Feb. 27, 1962 O. H. JENSEN 3,023,050

STOOL CONSTRUCTION

Filed Aug. 26, 1960 2 Sheets-Sheet 1

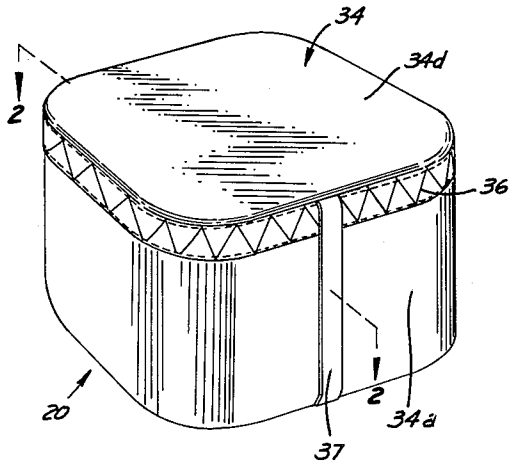


FIG. 1

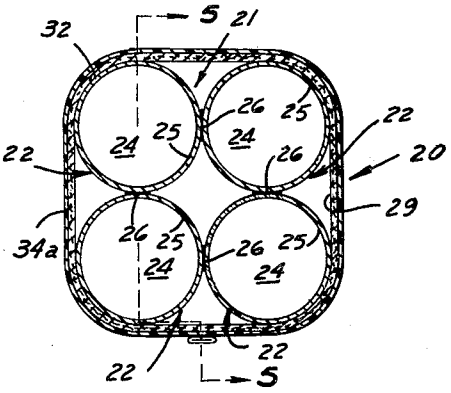


FIG. 2

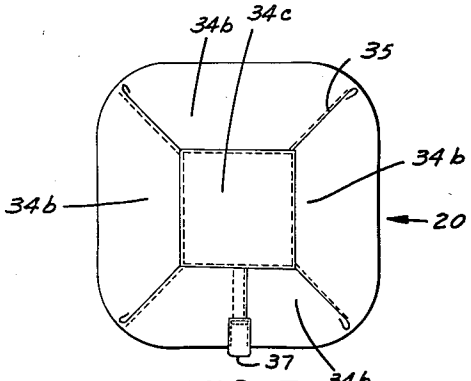


FIG. 3

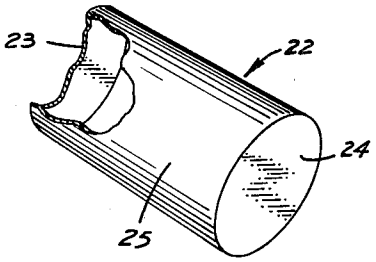


FIG. 4

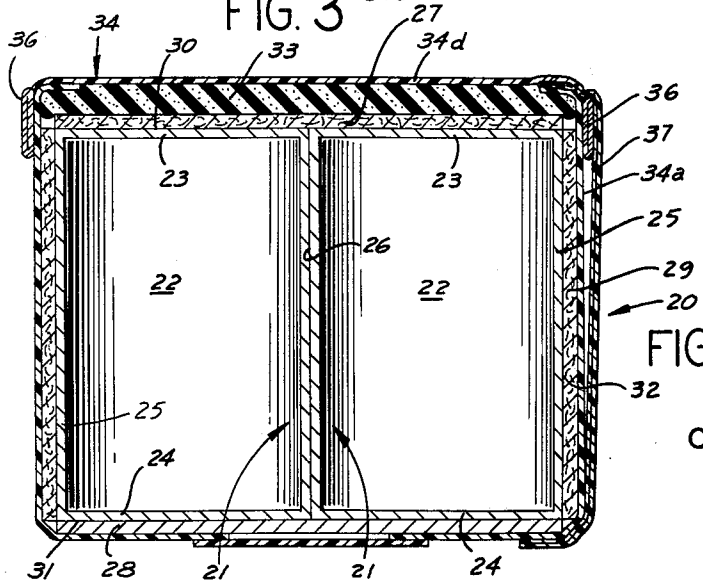


FIG. 5

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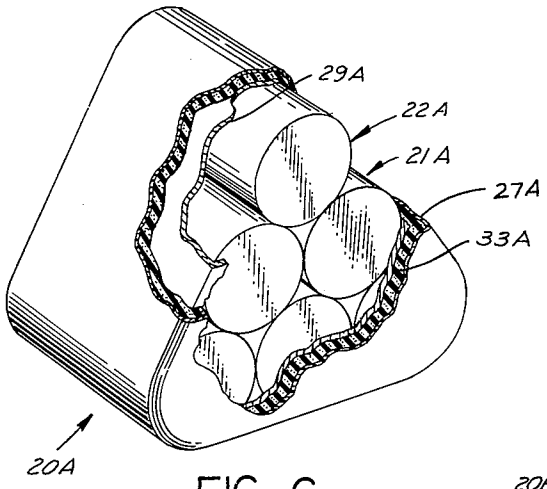


FIG. 6

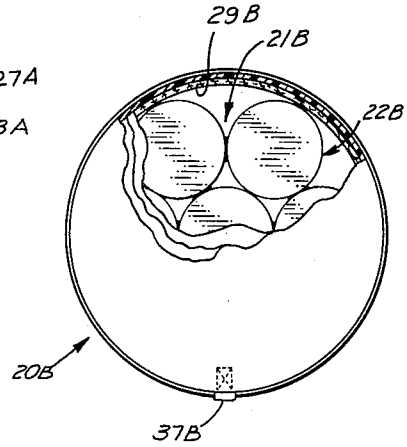


FIG. 8

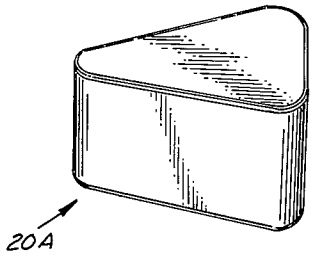


FIG. 7

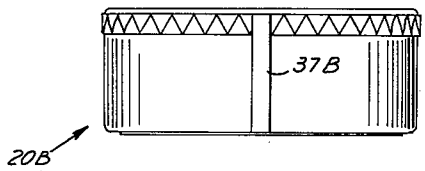


FIG. 9

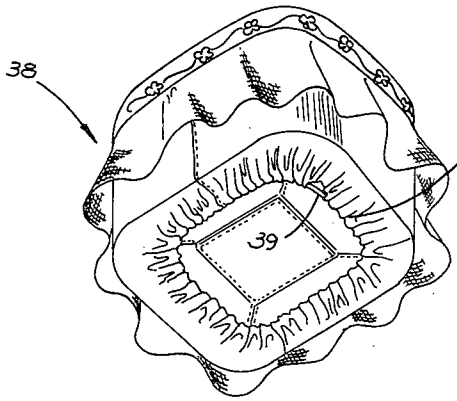


FIG. 10

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STOOL CONSTRUCTION

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2 Claims. (Cl. 297—462)

The present invention consists of an improved stool construction including an outer stool portion and an inner structural stool portion adapted to impart strength and rigidity to the stool while maintaining an extremely high strength-to-weight ratio. In other words, the stool of the present invention, by reason of the novel inner structural stool portion, can be extremely light while being of great strength sufficient to readily support the weight of an adult.

This makes it possible to make a number of different types of improved high-strength light-weight stools intended for various purposes.

For example, the present invention may assume the form of a hassock or footstool adapted to support the feet and lower leg portions of an individual who is seated in a chair positioned adjacent thereto.

It may assume a form wherein it comprises an all-purpose stool adapted to support the entire weight of a person seated thereon.

It may assume a reduced-size form intended primarily as a nursery stool or a child's stool.

It may assume a form comprising a small-vertical-height auxiliary foot rest well adapted for use by hospital patients or the like when sitting on the edge of a bed, or adapted for use by theater patrons as a foot rest when the patron is sitting in a theater seat, or it may assume a number of other configurations intended for a number of other specific purposes.

