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TABLE ASSEMBLY

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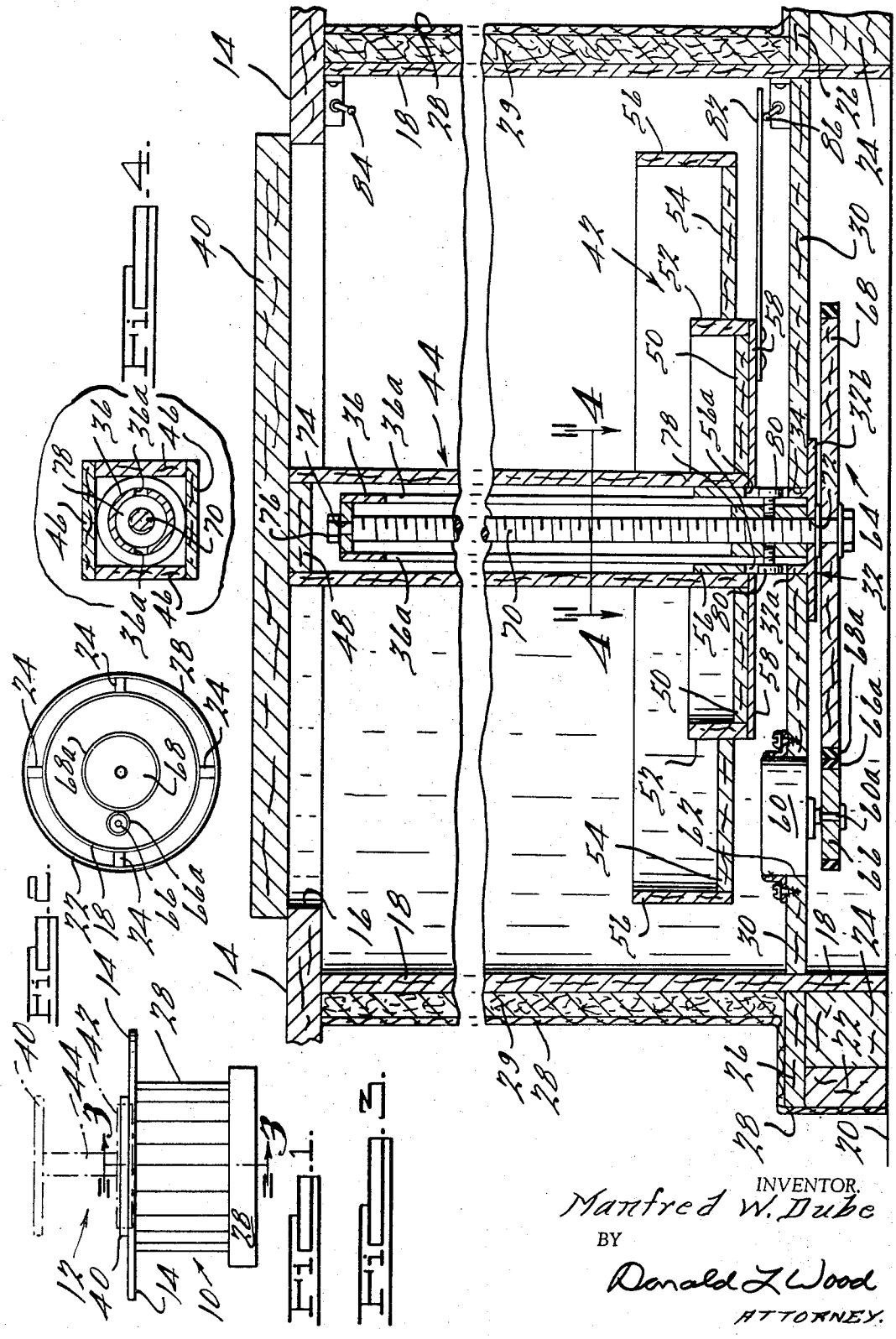


Fig. 4.

Fig. 2.

Fig. 3.

Fig. 1.

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TABLE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A table in which a movable assembly comprising a central circular portion of the table top, a generally circular rack normally positioned in a storage well below the table top, and a central post interconnecting the central table top portion and the underlying rack member, is movable bodily upwardly to raise the rack member into a position within the opening in the table top created by the upward movement of the central table top portion.

Summary of the invention

This invention relates to a table assembly; more particularly, it relates to a table assembly having storage facilities.

