Nov. 21, 1961 E. F. HAMILTON 3,009,739

STOOL

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Fig. 2.

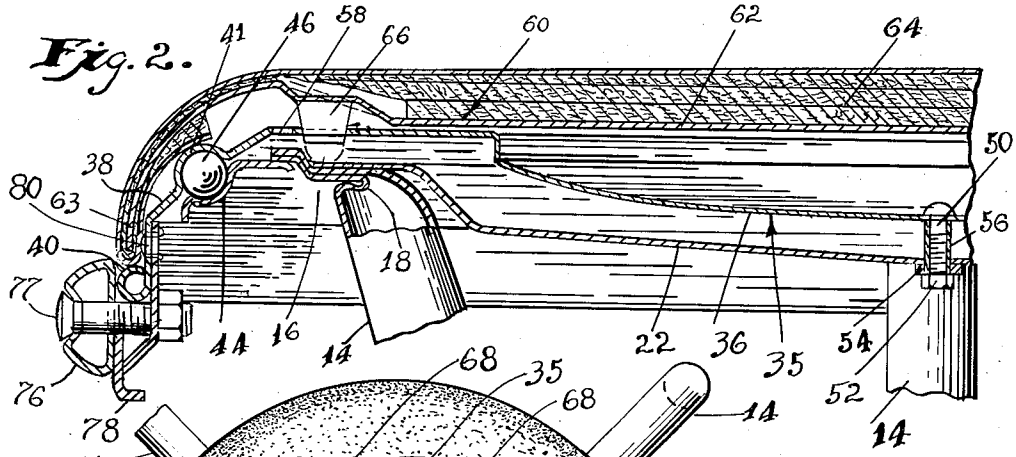


Fig. 3.

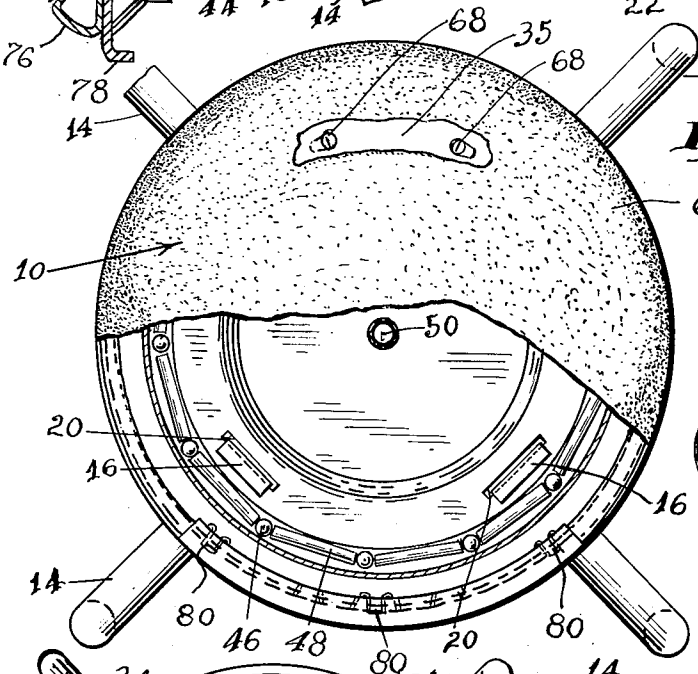


Fig. 1.

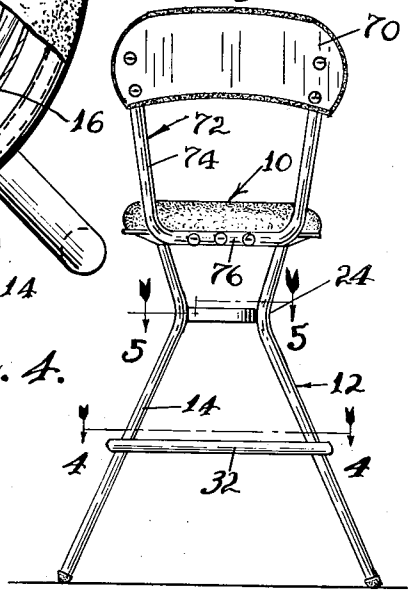
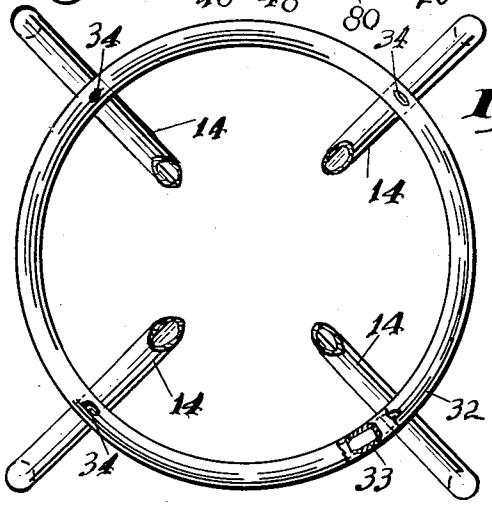


Fig. 4.



