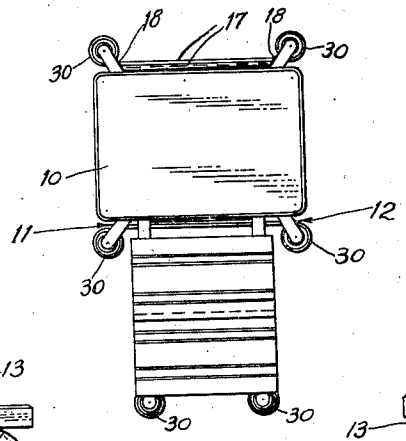
May 21, 1946. G. PEARLE 2,400,779

STEP STOOL

Filed Oct. 31, 1945

Fig. 3.



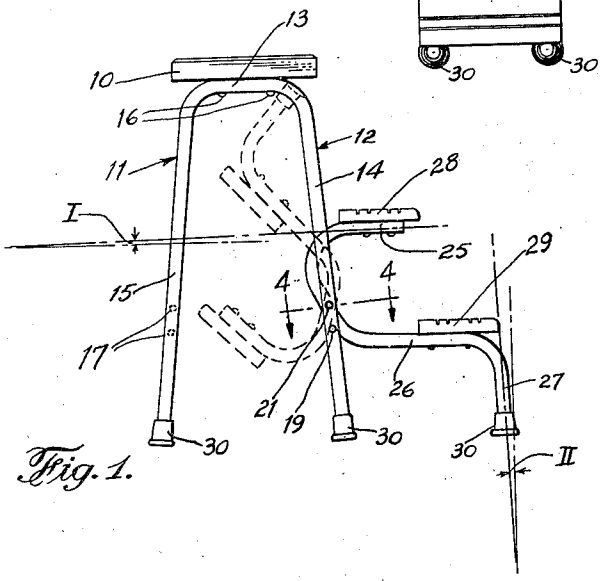


Fig. 1.

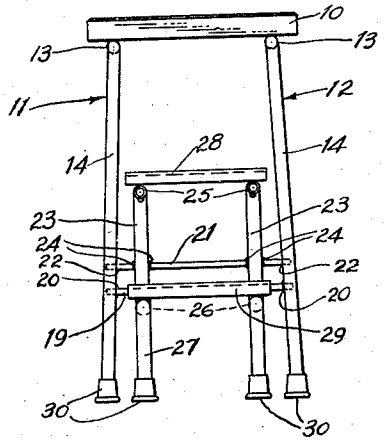


Fig. 2.

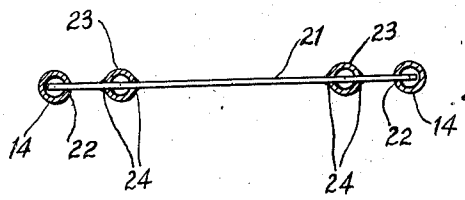


Fig. 4.

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STEP STOOL

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3 Claims. (Cl. 228—30)

This invention relates to step ladder chairs or step stools of the type wherein the ladder steps are retractible. While devices of this type are well-known in the art, the present invention deals with an improved organization of the different parts comprising the device, wherein advantages and benefits, heretofore not obtained in similar devices, are achieved.

The prime object of this invention is to provide a dependable step stool of a relatively lightweight, inexpensive and highly effective construction, wherein are employed light but sturdy bent tubular leg units for supporting the seat portion of the device, with which leg units is associated a sturdy, lightweight, tubular step-supporting structure, operative between the units and retractible beneath the seat of the device, when the latter is to be used as a stool.

Another object of this invention is to provide a step stool construction wherein a sturdy seat member is employed, which comprises a one-piece, self-contained platform adapted to sustain relatively heavy weight, and which is so dimensioned as to afford adequate anchorage for attaching elements within its body which are intended to secure the leg units to the seat member.

Another object of this invention is to provide two symmetrically disposed one-piece leg units, each unit having front and rear legs, and which units, although being of light, tubular construction, afford a very substantial and steady support for the seat member and for any weight placed thereupon, and wherein each of the two units comprises a connecting portion secured by screws or other attaching elements to the seat member, and from which connecting portion depend divergent leg members forming a substantially U-shaped structure, used in inverted position.

Another object of this invention is to so position the two U-shaped leg units relative to one another that their connecting portions are spaced in parallelism at a lesser distance than the floor ends of the leg members, thus providing a relatively large floor support for the considerably smaller seat member.

Another object of this invention is to provide fixed connecting and spacer rods at the lower portions of the leg members, extending between the rear members and between the front members of the unit, and the provision of a pivotal bar disposed above the connecting spacer at the front members, said bar being lodged within the inner wall portions of the tubular leg bodies, without extending through their outer wall portions, the latter wall portions forming stops for the bar, and wherein a pair of bent tubular step-supporting members are provided which are fixedly secured to said pivotal rod, the latter serving as spacer and connector for the two members, and wherein each of the members is provided with substantially parallel portions for the support and attachment of upper and lower steps, both steps serving as spacers and connectors for the parallel step supporting portions of the two members.