It is an object of the present invention to provide an improved table assembly.

A more particular object is to provide a table affording storage facilities below the table top and having a mechanism operable to readily move the stored items to a raised, readily accessible position adjacent the table top.

The table assembly of the invention includes a fixed assembly and a movable assembly. The fixed assembly includes a table top having a central opening and support means depending downwardly from the table top to support it in spaced relation to the ground or floor surface. The movable assembly comprises an upper, horizontally disposed panel member and a lower horizontally extending rack structure, each having a size and shape approximating those of the opening in the table top, and an upright member rigidly interconnecting the upper panel member and the lower storage rack to maintain them in vertically spaced relation. The table assembly further includes means operative to raise and lower the movable assembly so that it may be moved selectively between a first or stowed position in which the upper panel member is positioned adjacent the opening of the table top with the upright member extending downwardly therefrom to position the rack structure substatnially below the table top, and a second or raised position in which the rack structure is positioned adjacent the opening in the table top with the upright member extending upwardly therefrom to position the upper panel member substantially above the table top.

In the preferred embodiment of the invention, the means supporting the table top comprises a continuous skirt member depending from the table top to define a hollow area therewithin into which the movable assembly retracts to achieve its stowed position.

Brief description of the drawing

A preferred embodiment of the invention is shown in the accompanying drawing in which:

FIG. 1 is a view of a table assembly according to the present invention;

FIG. 2 is a bottom view of the table assembly of FIG. 1;

FIG. 3 is a cross-sectional view, on an enlarged scale, taken on line 3—3 of FIG. 1; and

FIG. 4 is a cross-sectional view taken on line 4—4 of FIG. 3.

Detailed description of the preferred embodiment

The table of the invention, as seen in FIG. 1, includes a fixed assembly **10** and a movable assembly **12**. Unless otherwise specified, the various parts of the table are preferably formed of wood or wood-like material.

Fixed assembly **10** includes a circular table top **14** having a central circular opening **16** and a continuous cylindrical skirt **18** depending from the underface of table top **14** and engaging a suitable ground or floor surface **20** to position top **14** above that surface. An auxiliary cylindrical rim member **22** encircles the lower portion of skirt **18** to stabilize the table and provide a flanged appearance to the lower end of the table. Rim **22** is held in concentric relation to skirt **18** by a plurality of blocks **24** positioned between it and the skirt, and by an annular member **26** encircling skirt **18** and overlying rim **22**. Decorative panelling **28** and/or upholstering **29** may be applied to skirt **18** and rim **22** to achieve any desired aesthetic effect.

Fixed assembly **10** further includes a horizontal panel or partition member **30** positioned transversely within skirt **18** adjacent, but spaced from, the lower end of the skirt. A metallic bearing member **32** is positioned adjacent a central aperture **34** in panel **30** with a flange portion **32***a* of the bearing member received within aperture **34** and the main body portion **32***b* of the bearing member positioned against the underface of panel **30**. A metal tubular member **36** is seated at its lower end within bearing member flange portion **32***a* and extends upwardly on the central axis of skirt **18** and table top **14** to a location immediately underlying table top **14**. Tubular member **36** has two diametrically opposed slots **36***a* extending from the lower end thereof to a location adjacent but spaced downwardly from the upper end thereof.

Movable assembly **12** comprises an upper panel member **40**, a lower rack structure **42**, and a central upstanding post **44** interconnecting panel member **40** and rack structure **42** to maintain them in vertically spaced relation.

Central post **44** is of box construction and comprises four upstanding panel members **46** arranged in edge to edge relation.

Upper panel member **40** is circular and has a diameter slightly greater than that of central opening **16** in table top **14**. A rectangular locator member **48** centrally secured to the underface of panel member **40** seats in the open upper end of post **44** to position panel member **40** on the central axis of the table.

Rack structure **42** includes a ring member **50** rigidly secured to the lower end of post **44**, an upstanding circular flange member **52** rigidly secured to the outer periphery of ring member **50**, a ring member **54** rigidly secured to an intermediate portion of the outer periphery of flange member **52**, and an upstanding flange member **56** rigidly secured to the outer periphery of ring member **54**. Flange member **56** has an outer diameter slightly less than that of central opening **16** in table top **14**.

Movable assembly **12** further includes a metal collar **56** slidably fitted over upstanding tubular member **36**, and a disc shaped platform **58** press fitted over collar **56**; platform **58** supports the weight of rack structure **42**, post **44**, and upper panel member **40**.

