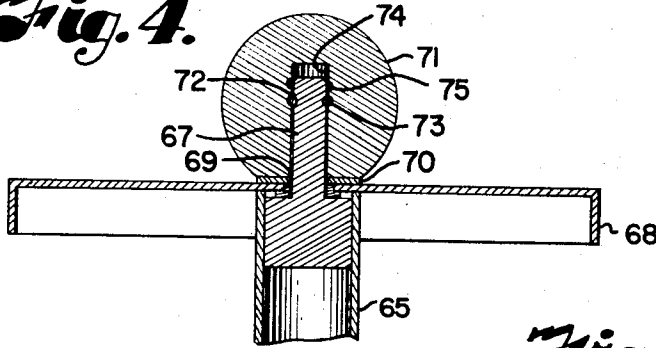


Fig. 6.

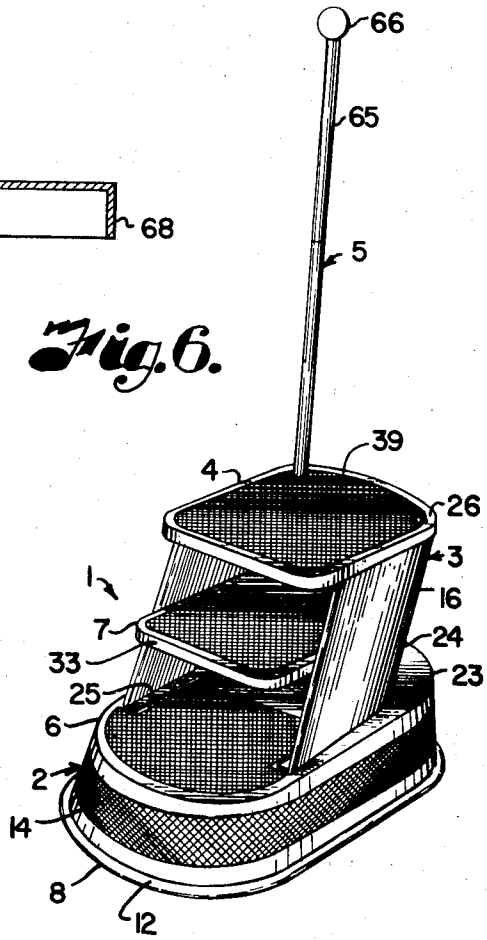


Fig. 5.

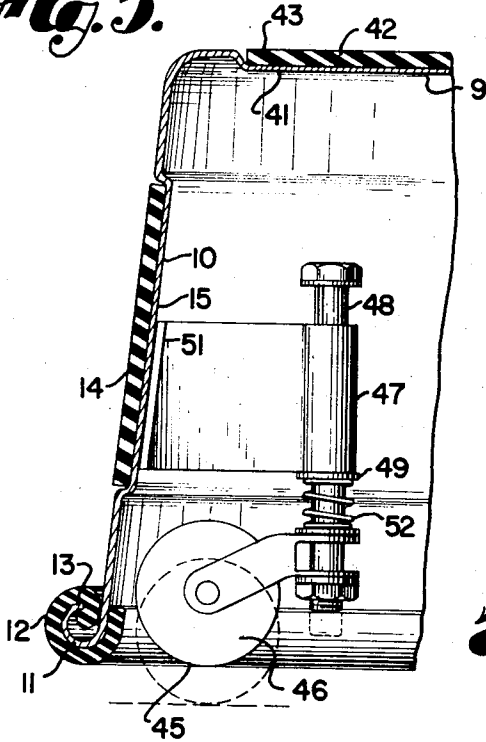


Fig. 7.