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Fig. 7.

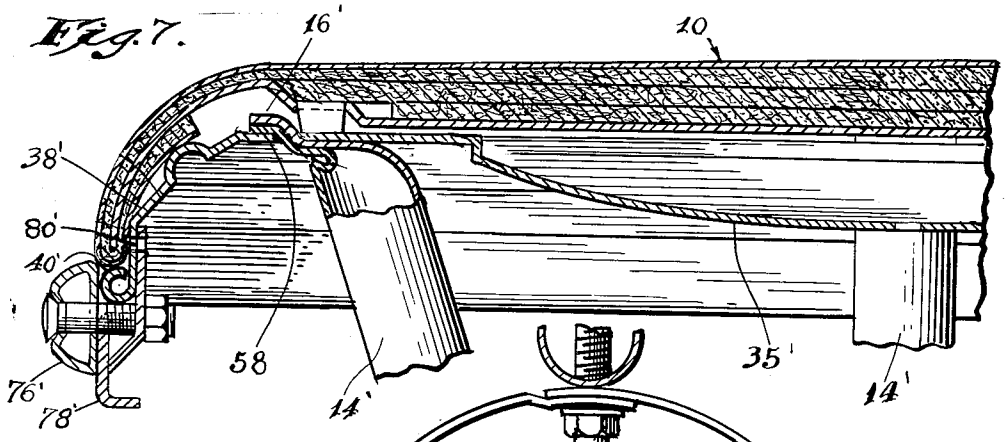


Fig. 5.

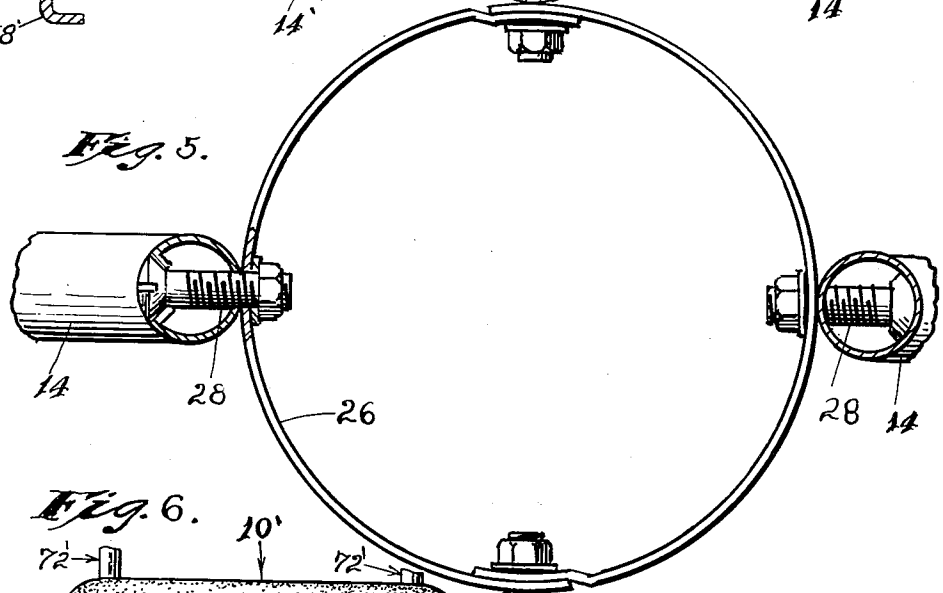
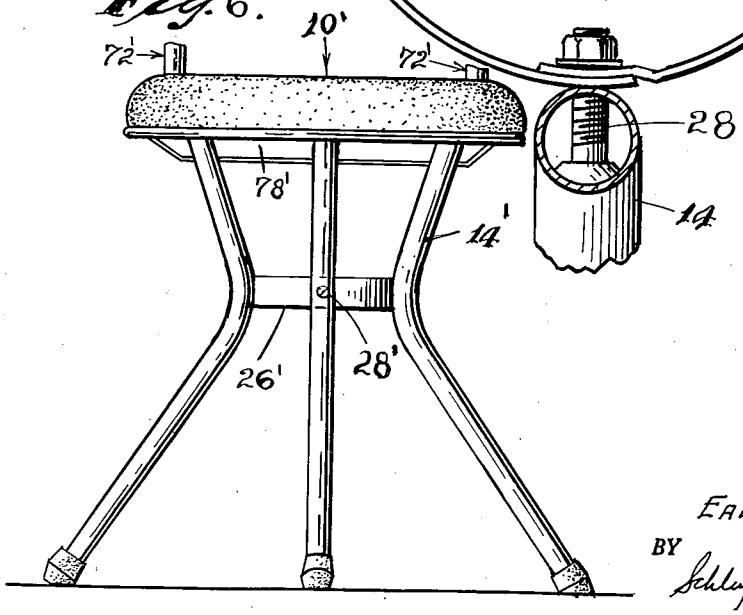