Furthermore, it is well adapted to be provided with removable slip cover means of various types of esthetically attractive materials having any desired type of decorative exterior appearance and adapted to be engaged in encompassing relationship with respect to the stool or removed therefrom and interchanged as desired. This allows such a removable slip cover means to be removed for cleaning purposes, replacement purposes, or interchangeability purposes in order to change the exterior appearance of the stool to correspond to the appearance of the surroundings in which it is intended to be used.

However, the basic inventive concept involved in the improved high-strength, light-weight stool of the present invention is the provision of an outer portion which is not primarily adapted to give the stool strength and the provision therein of an interior structural portion of a novel type adapted to impart great strength to the stool while adding very little weight thereto.

In one preferred form, the inner structural portion of the stool, just referred to, comprises a plurality of hollow sealed containers in closely adjacent side-by-side relationship within the interior of the outer portion of the stool, whereby to firmly support same and to impart great rigidity and strength to the stool while adding very little weight thereto by reason of the large volume of the hollow interior portions of the closed sealed containers, which are normally filled with air, although they might be filled with any other desired medium, preferably of a gaseous or fluid type, although not specifically so limited in all cases. In certain instances, the hollow interiors of the containers may be substantially evacuated, which will even further reduce the weight of the containers. In this form, it is essential that the containers be formed or made of rigid thin-sheet material and, preferably, this is true in all forms of the invention, although in certain modifications, the rigidity may be provided by the interior support given to each of the closed sealed containers by the gas or fluid or other filling medium contained therein. This is the

primary inventive concept of the present invention and is the feature which brings about the high strength-to-weight ratio of the novel stool construction of the present invention.

It is an object of the present invention to provide an improved high strength-to-weight stool construction of the character referred to in varying forms above and which is of extremely simple, cheap, light-weight, high-strength, virtually foolproof construction such as to be conducive to widespread use thereof.

Further objects are implicit in the detailed description which follows hereinafter and will be apparent to persons skilled in the art after a careful study thereof.

For the purpose of clarifying the nature of the present invention, several exemplary embodiments are illustrated in the hereinbelow-described FIGURES of the accompanying two sheets of drawings and are described in detail hereinafter.

FIG. 1 is a perspective view of one illustrative embodiment of the present invention.

FIG. 2 is a reduced-size vertical sectional view taken in the direction of the arrows 2—2 of FIG. 1.

FIG. 3 is a bottom plan view of the form of the invention illustrated in FIGS. 1 and 2.

FIG. 4 is a fragmentary view of one of the closed sealed containers which together comprise the inner structural portion of the stool and which give it its high strength-to-weight ratio.

FIG. 5 is an enlarged sectional view taken in the direction of the arrows 5—5 of FIG. 2.

FIG. 6 is a fragmentary, partly broken away, perspective view of a modified form of the invention which is basically the same insofar as the primary inventive concept is concerned, but which assumes a different exterior configuration.

FIG. 7 is a perspective view of the modified form of the invention illustrated in FIG. 6 shown in a different position.

FIG. 8 is a fragmentary top plan view (with the top surface partly broken away and with the side wall partly in section) of another modified form of the invention wherein it comprises a very low-height stool, which is well adapted for use as a foot rest or as a child's footstool.

FIG. 9 is an edge elevational view of the modified form of the invention illustrated in FIG. 8.

FIG. 10 is an underneath perspective view of a form of the invention similar to that shown in FIGS. 1–5 and further provided with removable slip cover means of decorative exterior appearance and provided with means for fastening it over the stool.

Referring to FIGS. 1–5 for exemplary purposes, one illustrative embodiment of the invention takes a typical exemplary form wherein it includes an outer stool portion, designated generally by the reference numeral **20**, and an inner structural stool portion, designated generally by the reference numeral **21**. The outer stool portion **20** is not primarily adapted to impart great strength to the stool, although it may impart a certain degree of strength to the stool. However, the inner structural stool portion **21** is primarily intended to impart great strength and rigidity to the stool while adding a very small amount of weight thereto. This is also true in all modified forms of the stool shown in other figures and referred to hereinafter. In the first form illustrated in FIGS. 1–6, the inner structural stool portion **21** consists of a plurality of closed sealed containers of thin-sheet material, each container being indicated by the reference numeral **22**.