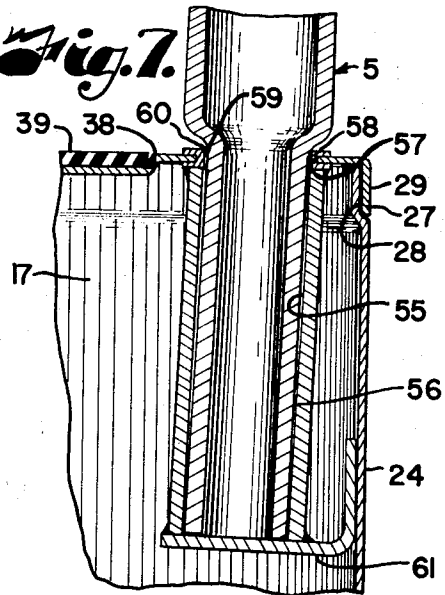


Fig. 11.

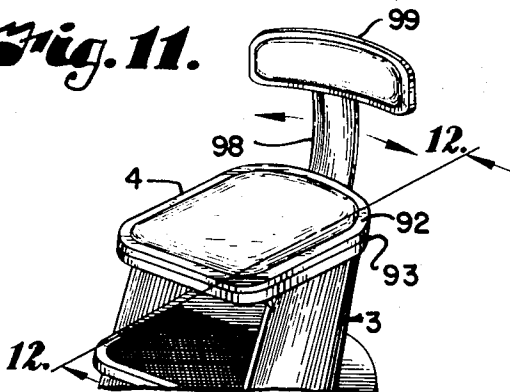


Fig. 8.

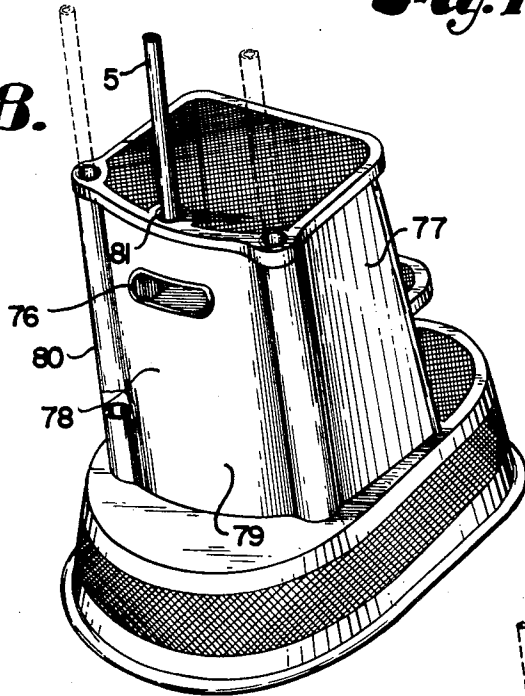


Fig. 12.

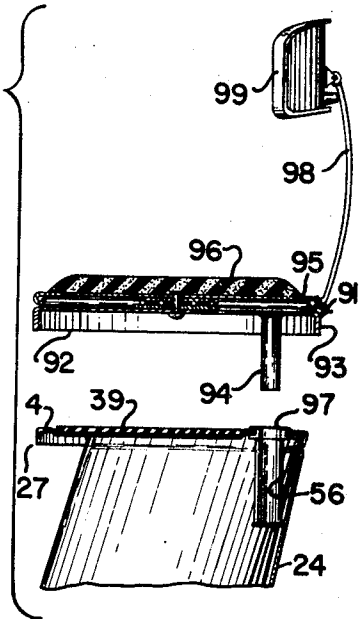


Fig. 9.