A notable feature in the construction of these step supporting members resides in the fact that the portions for supporting the upper step is upwardly inclined from the horizontal, while the leg portions of the step supporting members are inclined from the vertical towards the stool structure.

Another important feature of the present invention resides in the employment of the fixed spacer member, connecting the lower portion of the front legs, as stop means for the step supporting structure when swung either into operative position, that is in front of the stool portion of the device, or into inoperative position, that is in between the two inverted U-shaped leg units and beneath the seat member.

The foregoing and still further objects and additional advantages of the present invention will become more fully evident from the ensuing description, in connection with the accompanying drawing, and wherein:

Fig. 1 is a side elevation of the device in its presently preferred form;

Fig. 2 is a front elevation thereof;

Fig. 3 is a top view of the device shown in Fig. 1; and

Fig. 4 is a section taken on line 4—4 of Fig. 1.

Referring now specifically to the figures, numeral 10 denotes the seat member of the device, which is preferably constructed of a one-piece block of either natural ar laminated wood, plastic or metal, but which has a sufficient body and strength to not only accommodate, but firmly hold the fastening elements by means of which the leg units are attached to the seat member.

The seat supporting arrangement consists of two leg units 11 and 12, each comprising one-piece tubular elements bent into substantially U-shaped forms, which are attached in inverted position to the seat member by way of their straight-line, horizontal joining portions 13 from which extend front and rear legs 14 and 15. Attaching elements 16 in the form of screws, bolts or the like are employed for fastening straight-line portions 13 of the units to the seat.

Referring specifically to Fig. 2, it will be ob-

served that the two connecting portions 13 are arranged in parallel relation to one another and that they are spaced at a lesser distance than the bottom ends of the legs. In order to keep the legs in their spread position, two combination connecting and spacer elements 17 are provided between rear legs 15. The ends of these spacer elements project through the interior wall portions of the tubular legs but do not penetrate the exterior wall portions. Moreover they are held in their fixed position by welding or any other suitable means, such as indicated at 18 in Fig. 3.

A similar combination spacing and connecting element 19 is fixedly secured at 20 to the lower portion of front legs 14. Also this spacer passes through the interior wall portions of the legs, while the exterior wall portions serve as stops for this element.

Above rod 19 there is arranged a pivotal bar 21 journaled in suitable apertures 22 provided in the interior wall portions of front legs 14. This bar is free to turn and serves as spacer and connector for tubular step-supporting members 23, to which the bar is secured by means of welding, as shown at 24.

The step-supporting members comprise curved, substantially hook-shaped structures, two portions thereof, indicated in Fig. 1 at 25 and 26, are rendered substantially parallel to each other, although the upper portion 25 is inclined somewhat in upward direction from the horizontal, as indicated at I. The depending or leg ends 27 of these step supports are not truly vertical but are inclined at an angle II towards the stool structure. Connecting and resting upon the two upper ends 25 and the horizontal portions 26, are upper and lower steps 28 and 29, respectively, which not only connect, but serve as spacers for the two tube elements.

From Fig. 1 it will be observed that the step-supporting structure forms a rigid unit which is swingable with pivotal bar 21 into either operative position, shown in full lines, or into inoperative position, shown in broken lines, in which latter case the entire step-supporting structure, moving between the two leg units, retracts completely therewithin so that its legs are beneath seat member 10. Combination spacing and connecting rod 19 serves as stop for the step-supporting structure while in either inoperative or operative position, and is particularly intended to keep the structure in the latter position when the device is being moved from one place to another. Thus the position of the steps is not changed, as is usually the case with similar devices, thereby rendering the device ready and safe for instant use.

Referring now to Figs. 1 to 3, inclusive, it will be observed that the floor ends of all leg members, including those of the swingable step support, are equipped with anti-friction cushioning sockets or cups 30 which are intended to prevent slippage when the device is in use.

The fact that the step-supporting structure retracts completely beneath the seat member and is forcibly held in that position against bar 19 by the weight of its lower portion supporting step 29, the device may be readily carried about and used as stool. The portability of the device is facilitated by the substantial overhang in all directions of seat member 10 in respect to the leg units, as is clearly observable from Fig. 1.

All supporting parts of the device are made of relatively thin tubing, which, although rendering the device extremely light in weight, assure its sturdiness and durability.