In the specific example illustrated, there are four such containers **22** and each consists of a closed sealed metallic can having substantially flat parallel tops and bottoms **23** and **24**, with all of the tops **23** lying in a common horizontal upper plane and with all of the bottoms **24**

lying in a substantially flat lower plane parallel to and spaced below the upper plane.

In the specific form illustrated, each container or can top **23** is connected in sealed relationship with respect to its container or can bottom **24** by a substantially cylindrical side wall portion **25**.

Also, in the specific example illustrated, the contacting, touching, or tangent portions of the side walls **25** are effectively fastened together in rigid relationship at the fastening or contact points **26**. This may be accomplished by soldering them together, welding them together, cementing them together with some of the very strong adhesive agents such as epoxy resins, or the like, or may be accomplished in any other desired manner providing firm rigid mechanical fastening means effectively fastening the plurality of cans **22** together so as to form a complete rigid high-strength, light-weight inner structural stool portion **21**.

In the specific form illustrated, the stool outer portion, indicated generally at **20**, takes a particular exemplary form wherein it includes an upper panel member **27** lying immediately over the tops **23** of the fastened cans **22**, a lower panel member **28** lying immediately under the bottoms **24** of the fastened cans **22**, and lateral encircling panel means **29** lying immediately adjacent to and around the fastened plurality of cans **22**.

In a preferred form of the invention, the panel members or means just referred to are rigidly fastened with respect to the inner structural portion **21** of the stool by any suitable fastening means. This may comprise mechanical fastening means or adhesive fastening means of any desired type. For example, epoxy resin or various other very high-strength adhesive fastening means may be employed for fastening the undersurface of the upper panel member **27** to the can tops **23**, as indicated at **30**, may be employed for fastening the upper surface of the lower panel member **28** to the bottoms **24** of the cans, as indicated at **31**, and/or may be employed for fastening interior surface portions of the lateral encircling panel means **29** to exterior portions of the cylindrical side walls **25** of the cans **22** at regions of contact therewith adjacent each of the corners of the stool, as indicated at **32**. Furthermore, if desired, each of the panel members and means may be extended slightly beyond the positions shown in FIG. 3 and may be rigidly fastened to each other by suitable fastening means of a mechanical or adhesive nature.

In the particular embodiment of the invention illustrated in FIGS. 1–5, the top of the stool is additionally provided with resilient padding means **33**, which may be made of foam rubber, sponge rubber, polyurethane foam, or other equivalent padding material, lying above the upper panel member **27**, to which it may be fastened by suitable fastening means of a mechanical or adhesive nature, if desired.

In the particular example illustrated in FIGS. 1–5, the stool is also provided with cover means **34** encompassing the entire stool and which may be made of any suitable material such as leather, plastic, fabric, or the like, and which may be fastened over the exterior of the stool in any desired way. In the particular example illustrated, the stool cover **34** consists of an encircling side portion **34*a*** which has four overlapping fold portions **34*b*** extending inwardly underneath the bottom panel **28**, which are sewn or fastened along overlapping lines **35** to a rectangular junction patch **34*c*** at the center of the bottom of the stool. The upper edge of the side part of the cover **34*a*** is provided with a cuff or trim member **36** extending around the stool and terminates in a top edge fastened to a top portion **34*d*** of the cover means **34**, to which said top edge is mechanically fastened, adhesively fastened, or otherwise suitably fastened.

In the specific form illustrated in FIGS. 1–5, the stool is also provided with carrying handle means **37** consisting of a strap fastened at the top and bottom to the exterior of the stool in any appropriate fashion, such as by mechanical fastening means, adhesive fastening means, or the like. This makes it possible to conveniently and easily carry the stool, which is well adapted for portability by reason of its high strength-to-weight ratio.