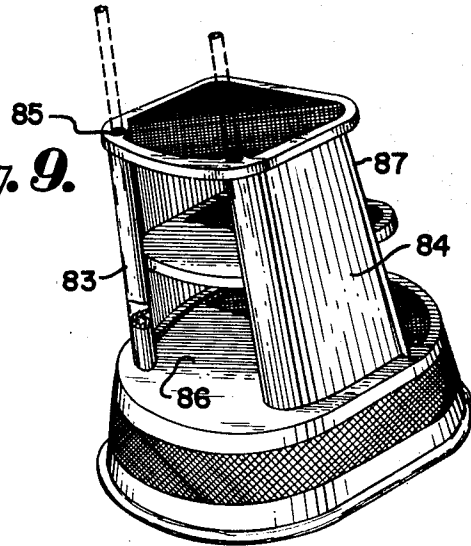
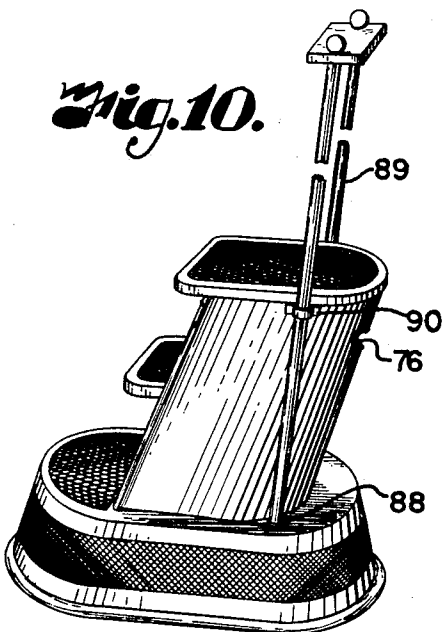


Fig. 10.



STEP STOOL STRUCTURE

This invention relates to new and useful improvements in articles of furniture, and, more particularly, to a combined step and stool that is freely movable and is stable when used as a seat or as steps to reach articles not accessible to a person from the floor.

The principal objects of the present invention are to provide a novel step stool structure having a base and steps with a platform for a top step to accommodate both feet of the user without excessive overhang of toes or heels; to provide such a structure with a plurality of steps that has stability and cannot tip when a person is standing on a step or platform; to provide such a step stool that is comfortable to sit on and of a height in a three-step structure wherein a person sitting on the top step or platform may comfortably place his feet on the step at the top of the base; to provide a step stool with resiliently mounted rolling members supporting the structure under no load conditions whereby it is freely movable to a desired place of use with the rollers collapsible under application of relatively slight pressure to the structure with the base member having a floor-engaging member on the bottom thereof to engage a floor or supporting surface to retain the stool in said selected place; to provide such a step stool with a base shaped to be easily moved by objects without catching thereon and with steps and platform progressively spaced from one end for ease of stepping up on same with said steps and platform above but within an area defined by extremities of the floor-engaging portion of the base; to provide such a step stool with supports extending upwardly above the platform for steadying a person on the steps or platform; to provide upstanding supports in the form of jointed posts removably mounted on the structure which posts may be used singly or collectively and have an article supporting member mounted thereon in upwardly spaced relation to the platform; to provide such a movable structures that are jointed whereby they can be easily packaged in a minimum sized carton holding the base and step structure; and to provide a step stool structure which is of sturdy construction, pleasing appearance and capable of ready manufacture at an economical cost.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a step stool and support embodying features of the present invention.

FIG. 2 is a side elevational view of the step stool and support structure with portions broken away to better illustrate the structure thereof.

FIG. 3 is a plan view of the step stool with the upstanding support removed.

FIG. 4 is an enlarged detailed sectional view through the mounting of the shelf on the upstanding support.

FIG. 5 is an enlarged fragmentary view partly in sections, showing one of the collapsible casters.

FIG. 6 is a perspective view of a step stool with one upstanding support.

FIG. 7 is an enlarged fragmentary sectional view through mounting of the upstanding support in the step stool structure.

FIG. 8 is a perspective view of a modified form of step stool and socket arrangement for the upstanding supports.

FIG. 9 is a perspective view of a further modified form of step stool.

FIG. 10 is a perspective view of a step stool with a modified form of support mounting for the upstanding supports.

FIG. 11 is a fragmentary perspective view of a modified form with a seat and back member removably mounted thereon.

FIG. 12 is a fragmentary sectional view of the step stool and seat in disassembled relation.

