A specifically designed stool to be used in performing one of the most common activities of daily living—putting on and taking off one’s shoes and socks. It is designed for senior citizens and others who because of the normal aging process or because of injuries to their backs and/or knees or even feet have limited motion ability and/or balance problems. It consists of a seat and footrest and armrests of the correct heights, widths and depths to make this task much easier and more comfortable. It is designed to look like a normal piece of furniture and is light and portable.
STOOL WITH FOOTREST AND ARMRESTS FOR PUTTING ON AND REMOVING FOOTWEAR

BACKGROUND

[0001] 1. Field of Invention

[0002] This invention relates to articles of furniture that can and have been used as an assist to one of the most common activities of daily living, the simple task of a person putting on or taking off their shoes and socks. It may also apply to the putting on or taking off of any other type of footwear or medical devices such as prosthetics attached to a person’s legs or feet.

[0003] 2. Description of Prior Art

[0004] Many people as they age or have incurred some form of injury to their feet, knees or back have difficulty in putting on and taking off their shoes and socks. They may find that the height of normal chairs or the edges of their bed are usually too high or too soft to make this simple task easy and comfortable. Some people have used footrests to overcome these deficiencies. Other people who live in a multi-storied houses, have found that sitting on the stairs makes the task much easier.

[0005] However, even using the chairs isn’t a perfect solution because the stair tread they must sit upon isn’t deep enough for comfort.

[0006] The present invention is directed to provide assistance in one of the most common activities of daily living, putting on and taking off one’s shoes and socks. Several prototypes were built and tested by people who are in the targeted population. The first was a simple stool of the correct height with a seat and footrest. This proved workable, but for those with a balance problem the absence of armrests made sitting down somewhat difficult. And, for those with weakness in their legs arising from the stool was also difficult. Armrests were added to the stool and these difficulties were overcome. It also has been designed to provide optimal performance at minimum cost to the targeted population.

[0007] Prior art shows many types of footrests used in conjunction with a chair. These devices, while primarily used to rest one’s feet or legs, can also provided a means to position their legs and feet off the floor to make the act of putting on or taking their shoes and socks much easier for those persons with back or knee problems. However, the height of the footrest, the height of the seat, the presences of armrests, easy access to the footrest and most of all convenience or ease of use are all important features to the ultimate user. Consequently, a furniture unit which combined the stool, footrest and armrests all in a single unit was the most important objective of the present invention.

[0008] U.S. Pat. No. 155,016 to M. Eberhard (Sep. 15, 1874) discloses a chair, not a stool, with a pull-out footrest. The seat appears to be the normal chair height which would force one to significantly bend over to reach the low footrest. Also, the footrest must be pulled out to be used which would be difficult for someone already sitting in the chair. Pulling it out prior to sitting could hinder the sitting of many of the targeted population and the chair has no armrests.

[0009] U.S. Pat. No. 155,524 to P. L. Lambert (Sep. 29, 1874) discloses a foot-rest for chairs with a pull-out foot rest. The design of the footrest shows that it would be extremely difficult for one to use it to put on or take off their shoes because their legs and feet would be straight out from the chair.

[0010] This would require some extreme reaching. Lambert states that his device is intended for easy chairs and the like; not for putting on or taking off footwear.

[0011] U.S. Pat. No. 611,048 to E. E. Allen (Sep. 20, 1898) discloses a folding chair, not a stool, with an attached swinging footrest. The design of the footrest would make it difficult to use to put on or take off one’s footwear as it must be pulled out and vertically adjusted to compensate for the length of the user’s legs. The footrest is really a leg rest when the chair is in the reclining position.

[0012] U.S. Pat. No. 694,538 to W. A. Eddy (Mar. 4, 1902) discloses a foot rest for chairs with two different embodiments which must be attached to a chair to useful. It is constructed is such a manner that it must be attached to a specific type chair and as such is not universal. It would also would have to be pulled from the chair to use it and the height of it appears to be too high to use for the targeted task. It’s really a leg rest not a footrest for putting on shoes.

[0013] U.S. Pat. No. 1,216,172 to L. O. Schulz (Feb. 13, 1917) discloses a convertible chair/bed, not a stool, which shows a pull-out footrest wide enough for a person to place both feet on them. But, the height of the footrest appears to be too high to really be effective and comfortable for the user to put on or take off their footwear comfortably. It is really a support for a portion of the bed when it is converted from a chair to a bed.

