United States Patent

[11] 3,611,953

[72] Inventor **Lorenz Schöttl**
8 Munich 83, Sundergaustrasse 130, Munich, Germany

[21] Appl. No. **824,644**
[22] Filed **May 14, 1969**
[45] Patented **Oct. 12, 1971**

[54] **ROTARY TABLE**
3 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **108/139**
[51] **Int. Cl.** **A47b 11/00**
[50] **Field of Search** 108/94–97, 139–143

[56] **References Cited**

UNITED STATES PATENTS

415,131	11/1889	Tousley	108/139
435,723	9/1890	Barnes	108/139 X
562,169	6/1896	Clay	108/139
913,110	2/1909	Eccleston	108/139
2,062,807	12/1936	Cramer	108/139
2,687,267	8/1954	Copenhaver	108/139 X
2,914,793	12/1959	McMahan, Sr.	108/139 X

Primary Examiner—Bobby R. Gay
Assistant Examiner—Glenn O. Finch
Attorneys—William K. Serp and Baker & McKenzie

ABSTRACT: A rotary table which is particularly adapted for supporting a television receiver during assembly. The rotary table includes a pair of plates adjacently positioned and supported for relative rotation by means of a centrally located trunnion. The outwardly disposed surfaces of each of the plates are formed to define a plurality of radially extending bracing ribs. The outwardly disposed surfaces of at least one of the plates is provided with a plurality of blind holes. These holes are adapted to receive support members so as to allow the table to accommodate the lower surface of a television receiver which is nonuniform in shape. According to an alternate embodiment, the downwardly disposed plate is provided with a plurality of holes extending through the plate and equally spaced about a circular line. The upper plate is provided with an alignment hole. Thus, as the upper plate is indexed with respect to the lower plate, each of the holes in the lower plate are selectively aligned with the alignment hole so as to permit mounting screws to be passed therethrough.