Referring more in detail to the drawings:

As required, detailed embodiments of the invention are disclosed herein, however, it is to be understood that these embodiments are merely exemplary of the invention, which may be embodied in many forms that are different from the illustrative embodiments presented herewith. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims actually defining the scope of this invention.

The reference numeral 1 generally designates a step stool structure including a base member 2 having an upstanding structure 3 thereon providing a plurality of steps with a top step serving as a platform 4 or seat. The step stool may also have upwardly extending posts or standards 5 to serve as handholds, all cooperating to provide a spaced means to step up to a desired height, for example, approximately 20 inches. The step stool has two or more intervening steps 6 and 7 with a platform 4 as the top step, which is large enough to accommodate both feet and obtain a secure footing without excessive overhang of the heels and toes. As shown the step 6 is on a portion of the base 2.

In the structure illustrated, the base 2 is an elongate, generally ovate structure having rounded ends 8. The base is generally hollow, having a top wall 9 with a depending peripheral wall 10, preferably inclined downwardly and outwardly, terminating in a lower peripheral rim 11. It is preferred that a continuous resilient floor-engaging member 12 be mounted on said rim 11. The floor-engaging member 12 preferably is in the form of a bumper and is secured to the rim by any suitable means such as having a portion thereof confined by annular lip 13 on said lower rim. In the structure illustrated, a band bumper 14 of resilient material and of substantial width is suitably secured to the wall 10 of the base to further provide a cushion arrangement to avoid marring or scratching articles of furniture. The band 14 is shown as being arranged in an inwardly recessed portion 15 of the base side wall, said band extending completely around the base. The floor-engaging member 12 is arranged to provide a frictional engagement with a floor in response to downward pressure applied to the step stool, creating a frictional engagement that resists movement of the step stool relative to the floor.

The upstanding step structure mounted on the base has the platform 4 forming the top step, said platform being supported by leg structure 16 suitably secured to the base as, for example, on the top wall 9 in spaced apart relation whereby the leg structure has side portions 17 adjacent elongate side edge portions 18 of a top wall 9 intermediate the rounded ends of the base member. The platform 4 may be the only step supported by the leg structure, however, in the structure illustrated and for a platform height of approximately 20 inches it is preferred that there be an intermediate

step 7 between and supported by the side leg structure. In the structure illustrated, in FIGS. 1, 2, 3, and 6 the leg structure 16 consists of upright side wall portions 17 spaced inwardly as at 20 from the side edges 18 of the base top wall 9 and substantially parallel thereto. The side wall portions 17 have forward edges 21 preferably rolled to present a pleasing appearance, provide rigidity and avoid any sharp edges. The edges 21 of the respective side walls are spaced apart to define an open forward end of the upright step structure facing a forward end 22 of the base. The side wall portions 17 extend toward the rear end 23 of the base and are connected by a curved rear wall 24 forming a substantially continuous side and rear wall structure extending upwardly from the top wall of the base. In the illustrated structure, the forward edges 21 are inclined rearwardly and upwardly as illustrated in FIG. 2. Also, the rear wall portion is inclined upwardly and rearwardly. The lower edges of the side and rear wall portions 17 and 24 preferably have an inturned bottom flange 25 suitably secured to the top wall 9 as by welding.