[0014] U.S. Pat. No. 1,505,829 to H. W. Warnecke (Aug. 19, 1924) discloses a dressing chair with a pull-out foot rest. This chair footrest has several major deficiencies, one that the footrest must be pulled out to be used which would have to be done while sitting or the user would have to straddle it prior to sitting. Another is the footrest is only wide enough for one foot which means the user has to reposition their body and legs for each foot. Another is that it has no armrests and the Inventor makes no mention of them. Lastly, the unit also provides a box in which to keep shoe polishing equipment with would increase the cost of the unit.

[0015] U.S. Pat. No. 2,628,879 to M. M. Schultz (Feb. 17, 1953) discloses a night table and chair with a pull out foot stool in the lower drawer. Again, the user would have to pull out the drawer with the foot stool after sitting down as it appears to be two wide to easily straddle it. It has a second storage drawer. The unit also has no armrests. Because the unit is really a night stand it’s ultimate cost would exceed that of the present invention.

[0016] Both the Warnecke and Schultz units are essentially chairs and the design indicates that they would be rather costly. In essence, all of the prior art based on the use of a chair and a built-in footrest result in an approach that in not easily portable, costly and neither of the units have the essential armrests. In fact, a search of the market reveals that none of these designs are currently being marketed.

[0017] U.S. Pat. No. 2,658,640 (Nov. 10, 1953) to D. C. Bayles discloses a children’s hamper with steps combined, not a stool with footrest and armrests. Quite possibly it could be used if the dimensions and construction material (wicker) were changed to provide for the size differences and to support the weight of an adult. But, it has no armrests, the only appendage to help one move it is a hole in the front wall and it is bulky. To modify it so that the targeted population could use it to effectively put on or take off their shoes would not be obvious to people in the field of children’s furniture i.e. modify a children’s hamper into a stool with footrest and armrest for elderly or handicapped people.
[0018] U.S. Pat. No. 4,034,829 (Jul. 12, 1977) to P. J. Hoffman discloses a step stool with a handrail and a stabilizing bar with a suction cup end. This device is really a heavy small set of portable steps with a handrail. It’s design and construction of metal or heavy duty plastic indicates that it’s primary purpose is something for one to stand on when overhead activities are being performed. Also, it has only one handrail which would not allow a person sitting on it to use both arms when arising. It is not a stool with a footrest and armrests and it is not a piece of furniture one would find in a bedroom.

[0019] U.S. Pat. No. 4,059,305 (Nov. 22, 1977) to V. T. Ammirata disclose a seat and footrest tilting chair for handicapped people. It’s design is such that the seat and footrest actually move together as one sits down. Upon sitting down one’s legs are bent and the footrest/feet are not easily accessible. It would be difficult to remove or put on footwear as the seat and footrest’s position are basically controlled by the pressure on the stretchable straps which in turn is caused by the occupant’s position of their legs and body in the chair. Lastly it is not a stool with a footrest and armrests.

[0020] U.S. Pat. No. 4,165,124 (Aug. 21, 1979) to J. A. Olan discloses a combination of chair and apparel cabinets. The chair has a slideable pull-out footrest which must be pulled out after sitting and it has garment compartments and storage shelves in both armrests and under the seat. From the drawings it appears that the footrest spacing is too high to be used for the targeted task and pulling it out to be used while sitting down would be most likely difficult for the targeted population. It is not a stool with footrest and armrest and would require purchasing extra storage to get the benefits of a footrest. It bulky and not light and portable.

[0021] U.S. Pat. No. 4,944,556 (Jul. 31, 1990) to T. J. Griesbaum et al discloses a supportive, adjustable chair for a child. While from first appearances the chair could be used for the targeted population; its design and proportions suggest not. It is considerably smaller than a chair for adults and its necessary bulkiness to support the targeted children makes it heavy, expensive and not easily portable. It is very unlikely that it would appeal to the targeted population of seniors and others with back or leg problems. It is a chair not a stool with a footrest and armrests.