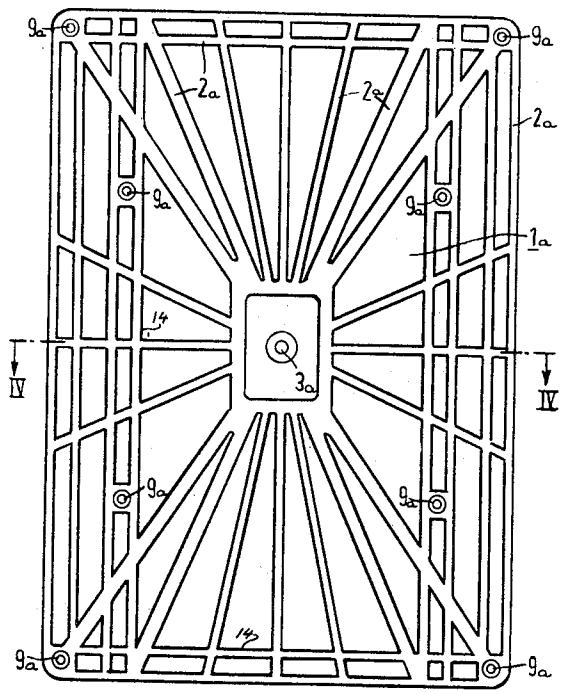


FIG. 1

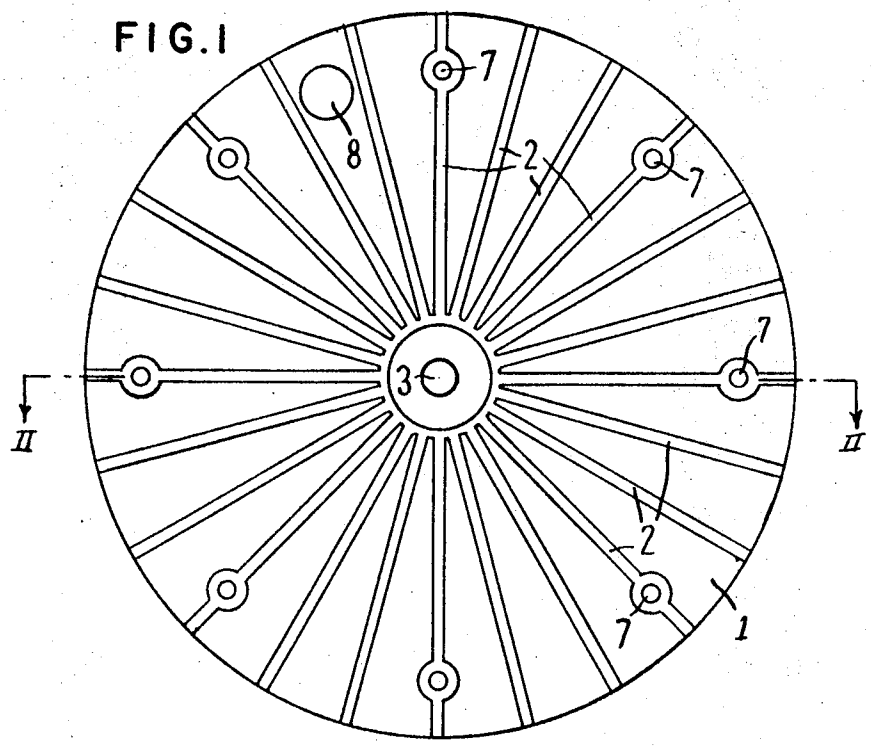


FIG. 2

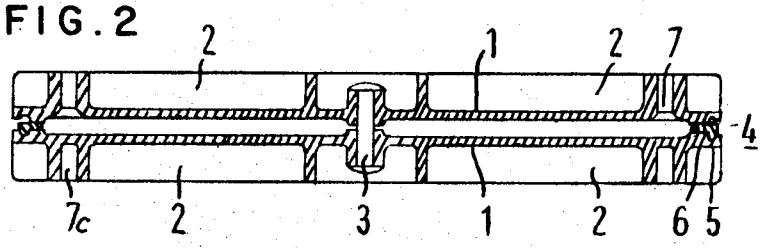


FIG. 3

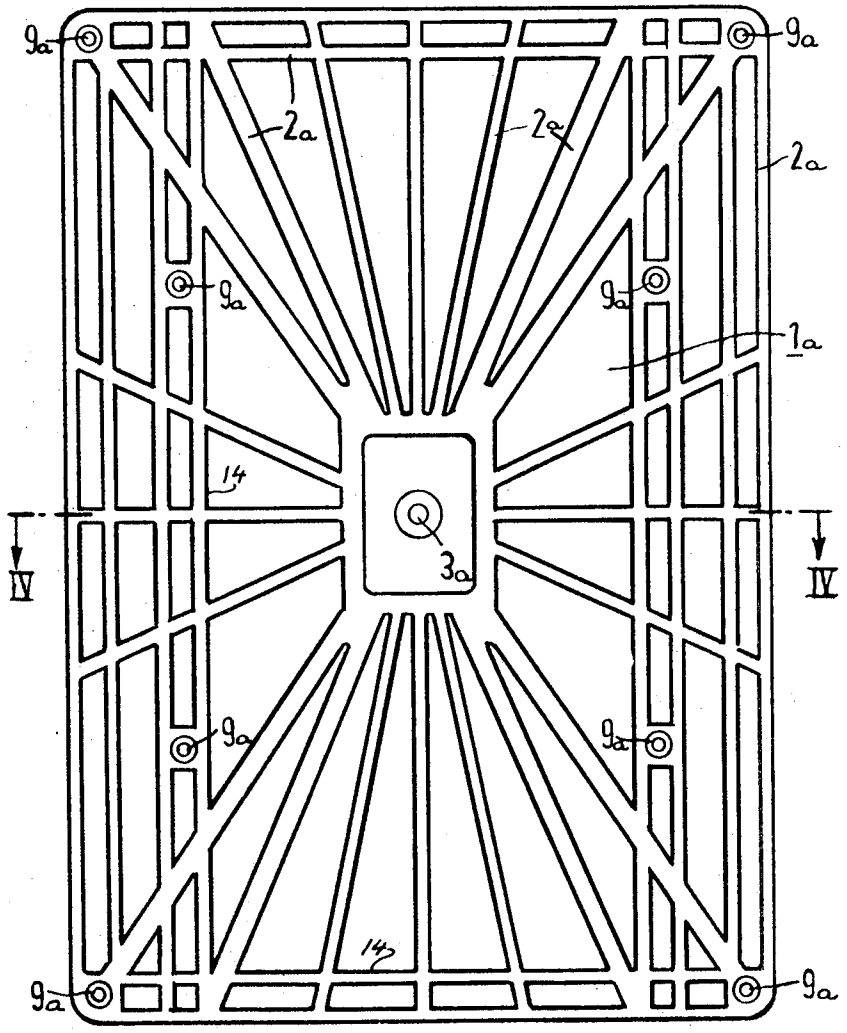


FIG. 4

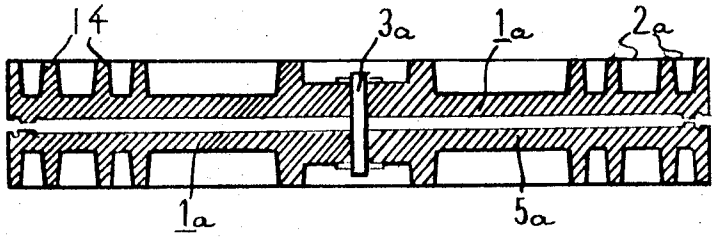


FIG. 5

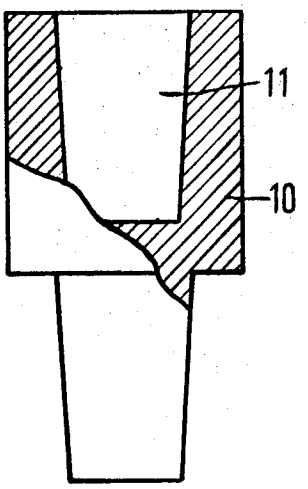
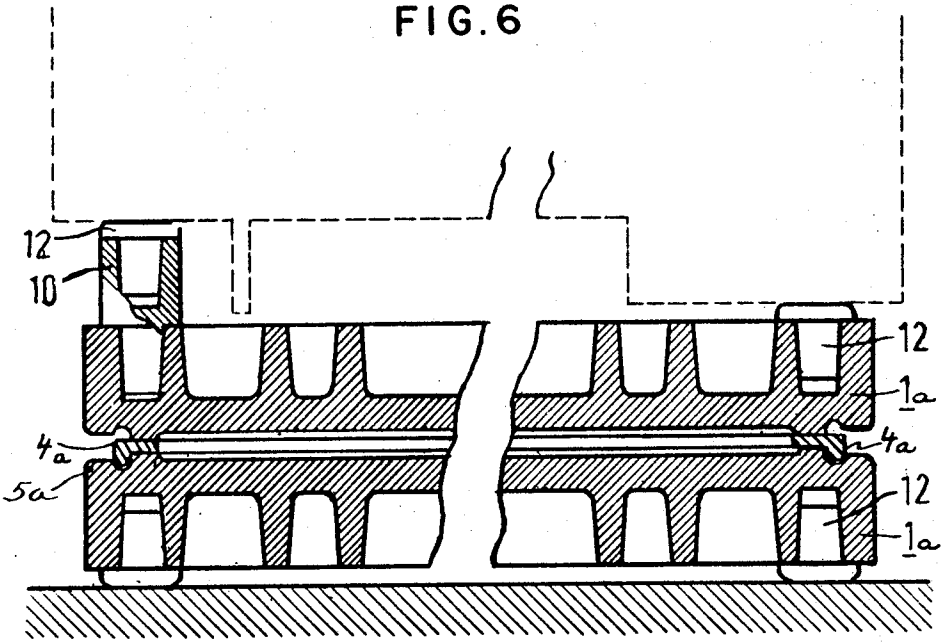


FIG. 6



ROTARY TABLE

BACKGROUND OF THE INVENTION

This invention generally relates to a rotary table for supporting various devices during assembly and is particularly adapted for supporting television receivers during their assembly. The illustrated embodiment includes two plates of plastic material each defining, on one of their surfaces, radially extending bracing ribs. The plates are rotatably connected by means of a central trunnion with the bracing ribs projecting from their outwardly disposed surfaces.