The platform 4 has a substantially flat wall portion 26 provided with a downturned peripheral flange 27 and the top portion of the walls 17 and 24 are inset as at 28 whereby they are received inside of the flange 27 of the platform and said inset portion and the flange 27 are suitably secured together as by welding. The rear portion or edge 29 of the platform as well as all other portions of the platform are within the area defined by the extremities of the base member and the forward edge portion 30 of said platform preferably projects forwardly from the upper portion 31 of the edge 21 of the side walls 16. In the structure illustrated, the step 7 is intermediate the base top 9 and the platform 4. The intermediate step 7 has a wall portion 32 provided with a peripheral depending flange 33, with the sides of said step portion shaped to fit within and engage the inner surfaces 34 of the side walls 17, the flanges 33 being suitably secured to said side walls as by welding. The rear portion 35 of the intermediate step 7 may conform to the interior shape of the adjacent portion of the rear wall 24 or the rear portion 35 may be spaced from the rear wall 24 of the upstanding portion. When the portion 35 is spaced it is preferred that a suitable bracket 36 be secured to the flange 33 at the rear of the intermediate step 7 and to said rear wall 24 to give adequate support whereby the steps and support are a substantially rigid, sturdy structure. The intermediate step 7 also extends forwardly of the side wall edges 21 as illustrated in FIG. 2. The forward edge 37 of the intermediate step 7 is suitably spaced from the forward edge 22 of the base to expose an area of the base top adapted to permit both feet of a user to be positioned thereon and sufficient set back of the intermediate step for ease of stepping up onto the intermediate step. The forward edge 30 of the platform is also set back sufficiently whereby the intermediate step can accommodate both feet of a user and have space whereby the feet can be easily moved in stepping up to the platform, and in all positions the person is on a support that is within the area defined by the base member whereby the downward component of force causing the engagement of the member 12 with the floor prevents any tipping of the structure. In order to provide suitable distribution of the weight, the top platform 4 from the forward to the rearward edges is approximately one-half the length of the base top. It has been found that a suitable sturdy

structure with great stability can be provided with a base width of twelve inches and a length of 18 inches, also that provides a structure that may be easily moved around objects and stored in small spaces.

In order to aid in the stability of a person on the step stool, it is preferred that a substantial area of the platform be recessed as at 38 and a non-skid pad 39 secured thereto as with adhesive, to form a non-skid surface, the upper surface 40 of the pad being substantially on a level with the upper surface of the wall 26 in the margins of the platform. The step portion 6 of the top wall 9 is preferably recessed as at 41 with a pad 42 secured thereto as by adhesive whereby the upper surface 43 of the pad is on a level with marginal portions of the top wall 9, the recess and pad substantially covering the area that would normally be contacted by the feet of the user. The intermediate step 7 is also recessed in a similar manner and provided with a pad 44 in the area thereof normally engaged by the feet of a user.

It is preferred that the step stool be readily rolled to its position for use and the base is rollably supported by a plurality of rollers or casters 45. The rollers or casters are resiliently supported whereby they are collapsible under pressure applied to the base or steps to enable the base bumper 12 to contact and frictionally grip the floor to ensure stability. In the structure illustrated, the rollers or casters 45 are mounted within the hollow base. In the illustrated structure, the casters are three in number, one being positioned in the forward portion of the base and the other two in laterally spaced relation adjacent the rear portion of the base. As shown, each caster includes a wheel 46 and a supporting bracket or a horn 47 which is slidably mounted on a stem 48. The stem has its upper end slidably received in a sleeve 49 of a bracket support 50 having flanges 51 suitably secured to the inside of the base wall 10. This arrangement is such that the wheels 46 normally project a slight distance below the base bumper 12. A spring 52 is positioned between the sleeve 49 and the bracket or horn 47 whereby the springs will apply a force with the rollers 46 on the floor to raise the step stool in unloaded condition whereby it may be freely moved from one place to another. A slight downward pressure on the steps or platform will compress the springs, causing the bumper 12 to engage the floor and prevent moving of the step stool from the selected position.

In the structure illustrated, in FIGS. 1 to 7 inclusive, the step stool is provided with mountings to receive posts or standards 5 whereby they extend upwardly above the platform 4. In the structure illustrated, the upstanding structure 3 has spaced socket members 55 upwardly opening and adapted to receive lower shank portions 56 of the posts 5. As particularly illustrated in FIG. 7, each socket includes an aperture 57 defining an opening 59 registering with a bore 60 in a tubular socket member 55. The lower end of the socket member is suitably secured as by welding to a bracket 61 that is secured to the wall portion 24, the lower portion of the bracket 61 preferably closing the lower end of the bore 60 of the socket member. The posts 5 are preferably tubular for lightness in weight and have smaller diameter lower ends extending into the sockets. It is also preferred that the posts be sectional, whereby a lower section 62 is mounted in the socket members and with each post having a socket 63 in its upper end to receive a reduced portion 64 on a section 65 extending

upwardly thereof, the sectional structure aiding in packing as it reduces the size of the cartons required. A suitable end member 66 is preferably mounted on the upper end of the posts.