[0022] U.S. Pat. No. 5,312,161 (May 17, 1994) to S. P. Mars discloses a chair for the elderly. The chair seat is designed to be higher than the average chair seat by several inches. A storable sliding foot support is used to emulate the floor when the person sits down and their legs are too short to reach the floor. There is no footrest that one could place their feet on which would shorten the distance between the seat and the floor or emulate floor. To use the foot support it must be pulled out before sitting because pulling it out while sitting would be difficult as it has no obvious appendages which to grasp. The alternate design showing a motor driving the foot support would require the chair be placed in close proximity to a power outlet. And, without a higher footrest it would be no better than sitting in the average chair. It is heavier and more costly than the present invention. Lastly, it is a chair not a stool with a footrest and armrests.

[0023] U.S. Pat. No. 5,762,163 (Jun. 9, 1998) to J. M. Kain discloses a step stool. Its design suggests that it could be used for the footwear putting on and removal process. However, the frame design makes it clumsy to sit on as the front legs/frame protrude where one would normally place their feet. The first step appears to be to narrow and its position below and behind the leading edge of the second step (seat) does not provide a comfortable position for one’s feet or legs while sitting. There are really no true armrests although the folding mechanisms could be used as a hand holds they wouldn’t be very comfortable; and their position is too far back of the top step/seat edge to be easily grasped. Lastly, its construction makes it appear as something found in a garage rather than a piece of bedroom furniture.

[0024] U.S. Pat. No. 6,145,931 (Nov. 14, 2000) to S. Subotic discloses an article for use in putting on and removing shoes. This is a single seating unit—a stool—with a pull-out footrest and a shelf support for shoes waiting to be put on or taken off. This unit has several deficiencies; first the slide-out footrest allows only one foot at a time to be placed on the footrest which would mean shifting one’s body side to side on the small stool when changing feet. The act of pulling out the sliding footrest may causes some seniors and others a problem as they may be forced to pull it out before they sit. This might make it awkward while they are sitting down. Most of all, the unit has no armrests which are essential for the targeted population. The dimensions of the unit also may not be good for seniors and its weight and lack of appendages makes it ease of portability less than many would like. Also, its design suggests an expensive solution, which may deter seniors living on a fixed income.

[0025] U.S. Pat. No. 6,578,720 (Apr. 30, 2002) to C. D. Santa Cruz et al discloses a combination trash receptacle and step stool. The disclosure suggests that the unit would be found in “a kitchen for easy disposal of trash.” Based on the implied use in the kitchen area, the height of the unit would most likely be the same as the lower cabinets found in the average kitchen, either 32 or 36 inches in order to fit in with average kitchen style. For an individual in the targeted population getting to the top in order to sit would be a difficult task. Two models of the trash container were made using the average kitchen dimensions mentioned above to verify this conclusion. The step which must be pulled out to be used is much higher than the first step in the average residential staircase based on these average kitchen cabinet heights and there are no real appendages to grasp when climbing up to sit. And, after sitting on the top putting one’s feet on the step would equivalent to sitting on a normal chair without a footrest. The step itself, which is designed to allow one to “have quick access to items located in high cabinets” is not designed to be used for the footwear putting on or removal process. Based on either the 32 or 36 inch height of the unit, the pull down step would be too shallow and not wide enough to be comfortable to sit on and wouldn’t have a footrest or armrests. The item is a trash container not stool with a footrest and armrests and would not be found in one’s bedroom.

[0026] U.S. Pat. No. 6,843,347 (Jan. 18, 2005) to T. Lamberson et al discloses a step stool. The triangular shape and construction on the unit makes it possible for it to be assembled in several variations. The unit must be assembled into one of three configurations to be used. None of these configurations results in a stool with an adequate seat, footrest and armrests for the task of putting on or taking off footwear. The apexes of the triangular side frames could be used as hand holds, but they wouldn’t be anywhere near as comfortable for the user as armrests. The unit in any of the configurations has no real armrests which are required for both safety and comfort. Lastly, the unit’s industrial construction of molded metal or plastic and with its many cross members makes it appear out of place in the average bedroom or living room.
U.S. Pat. No. 7,040,695 (May 9, 2006) to J. W. McClure discloses a bench cabinet for changing shoes. This is not a simple stool with footrest and armrest for changing footwear; it is a place to take off your shoes and store them while putting on a pair of slippers upon entering a private home. The bench portion of the device does not include a footrest and none of the configurations include an armrest. It is designed to be more permanent fixture in a house, close to the house’s entry. It is not a stool with footrest and armrests.