The table of the invention further includes means for imparting vertical movement to movable assembly **12**. These means include a reversible electric motor **60** supported in an opening **62** in panel member **30** with its output shaft **60***a* extending vertically downwardly into the space **64** between panel member **30** and support surface **20**. A small drive wheel **66** is secured to the lower end of shaft **60***a* in frictional driving relation to a large wheel **68**. An elongated metal screw **70** is secured at its lower

end to driven wheel **68** and passes upwardly therefrom through a lower journal **72** provided by bearing member **32** and through an upper journal **74** provided by an upper end wall **36***a* of tubular member for threaded engagement with a nut **76**. A nut **78** is slidably received within tubular member **36** and threadably engages screw **70**, and a pair of diametrically opposed bolts **80** are threaded into nut **78** and extend radially outwardly therefrom through slots **36***a* in tubular member **36** for lifting engagement with the upper closed ends of diametrically opposed slots **56***a* in collar **56**. Friction wheels **66** annd **68** are preferably provided with tires **66***a*, **68***a* formed of a suitable friction material such, for example, as soft rubber. Nut **78** may be formed of Delrin or other suitable hard plastic material.

Movable assembly **12** is normally maintained in the lowered position seen in FIG. 3 in which upper panel member **40** directly overlies opening **16** in table top **14** to close that opening, and rack structure **42** and central post **44** are positioned out of sight within the well defined by skirt **18** and transferse partition **130**.

If motor **60** is now energized in a sense to rotate it in a first or "forward" direction, screw **70** will be rotated through speed reduction wheels **66**, **68** in a sense to screw nut **78** upwardly within tubular member **36**; this upward movement is transmitted to movable assembly **12** through bolts **80**, collar **56** and platform **58**. Movable assembly **12** is thus moved upwardly from its stowed or retracted position of FIG. 2 to its raised or working position seen in phantom in FIG. 1 with the extent of upward movement being determined by engagement of a finger **82**, projecting radially from platform **58**, with a limit switch **84** positioned on the underface of table top **14**. In the raised position of movable assembly **12**, rack structure **42** is positioned within opening **16** to provide ready access to bottles or other articles positioned on the rack structure, and post **44** extends upwardly from the rack structure to position upper panel member **40** in a raised position spaced substantially above table top **14** where it serves to provide an auxiliary, raised table surface for receipt of glasses and the like.

When it is desired to lower movable assembly **12**, motor **60** is energized in a sense to rotate it in a second or "reverse" direction; reverse rotation of motor **60** rotates screw **70** in a direction to screw nut **78** downwardly within tubular member **36** and thereby lower assembly **12** into the hollow or well of the table with the extent of downward movement being determined by engagement of finger **82** with a second limit switch **86** carried on transverse panel member **30**. Movable assembly **12** may of course also be positioned at any position intermediate the described stowed and raised positions.

Although a preferred embodiment of the invention has been illustrated and described in detail with reference to the accompanying drawing, it will be understood that various changes may be made in the preferred embodiment without departing from the scope or spirit of the invention as defined by the appended claims.

I claim:

1. A table assembly comprising:

(A) a fixed assembly including a table top having a generally central opening therein and means depending from said table top to space the same above a support surface;

(B) a movable assembly including a horizontally extending rack structure having a size and shape generally approximating those of said opening; and

(C) drive means for selectively moving said rack structure between a first or stowed position in which it is positioned substantially below said table top and a second or raised position in which it is positioned adjacent said opening, said drive means comprising:

(1) a tubular member centrally upstanding on the generally central axis of said fixed assembly,

(2) an elongated upright screw journaled within said tubular member for rotation about said central axis,

(3) a reversible motor carried by said fixed assembly,

(4) means operative in response to actuation of said motor to rotate said screw,

(5) a nut threaded on said screw, said nut having a size and shape in transverse cross section corresponding to the inner periphery of said tubular member and having a substantial vertical extent to provide a large area, annular sliding bearing interface between said nut and said tubular member, and

(6) diametrically opposed arms extending radially outwardly from said nut and passing through said opposed slots in said tubular member for lifting engagement with said rack structure, whereby the sliding large area interface of said nut with the inner periphery of said tubular member and the sliding engagement of said arms within said slots coact to provide a smooth upward and downward movement of said rack structure in response to selective actuation of said motor.