The posts 5 may be used singly or collectively as, for example, one post may be used in a socket at the right hand side of the rear portion of the platform by a person wanting to grasp the post with his right hand for steadying purposes. If the person desired to use the left hand, the post could be moved to the socket on the other side of the platform. Also, two posts may be used and a shelf or article holder mounted on the upper ends thereof. In the structure illustrated, the upper ends of the post sections 65 have upstanding reduced end portions on pins 67 and a shelf member 68 has spaced apertures 69 whereby the shelf member may be mounted on the upper ends of the posts with the pins 67 extending upwardly through said apertures 69. To form a keeper for the shelf member 68 and hold same on the posts 5 it is preferred that a washer 70 be sleeved on the respective pins 67 and a fastener member such as a ball 71 secured on the pin in engagement with the washer and shelf. A suitable keeper is arranged in the member 71 and on the pin, for example, the pins may have grooves 72 with spring lock rings mounted therein with a member 71 having bores 74 with grooves 75 to engage the ring 73 wherein the fastener member 71 is in tight engagement with the washer 70 and the shelf 68 to hold same on the post. This provides a frictional anchor permitting easy removal of the fastener and shelf while both posts and shelf assembly can be removed as a unit by removing the posts from the socket members 55. To facilitate moving of the step stool structure, the rear wall portion 24 may be provided with a hand-hold opening 76 whereby the structure can be grasped and carried or moved from place to place.

The operation of the step stool will be readily understood from the foregoing description. Under no load condition, the structure may be readily rolled from place to place by merely applying the toe to the bumper 12 and giving a slight push. When used as a step or as a seat, the weight of the user collapses the casters 45, whereupon the base bumper 12 frictionally engages the floor to anchor the device in position. With the device thus anchored, the person may move from step to step as desired. The platform 4 may be used as a seat, and, if desired, the feet engaged on the step portion 6 of the top of the base 2 for comfort. When it is desired to reach heights wherein the person stands on the platform 4, the steadying posts 5 may be used or the posts 5 and the shelf member 68 may be used to hold articles to facilitate putting articles up or taking articles down from elevated positions.

A modified form of step stool is illustrated in FIG. 8. In this form of the invention, the side wall 77 and back wall 78 of the upstanding step structure 79 on the base member are joined by outwardly curved column-like portions 80 to give added rigidity and also to provide socket portions positioned therein for receiving posts 5. Also, a central post socket 81 at the rear of the platform is provided for the selected positioning of the post 5.

In the form of the invention illustrated in FIG. 9, the rear wall of the step structure is omitted and the rear end portions 83 of the side walls 84 are rolled forming tubes as at 85 for receiving the lower ends of the posts 5. This provides an open rear end 86 of the step struc-

ture 87 extending upwardly from the base member 2.

In the form of the invention illustrated in FIG. 10, socket members 88 are arranged in the base to receive posts 89, bracket members 90 being provided to secure the posts 89 adjacent the platform, the posts and step stool structure being otherwise substantially the same as shown in FIGS. 1 to 6 inclusive and utilized in the same manner.

In the structure shown in FIGS. 11 and 12, a seat mounting member 91 is removably mounted on the platform 4, said mounting member having a top wall 92 with a depending peripheral flange 93 shaped to extend downwardly around the peripheral flange 27 of the platform 4 with engagement whereby the seat mounting member is held against rotation. The mounting member 91 may also have depending post member 94 adapted to engage in the socket members 55 to further secure the mounting member in position. A seat 95 preferably having a cushion 96 thereon is mounted on the seat mounting member 91 preferably by means of a suitable bearing structure 97 whereby the seat can rotate about a substantially central axis. It is preferred that the seat 95 have an upstanding arm 98 with a back rest 99 thereon for comfort of the user. The operation of the structure is believed evident and that the step stool can be used the same as above described with the additional feature that the seat can rotate as well as provide support for the back of the user.