Kneier discloses a chair with attached footrest for putting on and removing footwear. This is a specially designed chair in which the seat is higher than a normal chair, 22 versus 18 inches from the floor. The footrest extends between 7 and 9 inches in the front of the chair. A model of this configuration was made and tested by people of average height and many found that the seat height and protruding footrest made it impossible to place their feet on the floor when seated. Another difficulty was what to do with one’s footwear during the process. One would have to hold their shoes and socks in their lap after sitting down as placing their shoes on the floor most often puts them out of reach and placing them on the footrest could interfere with the process. Placing shoes that you wear in all environments in your lap is not an appealing procedure. To use the storage compartment beneath the seat, the user must either place their footwear in it before sitting down or place the footwear which they have in their hands in the compartment after sitting down: which will require some bending and twisting given that the armrest are in the way. Retrieving the footwear will also require many of the same motions. Whereas, when using the present invention, the user can place their footwear on the floor within easy reach either before or while sitting down and not have to be concerned with where to place their shoes. Furthermore, the unit as disclosed by Kneier would result in a fairly large chair and many senior’s living space may not allow them room to include such a unit in their household. Potential customers may also question the need to pay for storage, especially if they had a large number of shoes. Cost and portability of the unit make also affect a person’s decision to purchase one. Lastly, the unit is a chair not a stool with a footrest and armrests.

A detailed examinations of the patents listed above and many others reveals that there isn’t a real good low cost furniture solution currently on the market to make the task of putting on or taking off shoes and socks easy and comfortable for people with knee, back or leg problems. Medical supply houses have stools of adjustable height principally for use in the shower and bath. Some are marketed under the name INACARE which have telescoping metal legs with a plurality of holes and internal locking pins to provide the adjustment. None of these stools have attached footrests or armrests. A plastic “Boot Bench” which has a storage compartment as part of the seat, but no footrest or armrest is currently being marketed by the STEP2 Company. It is ideal for youngsters, but its dimensions are not good for anyone with back or knee problems or aging senior’s with somewhat limited motion and need for stability provided by armrests.

OBJECTIVES AND ADVANTAGES

For elderly people and those people with back, leg or knee problems or even those persons with a balance problem caused by Parkinson’s disease or some other brain injury; the simple task of putting on or taking off their shoes and socks can be either an annoyance or a significant problem. Especially since this task is usually done everyday. And, with the recent increase in the number of knee and hip replacements being performed and the increase of back injuries caused by out-of-shape people extending themselves physically; more and more people are suffering when performing this simple task. Thus, the objectives of the present invention are to overcome the deficiencies of past solutions and provide a device that will satisfy the needs of the people affected.

The first objective of the present invention is to provide a piece of furniture that would fit in with the vast majority of people’s taste in furniture design and space in their household. The design should not look as if it is only fit for a nursing home or hospital. The lines should be clean and attractive to the average person. And, even more importantly the unit must fit the application; so its dimensions, especially the height, depth and width of the seat, footrest and armrests are quite important. It was found that the dimensions that emulated a set of steps in a staircase was ideal for the height and depth of the seat and footrest. These dimensions makes it possible for the occupant to place their shoes and socks on the floor within easy reach and still get the benefits of the footrest. The armrests’ height and width dimensions were defined after researching them in currently available household furniture. The length of the armrests was found to best if they were the same length as the depth of the seat; which would prevent them from interfering with one’s sitting down.

Another objective of the design is the ultimate cost of the unit to the consumer. Many of the people in the targeted population have limited income and could not afford something other than a basic device. So, the materials to be used and the construction of the unit are critical to its success in the market place. And, the unit should also be light weight and easily portable.

The preferred embodiment of the present invention would be constructed using the open frame technique typical of ordinary stools and chairs of some type of hardwood or even plywood, preferably Baltic birch, to make it fit in more easily with one’s current furniture. However, the unit could be made of plastic or metal as long as the resulting unit is strong enough for the application and light enough to be easily portable. The seat, footrest and armrests would have rounded edges and could also be padded for additional comfort for the user. Another feature of the stool would make the seat and footrest available in several widths, from the width of a average chair to a much wider width to accommodate persons of extra large size. The unit would also be designed and manufactured in such a manner so that it would be shipped in an unassembled condition to save shipping cost and easily assembled by the user using common fastening techniques.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the preferred embodiment of the invention.