Fig. 6.



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United States Patent Office 3,009,739 Patented Nov. 21, 1961

3,009,739
STOOL

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Filed Apr. 27, 1959, Ser. No. 809,036
8 Claims. (Cl. 297—349)

This invention relates to stools, and more particularly to stools of the type having either a rotatable or non-rotatable seat.

It is an object of my invention to reduce the cost of manufacturing this type of stool, and to improve and simplify its construction. A further object of my invention is to provide such a stool of sturdy construction, which can be made largely of sheet-metal and metal-tubing, and which is adapted for shipment in knocked-down condition. A still further object of my invention is the provision of a stool having a base and seat construction that can easily be adapted for either rigid or rotating interconnection.

According to one form of my invention, there is provided a base comprising a sheet-metal plate supported on a plurality of annularly spaced legs. A seat is rotatably carried on the base and comprises a circular sheet-metal member rigidly interconnected to a seat-pan having a cover disposed thereon. Said circular sheet-metal member and the plate are provided with opposed annular offsets defining a ball race in which a series of bearing balls are carried. Conveniently, the seat and base are held in assembled relation by means interconnecting the circular sheet-metal member and the plate at their common axes while permitting relative rotation therebetween.

Conveniently, the seat may be provided with a bracket for supporting a back-rest in an elevated position above the seat.

The accompanying drawings illustrate my invention. In such drawing:

FIG. 1 is a rear elevation of a stool embodying my invention;

FIG. 2 is an enlarged fragmental vertical section of the stool shown in FIG. 1;

FIG. 3 is a plan view of the stool seat with portions thereof broken away;

FIG. 4 is a horizontal section taken on the line 4—4 of FIG. 1;

FIG. 5 is a horizontal section taken on the line 5—5 of FIG. 1;

FIG. 6 is a fragmental front elevation of a modified form of my invention; and

FIG. 7 is an enlarged fragmental vertical section of the stool shown in FIG. 6.

As illustrated in the drawings, my stool comprises a seat portion 10 supported on a broad floor-engaging base 12. The base 12 includes a plurality of legs 14 conveniently formed from lengths of metal-tubing and arranged in an annularly spaced relation. Adjacent its upper end, each of the legs 14 is flattened and bent to form an offset finger 16 extending across the upper end of the leg and projecting outwardly therefrom. As shown in FIG. 2, in forming the fingers 16, the walls of the legs are bent inwardly, as at 18, so that the upper ends of the legs brace and support the outwardly projecting fingers 16. Each of the fingers 16 is received in a chordally disposed slot 20 formed in a circular sheet-metal plate 22. Thus, by inserting the fingers 16 in the slots 20 and then pivoting the lower ends of the legs

14 inwardly, the fingers will engage the upper face of the plate 22 radially outwardly from said slots and the lower face of the plate radially inwardly of said slots to form rigid interconnections between the legs 14 and the plate 22.

The legs 14 are bent inwardly at a point disposed toward their upper ends, as at 24, and are interconnected at their inwardly bent portions 24 by a pair of semi-circular braces 26 secured to the legs by bolts 28. As will be understood, the braces 28, in addition to interconnecting the legs 14, the braces 26 hold said legs in an inwardly disposed position so that the fingers 16 are retained in the slots 20 bearing against the upper and lower faces of the plate 22. The legs 14 are further interconnected and braced by an annular brace 32 conveniently formed from a length of metal-tubing having its abutting ends joined by a plug 33 press-fit therein. The brace 32 is mounted on the outer faces of the legs 14 by bolts 34. Thus, both the braces 26 and 32 prevent the lower ends of the legs from pivoting outwardly thereby bracing the legs and holding the fingers 16 rigidly connected to the plate 22.