It is to be understood that while I have illustrated and described certain forms of my invention, it is not to be limited to the specific forms or arrangements of parts herein described and shown.

What I claim and desire to secure by Letters Patent is:

1. A step stool comprising:
 - a. an elongate base member;
 - b. a floor-engaging member at the bottom of said base member and adjacent the periphery thereof for frictionally engaging a floor surface and resisting movement thereon;
 - c. said base member having a top surface spaced upwardly from said floor engaging member a step height;
 - d. an upstanding structure mounted on said base member and having a platform spaced upwardly of the base top surface, said upstanding structure being spaced from one end of the elongate base member with the base top surface between the said one end and the upstanding structure forming a step;
 - e. said base member and upstanding structure having multiple steps with said platform being a top step;
 - f. said upstanding structure having outer portions thereof positioned inwardly of extremities of said floor-engaging member whereby weight of a person on a step is applied inside of said extremities;
 - g. a seat mounting member adapted to be positioned in overlying relation to the platform;
 - h. means on said seat mounting member engaging said platform to retain seat mounting member in fixed relation relative thereto;
 - i. a seat member;
 - j. means mounting said seat member on said seat mounting member for turning about a substantially central axis.
2. A step stool comprising:

- a. a base member having a top wall and a peripheral wall depending therefrom, said base top wall being elongated;
- b. a floor-engaging member at the bottom of said peripheral wall for frictionally engaging a floor surface and resisting movement thereon;
- c. an upstanding structure mounted on said base member and having a platform spaced upwardly of the base top wall, said upstanding structure being spaced from one end of the elongate base member with the base top wall between the said one end and the upstanding structure forming a step;
- d. said base member and upstanding structure having multiple steps with said platform being a top step;
- e. said upstanding structure having outer portions thereof positioned inwardly of extremities of said floor-engaging member whereby weight of a person on a step is applied inside of said extremities;
- f. spaced leg members on said base adjacent sides thereof and upstanding from the top thereof;
- g. said platform being on said legs at upper portions thereof;
- h. a step member supported on said legs and spaced between said base top member and said platform;
- i. said step member and platform having forward edges towards said one end of the base member, said forward edges of the step member being spaced from said one end of the base member whereby the step portion on the base top wall accommodates a person standing thereon, said platform forward edge being spaced from the forward edge of the step member whereby said step portion accommodates a person standing thereon;
- j. a support member mounted on said platform and upstanding therefrom to provide support for a person on said platform, said support member including:
 - 1. a seat mounting member adapted to be positioned in overlying relation to the platform;
 - 2. means on said seat mounting member engaging said platform to retain said seat mounting member in fixed relation relative thereto;
 - 3. a seat member;
 - 4. means mounting said seat member on said seat mounting member for turning about a substantially central axis;
 - 5. a back support mounted on said seat member in upstanding relation relative thereto for movement with said seat member.
- 3. A step stool comprising:
 - a. a hollow base member having a top wall and a peripheral wall depending therefrom, said base top wall being elongated and the peripheral wall inclined downwardly and outwardly from said top wall, said base member having first and second ends and opposed sides;
 - b. a floor-engaging member at the bottom of said peripheral wall for frictionally engaging a floor surface and resisting movement thereon;
 - c. an upstanding structure mounted on said base member and having sides adjacent to and inwardly of said side of the base member, said upstanding structure having a platform spaced upwardly of the base top wall, said upstanding structure being spaced from said first end of the elongate base member with the base top wall between the said