As has been stated previously, supports 25 for upper step 28 are somewhat inclined, the purpose of such upward bend being to counteract the force of weight step 28 is to carry. Supports 25 may become somewhat depressed, however their resiliency will return them to their normal, inclined position when the weight is removed. Similarly the incline from the vertical of leg portions 27 has its advantage. Placed at that incline, these leg portions have the tendency to resist displacement when the steps are being used. Resilient cups 30 are instrumental in keeping the floor ends of all leg members in desired position and prevent slippage.

Referring to Fig. 1 of the drawing, it will be observed that the substantially hook-shaped step-supporting structure, shown in full lines in its operative position, provides in that position a substantial extension of the supporting area of the stool. In other words, the area normally covered by the stool, when the step-supporting structure is in inoperative position, is materially increased by that step-supporting structure when the latter is in operative position.

It will be also observed that the center of upper step 28 is at a very substantial distance from pivotal bar 21 and front legs 14 of the stool, whereby the center of gravity of the step structure is placed to the front of the device. Thus the accidental swinging-in of the step-supporting structure is effectively prevented while step 28 is being used.

From the foregoing the general arrangement of the present device shall be readily understood by those skilled in the art. Its advantages resulting from its specific construction include extreme lightness in weight, ready portability, sturdiness, exceptional rigidity and stability in use, and its capacity for supporting exceptional weight without the danger of collapse, especially when the steps are being used. The employment of the stop bar 19 is especially advantageous, since the device may be carried with the steps in operative position, and is ready and safe for immediate use when placed.

Having thus outlined the important advantages of the present invention, it is to be understood that changes and improvements may be incorporated therein without departing from its scope and intent as defined in the annexed claims.

I claim:

1. In a step stool having a top platform adapted to serve as seat, and retractible steps therebelow, a pair of one-piece, tubular leg units bent to substantially U-shaped forms with divergent leg members and employed in inverted position, the joining portions of the leg members being secured in parallelism with each other and with the underface of the seat, while the free leg member ends of the two units are spread, being spaced at a greater distance than the joining portions, spacer elements fixedly connecting corresponding, spread leg members of the units, in that they pass through and are attached to the interior wall portions of the leg members, without penetrating their exterior wall portions, a bar pivotally lodged in apertures provided at the interior wall portions and extending between the exterior wall portions of one pair of connected leg members, a pair of one-piece bent, substantially hook-shaped tubular step supports uniformly spaced from each other and fixedly secured to and movable jointly with said bar, each step support having two, sub-

stantially parallel offset portions and a substantially vertical leg portion, step members joining and spacing said offset portions, said step support being adapted to assume either a swung-out, operative, or an inoperative position within the leg units and beneath said seat, one of the spacer elements serving as stop for the step support when in either of its two positions.

2. A step stool comprising a seat member, a pair of one-piece tubular leg units secured to and supporting said seat member, each unit having a straight-line leg joining portion and front and rear leg members extending therefrom in diverging directions, the leg joining portions of the units being disposed parallel to each other and being spaced at a lesser distance than the leg member ends of the units, combination spacing and connecting rods extending between and fixedly united with the lower leg portions of the front and of the rear leg members, a pivotal bar disposed above the rod connecting the front leg members, said combination spacing and connecting rods and said pivotal bar penetrating the interior, but ending short of the exterior walls of the leg portions, a substantially hook-shaped tubular step-supporting structure symmetrically associated with and fixedly secured to said pivotal bar and being adapted to swing together with the bar either to a position beneath the seat member, or in front of the front leg members, said rod between the front leg members serving as stop for the step supporting structure when in either of its two positions, said step-supporting structure having two off-set parallel portions for accommodating lower and upper steps and leg ends intended, when the structure is in use, to assume a position at an appreciable distance from the front legs of the stool, thereby substantially augmenting the total supporting area of the device, the center of the upper step being disposed at a substantial distance from said pivotal bar and from the front legs of the stool for the purpose indicated.

3. In a step stool, a seat, a pair of leg units supporting it and being secured thereto at spaced relation to each other, said leg units comprising one-piece, tubular structures each having a horizontal, straight-line joining portion attached to the seat and divergent front and rear legs depending from the joining portion, rigid spacer means projecting through and being fixedly secured to the interior wall portions of the front legs, but stopping short of their exterior wall portions, similar spacer means connecting the rear legs of the units so that the leg ends of the units become spaced at a greater distance than their joining portions, a swingable step support made of bent, substantially hook-shaped tubular elements operative between the front legs of the units, a bar pivotally lodged in the interior wall portions and extending between the exterior wall portions of the front legs, and being disposed above the fixed spacer means for the latter, said step support being fixedly secured to said bar, said spacer means for the front legs serving as stop for the step support, said step support having two off-set parallel portions for accommodating lower and upper steps and leg ends intended, when the structure is in use, to assume a position at an appreciable distance from the front legs of the stool, thereby substantially augmenting the total supporting area of the device, the center of the upper step being disposed at a substantial distance from said pivotal bar and from the front legs of the stool for the purpose indicated.

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