The stool seat 10 comprises a circular sheet-metal bottom 35 provided with a downwardly dished central portion 36 and a depending peripheral flange 38 rolled at its lower edge to form a stiffening bead 40. Between its dished portion 36 and flange 38, the seat-bottom is provided with an annular offset 41 cooperating with an opposed annular offset 44 in the plate 22 to define a ball race for the reception of bearing balls 46 desirably spaced by appropriate spacers 48. The seat-bottom 35 and the plate 22 are held in assembled relation, while permitting free rotation of the seat-bottom 35 on the plate, by means of a bolt 50 extending through coaxially aligned openings in the bottom 35 and the plate 22. A nut 52 is received on the lower end of the bolt 50 extending below the plate 22 and supports a washer 54 against the lower face of the plate 22. A sleeve bearing 56 is journaled within the washer 54 on the bolt 50 with the ends of said bearing abutting the lower face of the seat-bottom 35 and the upper face of the nut 52. Thus, the bolt assembly 50—56 provides both means for holding the seat and base in assembled relation and an axially disposed bearing for the rotatable seat. For reasons that will become more apparent hereinafter, the seat-bottom 35 is also provided with a plurality of chordally disposed slots 58 corresponding to the slots 20 in the plate 22.

Mounted on the seat bottom 35 is a circular sheet-metal seat-pan 60 having a central dished portion 62 and a depending peripheral flange 63. A padded covering 64 is disposed over the upper surface of the seat-pan 60, with the portion of the covering 64 overlying the dished area of the seat-pan having an increased thickness to present a smooth upper seat surface. A series of tapered ears 66 formed on radii of the seat-pan 60 between its dished portion 62 and the flange 63 are receivable in an annular series of circular openings 68 in the seat-bottom. The tapered ears 66 are wedged against the edges of the circular openings 68, with their lower ends extending through said openings and bent to lie against the lower face of the seat-bottom. Conveniently, the lower ends of the several ears 66 are bent in different directions, so that the seat-pan 60 and the seat-bottom 35 will be held rigidly connected irrespective of any torque forces applied thereto during rotation of the seat. The seat-pan 60 and the seat-bottom 35 are further held in assem-

bled relation by a press-fit between their peripheral flanges 63 and 38. As shown in FIG. 2, the margin of the covering 64 extends over the end of the seat-pan flange 63 and is held on the seat-pan by the press-fit between the flanges 63 and 38.

Conveniently, the stool may be provided with a back rest 70 mounted on the seat 10 by a back support 72 formed from a length of metal-tubing bent into a generally U-shape to provide a pair of arms 74 interconnected by a bight stretch 76. The upper ends of the back support arms 74 are connected to the back rest 70 in any convenient manner. The bight 76 of the back support is partially flattened and bent into an arcuate shape for connection, as by bolts 77, to an arcuate bracket 78 mounted on the inner face of the seat-bottom flange 38 as by rivets 80. The lower portion of the bracket 78 is offset outwardly with its outer face coplanar with the bead 40 on the seat-bottom flange 38, so that the flattened bight stretch 76 of the back support will engage, and be supported against the bracket 78 and the bead 40 to provide a rigid interconnection between the back rest 70 and the seat 10.

One of the principal advantages of my stool construction is its adaptability to be easily converted from a stool having a rotatable seat to a stool having a non-rotatable seat by the interchange of a few components. As shown in FIGS. 6 and 7, in producing a stool having a non-rotatable seat, the plate 22 and the bearing members 50—56 are simply omitted from the construction. As shown in FIG. 7, the fingers 16′ on the legs 14′ are received in the slots 58 formed in the seat-bottom 35′ for rigidly interconnecting the seat-bottom 35′ to the legs 14′. I have illustrated a stool in the modification shown in FIG. 6 as having relatively short legs. The brace 32 may also be omitted from such a construction, since the pair of braces 26′ connected to the legs 14′ by bolts 28′ will serve to hold the leg fingers 16′ rigidly connected to the seat 10′ when such relatively short legs are employed.

The modification illustrated may also be provided with a back rest in which case the arcuate bracket 78′ is mounted on the seat-bottom flange 38′ by rivets 80′, and the flattened bight 76′ of the back support 72′ is connected thereto with its inner face bearing against the outer faces of the bead 40′ and the bracket 78′.