- first end and the upstanding structure forming a step;
- d. said base member and upstanding structure having multiple steps with said platform being a top step, said steps having forward edges toward said first end of the base member with said forward edges being inclined up and away from the said first end, said platform having a width accommodating both feet of the user in side-by-side position and to permit the user to sit thereon, said platform width being less than the width of the base top wall between sides thereof, said platform having a rear end adjacent and inwardly relative to said second end of the base member;
- e. said upstanding structure having outer portions thereof positioned inwardly of extremities of said floor-engaging member whereby weight of a person on a step is applied inside of said extremities.
- 4. A step stool as set forth in claim 5 wherein:
 - a. said elongate base is generally ovate in shape with rounded ends;
 - b. a plurality of rollers resiliently mounted on said base for rollably supporting said step stool structure to space said floor-engaging member from the floor under no load conditions, said resilient mounting permitting said floor-engaging member to engage the floor in response to slight pressure applied to a step of said step stool.
- 5. A step stool as set forth in claim 4 including:
 - a. said upstanding structure has a plurality of upwardly opening sockets adjacent said rear end of the platform;
 - b. an elongate rod-like hand-hold member having a lower portion removably supported in a socket.
- 6. A step stool as set forth in claim 5 wherein:
 - a. there are at least two hand-holds spaced laterally substantially at the sides of the platform and at an end thereof remote from the step portion of the base member;
 - b. a shelf member removably mounted on upper portions of said hand-holds.
- 7. A step stool as set forth in claim 3 wherein said upstanding structure includes:
 - a. spaced leg members on said base adjacent sides thereof and upstanding from the top thereof and forming the sides of said upstanding structure;
 - b. said platform being on said legs at upper portions thereof;
 - c. a step member supported on said legs and spaced between said base top member and said platform;
 - d. said step member and platform having said forward edges towards said first end of the base member, said forward edges of the step member being spaced from said first end of the base member whereby the step portion on the base top wall accommodates a person standing thereon, said platform forward edge being spaced from the forward edge of the step member whereby said step portion accommodates a person standing thereon.
- 8. A step stool as set forth in claim 7 wherein said legs are wall members mounted on the base top and each wall member has a forward edge inclined upwardly away from said first end of the base member, and said step member is between said leg wall members and extends forwardly thereof.
- 9. A step stool as set forth in claim 8 wherein:

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- a. said elongate base is generally ovate in shape with rounded ends;
- b. a plurality of collapsible casters secured to the base member for rollably supporting the step stool under no load conditions and collapsible under application of a relatively slight pressure on the step stool to allow said floor-engaging member to engage the floor and resist movement of the step stool.

10. A step stool as set forth in claim 9 and including:

- a. a support member mounted on said platform and upstanding therefrom to provide support for a person on said platform.

11. A step stool as set forth in claim 10 wherein said support member includes:

- a. an elongate hand-hold member;
- b. means on one of said platform and base member adjacent said second end thereof removably mounting said hand-hold member whereby said hand-hold member extends upwardly beyond the platform for grasping by a person on said steps.

12. A step stool as set forth in claim 11 wherein:

- a. said means mounting said hand-hold include a socket member, there being a plurality of said socket members in spaced apart relation;
- b. said hand-holds are rod-like members of separable sections, said hand-holds have lower ends selec-

tively positioned in said socket members.

13. A step stool as set forth in claim 12 wherein said support member includes:

- a. a seat mounting member adapted to be positioned in overlying relation to the platform;
- b. means on said seat mounting member engaging said platform to retain said seat mounting member in fixed relation relative thereto;
- c. a seat member;
- d. means mounting said seat member on said seat mounting member for turning about a substantially central axis.

14. A step stool as set forth in claim 12 wherein:

- a. said leg wall members are on each side of the step member and platform and are connected at rear portions by a curved wall integral with said leg wall members;
- b. said floor engaging member is a resilient bumper having portions extending outwardly relative to the peripheral wall of the base member forming a peripheral cushion;
- c. non-skid surface material is on each of the step portions and platform; and
- d. an elongate rod like hand-hold secured relative to said platform and extending upwardly therefrom for grasping by a person on said steps.

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