2. A table assembly according to claim **1** wherein said table assembly further includes means operative in response to arrival of said rack structure at its said stowed position to transfer the weight of said rack structure to said fixed assembly and thereby divorce said weight from the drive means.

3. A table assembly according to claim **1** wherein:

(D) said drive means further includes a sleeve drivingly connected to said rack structure and slidably received over said tubular member and having diametrically opposed vertically extending slots therein in circumferential alignment with the diametrically opposed slots in said tubular member, whereby the outer ends of said arms may engage the upper ends of the slots in said sleeve to provide lifting engagement with said sleeve and thereby with said rack structure; and

(E) said fixed assembly includes stop means adapted to be engaged by said sleeve upon arrival of said rack structure at its said stowed position, whereby the deactuation of said motor may be timed to occur simultaneously with or immediately following such arrival so that the arms may move downwardly a small distance within the slots in said sleeve to allow the fixed assembly to assume the weight of said rack structure and divorce said weight from the drive means.

4. A table assembly according to claim **1** wherein:

(A) said tubular member is circular in cross section;

(E) said nut is circular in cross section and has a height at least as great as its diameter; and

(F) said arms comprise bolt members threaded into diametrically opposed threaded sockets in said nut.

5. A table assembly according to claim **3** wherein:

(G) said arms comprise bolt members threaded into diametrically opposed threaded sockets in said nut; and

(H) said bolt members terminate in the cylindrical plane of said sleeve in generally circular heads having a diameter approximating that of said slots in said sleeve.

6. A table assembly according to claim **4** wherein said nut is formed of a plastics material and said tubular member is formed of a metallic material.

7. A table assembly according to claim **1** wherein:

(D) said depending means comprises a continuous skirt depending downwardly from said table top for engagement with said support surface;

(E) said fixed assembly further includes a transverse panel member positioned within said skirt adjacent, but in spaced relation to, the bottom edge of said

skirt to define a well above said transverse panel member into which said movable assembly is lowered to achieve its stowed position, the skirt being open below said transverse panel member down to said support surface to define a readily accessible power train space between said transverse panel member and said support surface;

(F) said screw projects at its lower end downwardly through said transverse panel member into said power train space;

(G) the output shaft of said motor is positioned within said power train space on a generally vertical axis offset with respect to the central axis of said screw; and

(H) speed reduction means are positioned within said power train space to drivingly interconnect said output shaft and said screw.

8. A table assembly according to claim **7** wherein said motor is a reversible electric motor carried by said transverse panel member with its output shaft projecting downwardly into said power train space on said offset vertical axis.

9. A table assembly comprising:

(A) a fixed assembly including

(1) a table top having a generally central opening therein,

(2) a continuous skirt depending downwardly from said table top for engagement with a support surface, and

(3) a transverse panel member positioned within said skirt adjacent, but in spaced relation to, the bottom of said skirt to define a well above said panel member accessible through said opening, the skirt being open below said transverse panel down to said support surface to define a power train space between said transverse panel member and said support surface accessible by a simple tilting movement of said fixed assembly;

(B) a movable assembly including

(1) a horizontally extending rack structure having a size and shape generally approximating those of said opening, and

(2) a hollow post centrally upstanding from said rack structure and rigid therewith;

(C) means mounting said movable assembly for movement between a first or stowed position in which said rack structure is positioned within said well substantially below said table top and a second or raised position in which said rack structure is positioned adjacent said opening;

(D) a shaft member centrally journaled in said transverse panel member and extending above said panel member upwardly within said hollow post and downwardly below said panel member into said power train space;

(E) means operative in response to selective rotary movement of said shaft to selectively move said movable assembly between its stowed and raised positions;

(F) a reversible motor carried by said fixed assembly and including an output shaft positioned within said power train space; and

(G) speed reduction means positioned within said power train space to drivingly interconnect said output shaft and said shaft member.

10. A table assembly according to claim **9** wherein said motor is a reversible electric motor carried by said transverse panel member with its output shaft projecting downwardly into said power train space on a generally vertical axis offset with respect to the central axis of said shaft.

References Cited

UNITED STATES PATENTS

1,676,108	7/1928	Novak	312—312
1,883,833	10/1932	Tilton	312—312 X
1,893,551	1/1933	Kask	312—312
2,171,084	8/1938	Fasce	312—312
2,895,311	7/1959	Spalvins	312—312
3,028,210	4/1962	Byars	312—312 X
3,065,037	11/1962	Chapman	312—312 X

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312—272, 223