I claim as my invention:

1. A stool, comprising a base and a seat, said seat comprising a circular seat pan having a padded covering mounted on its upper face, and a circular seat-bottom, said seat pan having an annular series of depending ears extending through an annular series of openings formed in said seat-bottom with the lower ends of said ears extending normal to the radii of said seat-bottom along the lower face thereof, and said base comprising a sheet-metal member rotatably supporting said seat on an annular series of balls carried in opposed annular offsets formed in said sheet-metal member and seat-bottom, means rotatably interconnecting said seat-bottom and said sheet-metal member on their axes, a plurality of annularly spaced legs having offset fingers at their upper ends projecting through slots in said sheet-metal member and extending radially outwardly therefrom, said fingers bearing against the upper face of said member radially outwardly from said slots and against the lower face of said member radially inwardly from said slots, and one or more braces interconnecting the legs and holding said fingers and sheet-metal member interconnected.

2. A stool as set forth in claim 1 in which said seat pan and seat-bottom have overlapping peripheral flanges press-fit together, and the margins of the covering on said pan extending over the edge of the seat pan flange between said flange and the seat-bottom flange and bindingly gripped therebetween for holding the covering on the seat pan.

3. A stool as set forth in claim 1 in which said openings formed in the seat-bottom have a circular cross-section and said depending ears extending therethrough are tapered, with their maximum width being disposed adjacent said seat pan.

4. A stool, comprising a circular sheet-metal member having a plurality of annularly spaced legs mounted thereon, a circular seat-bottom rotatably interconnected to said member and carried on an annular series of balls carried in opposed annular offsets formed in said seat-bottom and member, a circular seat pan rigidly mounted on said seat-bottom and having a covering mounted thereon, a peripherally extending flange on said seat-bottom extending below the plane of said seat pan, an arcuate bracket mounted on the inner face of said flange, and a back rest supported on a generally U-shaped back support having a bight stretch rigidly connected to said bracket below the plane of said seat pan.

5. A stool, comprising a circular sheet-metal member having a plurality of annularly spaced legs mounted thereon, a circular seat-bottom rotatably interconnected to said member and carried on an annular series of balls carried in opposed annular offsets formed in said seat-bottom and member, a circular seat pan rigidly mounted on said seat-bottom and having a covering mounted thereon, a peripherally extending flange on said seat-bottom having a stiffening bead at its lower end, an arcuate bracket mounted on said flange at its upper end and having its lower end offset outwardly to lie in the general plane of said stiffening bead, and a back rest supported on a generally U-shaped back support having a bight stretch rigidly connected to said bracket, said bight stretch bearing against and being supported by the outwardly disposed faces of the flange bead and the arcuate bracket.

6. A stool, comprising a sheet-metal member having a plurality of spaced cross-braced legs mounted thereon, a seat pan having a covering mounted thereon and interconnected to and supported by said sheet-metal member, said sheet-metal member having a downwardly extending peripheral flange extending below the plane of the seat pan, a bracket mounted on the inner face of said flange, and a back rest supported on a generally U-shaped back support having a bight stretch rigidly connected to said bracket below the plane of the seat pan.

7. A stool, comprising a sheet-metal member having a plurality of spaced cross-braced legs mounted thereon, a seat pan having a covering mounted thereon and interconnected to and supported by said sheet-metal member, said sheet-metal member having a downwardly extending peripheral flange having a stiffening bead at its lower end, a bracket mounted on said flange at its upper end and having its lower end offset outwardly to lie in the general plane of said stiffening bead, and a back rest supported on a generally U-shaped back support having a bight stretch rigidly connected to said bracket, said bight stretch bearing against and being supported by the outwardly disposed faces of the flange head and said bracket.

8. A stool, comprising a circular sheet-metal member having a downwardly projecting peripheral flange, a plurality of annularly spaced legs having offset fingers at their upper ends projecting through slots formed in said sheet-metal member and extending radially outwardly therefrom, said fingers bearing against the upper face of said member radially outwardly from said slots and against the lower face of said member radially inwardly from said slots, brace means interconnecting said legs and holding said fingers and sheet-metal member interconnected, a circular seat pan mounted on said member and having a downwardly projecting peripheral flange press-fit over said sheet-metal member, a covering mounted on said seat pan and having it marginal edge extending over the ends of said seat pan and bindingly gripped between the peripheral flanges on said seat pan and sheet-metal member, and an annular series of ears on said seat pan receivable in an annular series of openings formed in the circular sheet-metal member with the lower ends of said

ears projecting through said openings and extending normal to the radii of the sheet-metal member along the lower face thereof for rigidly interconnecting the seat pan and circular sheet-metal member.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,009,739 November 21, 1961

Earl F. Hamilton

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 56, for "head" read -- bead --; same column, line 70, for "it" read -- its --.

Signed and sealed this 17th day of April 1962.

(SEAL)
Attest:

ESTON G. JOHNSON

Attesting Officer

DAVID L. LADD

Commissioner of Patents