It should be clearly noted that, in certain forms of the invention, the panel members and means may be eliminated, if desired. Also various other modifications within the basic concept of the invention, as defined hereinbefore, are contemplated.

FIGS. 6 and 7 illustrate a slightly modified form of the invention wherein the exterior shape is substantially triangular rather than substantially rectangular with rounded corners as in the first form of the invention illustrated in FIGS. 1–5. In this modification, similar parts will be indicated by similar reference numerals, followed by the letter "A." It should be noted that the major difference in this form of the invention is that the lateral encircling panel means **29A** defines an interior region carrying the cans **22A** which is of substantially triangular configuration. Furthermore, each of the end panel members corresponding to those shown at **27** and **28** in FIG. 5 of the first form of the invention are substantially triangular in shape. Thus, the entire stool assumes a triangular configuration in this modification. Furthermore, since the stool may be used in the position shown in FIG. 6 or in the position shown in FIG. 7, the padding means **33A** is shown as being positioned outwardly of all of the panel members and means. However, the invention is not specifically so limited and it may merely be positioned outwardly of the particular panel member or means which is intended to be positioned at the top of the stool when in use.

FIGS. 8 and 9 illustrate a further modification of the invention wherein the configuration of the stool, as seen in plan view, is substantially circular rather than substantially square with round corners as in the first form of the invention illustrated in FIGS. 1–5. Otherwise, this modification of the invention is essentially similar, and similar parts are indicated by similar reference numerals, followed by the letter "B," however. Further description is thought unnecessary. This form of the invention is preferably of relatively low vertical height and is especially well adapted for use as a foot rest when a person is seated on the edge of a hospital bed, on a theater seat, or under other circumstances where a small degree of vertical lift or support for the feet is desirable.

FIG. 10 illustrates the form of the invention shown in FIGS. 1–5 as being further provided with removable slip cover means, indicated generally at **38**, adapted to be very easily removably engaged in encompassing relationship with respect to the stool. This is accomplished, in the specific form illustrated, by reason of elastic means **39** carried in a shirred hem portion **40** of the fabric slip cover means **38** at the bottom thereof to allow it to be elastically slipped over and/or removed from the stool, as desired. Snaps, buttons or other fasteners may also be used if desired. This makes it possible to remove the slip cover **38** in order to wash or clean it or in order to interchange it for one of different exterior ornamental appearance, if desired.

It should be noted that any or all of the stools specifically described hereinbefore may be of desired sizes for use by adults in any of the manners referred to at the beginning of this application or may be of somewhat lesser size for use as a nursery stool or by children beyond the nursery age.

It should be understood that the figures and the specific description thereof set forth in this application are for the purpose of illustrating the present invention and are not to be construed as limiting the present invention to the precise and detailed specific structure shown in the figures and specifically described hereinbefore. Rather, the real invention is intended to include substantially equivalent constructions embodying the basic teachings and inventive concept of the present invention.

I claim:

1. A small, light-weight, high-strength, stool construction, comprising: a plurality of upstanding side-by-side hollow, closed, sealed metallic cans having substantially flat parallel tops and bottoms and substantially cylindrical side walls, with all of the tops lying in a substantially flat upper plane and with all of the bottoms lying in a substantially flat lower plane parallel to and spaced below said upper plane; fastening means joining adjacent cylindrical side wall portions of the plurality of cans together to form a rigid, composite, multiple-can, inner stool-supporting structure of high strength and low weight; an upper panel member lying adjacent to the tops of the fastened cans; a lower panel member lying adjacent to the bottoms of the fastened cans; lateral encircling panel means lying adjacent to at least certain of the exterior portions of the fastened plurality of cans; resilient padding means positioned above said top panel member; means fastening the panel members and the padding means in fixed relationship with respect to the inner supporting structure comprising the fastened plurality of cans; and cover means encompassing the joined and fastened plurality of cans, the panel members, and the padding means.

2. A stool of the character defined in claim 1, including removable slip-cover means of decorative exterior appearance provided with elastic means for fastening it over at least the upper portion of the assembled stool.

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