Fig. 2 is a side view in elevation of the preferred embodiment of the invention.

Fig. 3 is a front view in elevation of the preferred embodiment of the invention.

Fig. 4 is a back view in elevation of the preferred embodiment of the invention.

REFERENCE NUMBERS IN THE DRAWINGS

11 Seat of stool.

12 Footrest of stool.
[0040] 13 Left side frame member.
[0041] 14 Right side frame member.
[0042] 15 Armrest portion of frame member.
[0043] 16 Seat support portion of the frame member.
[0044] 17 Typical cross brace.
[0045] 20 Stool with footrest and armrests.

DESCRIPTION OF THE DRAWINGS

[0046] FIG. 1 shows the stool 20 with its footrest and armrests in perspective.
[0047] FIG. 2 is a side view of the preferred embodiment of the stool where the seat 11 is mounted to the seat support 16 which is mounted to the left side frame member 13 having an armrest portion 15 and the footrest 12 is mounted to the lower horizontal portion of the left side frame member 13 and the front brace 17, middle brace 17 and both back braces 17 are attached to the side frame member 13 using common fastening techniques.
[0048] FIG. 3 is a front view of the preferred embodiment where seat 11 is mounted to the top of both the seat support members 16 of the left side frame member 13 and right side frame member 14 and both frame members having an armrest portion 15; and footrest 12 is shown attached to the lower horizontal portion of both the left side member 13 and the right side member 14; and with the front brace 17 and the middle brace 17 also attached to both sides members 13 and 14 using common fastening techniques.
[0049] FIG. 4 is a back view of the preferred embodiment where the seat 11 is mounted to the seat support portion 16 of the frame members 12 and 13 both frames having an armrest portion 15 and the footrest 11 is mounted to the side frames 12 and 13 and both the back braces 17 are also mounted to the side frames 12 and 13 using common fastening techniques.

I claim:

1. An article of furniture comprising a stool, with a seat, a footrest and armrests specifically designed to assist seniors and other persons with mobility problems in their knees, legs or back or balance problems in the act of putting on and taking off their shoes and socks.

2. The said stool as set forth in claim 1 consisting of a pair of side frames, both a right hand one and a left hand one each having an armrest portion, that comprises said armrests manufactured using an open frame technique embodying multiple horizontal and vertical members supporting said seat and said footrest and having cross braces to provide said stool its strength and stability.

3. The said stool as set forth in claim 1 wherein said footrest is 8 inches and said seat is 16 inches from a base of said side frames to emulate the dimensions of the vertical rise of two steps of a normal rectangular staircase found in the average multistory residential building.

4. The said stool as set forth in claim 1 wherein depth of said footrest is 10 inches to emulate that of a normal stair tread and the depth of said seat is 20 inches to emulate that of two said normal stair treads found in said normal rectangular staircase in said average multistory residential building.

5. The said side frames as set forth in claim 2 wherein the said armrest portion of said side frames are manufactured to extend 8 inches above said seat and provide a stable holding surface which the occupant of said stool may use to assist in sitting and rising from said stool.

6. The said stool as set forth in claim 1 wherein said footrest and said seat and said armrests portion of said side frames may have rounded edges or be padded for comfort using typical upholstery materials and techniques.

7. The said stool as set forth in claim 1 wherein said side frames, said seat, said footrest, said armrest portion of said side frames and said braces may be made of wood, metals, polymers and composites any of which would make said stool easily portable and economically priced for the targeted population and still provide the necessary strength and stability to support any person of above average weight.

8. The said stool as set forth in claim 1 wherein it shall be manufactured in such a manner to allow said stool to be supplied to the consumer in an unassembled manner for ease of packing and shipping and be easily assembled by said consumer with supplied common fasteners such as screws, Tee nuts and Cross bolts to ensure its strength and rigidity.

9. A stool with a seat, a footrest and armrests light in weight and styled to appear as a normal piece of furniture specifically designed to assist seniors and other persons with limited mobility in their knees, or back or legs or balance problems caused by Parkinson’s disease or some other brain injury in the act of putting on and taking off their shoes and socks wherein the heights and depths of said seat and said footrest emulate that of a single stair in a normal rectangular staircase rising to a landing in an average multistory residential house.

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