The rotary table may be used either as an independent support for objects which are to be rotatably supported such as television receivers, loudspeakers, as part of the regular construction for rotatable pieces of furniture or as a support base for an instrument assembly table. With respect to the preferred embodiment, holes are drilled through one of the plates which comprise the table. The holes are equally disposed about the circumference of a circle, the center of which is concentric with the axis of the support trunnion. An assembling aperture is provided on the remaining plate and located on the same circle as are the holes so that by indexing one plate relative to the other, each hole can be aligned with the assembly aperture to permit securing the lower plate onto a mounting surface. When the table is to be portable the holes, with the exception of the assembling aperture, serve to receive feet, preferably made of soft rubber, which prevent slipping of the rotary table with respect to its support surface and additionally prevent marring of the surface.

It has been found that untreated bearing surfaces produce substantial sliding friction which interferes with the smooth operation of the rotary table. Therefore, it is an object of this invention to provide a rotary table including plates which can be smoothly rotated with respect to each other.

It is an additional feature of the illustrated embodiments that a ring displaying low-friction characteristics is positioned coaxially with respect to the central trunnion between the two plates. The ring includes at least one circular projection which extends into a corresponding angular groove molded in a surface of the plate. The illustrated embodiments provide a rotary table displaying low-friction characteristics and high reliability. Alternatively, a common roller bearing may be used between the two discs which would be considerably more complicated and would generally require greater maintenance.

The ring is preferably coated with a suitable lubricant such as tetrafluoroethylene polymer, a plastic material commercially sold under the trademark "Teflon." An alternative material which has been found to be particularly suitable is graphite which has the additional feature of being highly resistant to wear. In order to maintain minimum surface loading upon the ring, it is suggested that the ring have an outer diameter which nearly corresponds with the maximum diameter of the plastic discs. In this manner, the load is distributed over the greatest possible surface area.

The illustrated embodiments are particularly adapted to serve as supports for a television receiver. In order to provide greatest stability, the overall size of the table should not be significantly smaller than the base of the receiver. When the television receiver is relatively large, the difficulty of providing a stable support increases. In order to maintain satisfactory stability, an alternate embodiment includes a rotary table, the plates of which are rectangularly shaped and define, in addition to the aforementioned, radially extending bracing ribs, longitudinal as well as transverse ribs which extend parallel to the longitudinal and transverse edges of the plate. These radial, longitudinal and transverse bracing ribs provide maximum resistance to bending under an applied load. Due to the rectangular shape of the plates, the supporting area is almost double the size which would be provided by using the disc-shaped plates described in the preferred embodiment.

With respect to the alternate embodiment, it is preferable to provide the upper rectangular plate with blind holes into which support members can be inserted. Such support members serve to compensate for variations in the level of the bottom surfaces of the television receiver. Usually the base of a television receiver is nonuniform. The above-mentioned supporting members are adapted to compensate for such nonuniformities thereby supporting the receiver in a level position.

Various features and advantages of this invention will become apparent from the following description of the preferred embodiments as read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a rotary table embodying certain features of this invention.

FIG. 2 is a full cross-sectional view of the apparatus illustrated in FIG. 1 taken along the line II—II.

FIG. 3 is a plan view of an alternate embodiment illustrating certain features of this invention.

FIG. 4 is a sectional view taken along the line IV—IV of FIG. 3.

FIG. 5 is an enlarged view of a support member for use in combination with the rotary table illustrated in either FIGS. 3 or 4.

FIG. 6 is a sectional view of a rotary table including the support member illustrated in FIG. 5 with the outline of the base of a television receiver shown in phantom for purposes of illustration.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

Referring to the embodiments illustrated in FIGS. 1 and 2, the rotary table includes two circularly shaped plates or discs 1 which may be constructed of any suitable material such as plastic. Upon one side of each of the discs and extending radially are bracing ribs 2. The two discs 1 are rotatably connected to a central trunnion 3 with the bracing ribs 2 facing outwardly. To assure free sliding movement between the plates, a lubricating means is provided between the plastic discs 1. According to the illustrated embodiment, a slide ring 4 is placed between the discs and is positioned concentrically with the axis of the central trunnion 3. The ring may be constructed on "Teflon" or preferably graphite and defines, at its outer edge, a circular, rounded projection 5 which is received in a circular channel 6. The channel 6 is molded into the upwardly disposed surface of the lower disc 1 and displays substantially the same cross-sectional profile as the projection 5.

Each of the discs 1 includes a plurality of through holes 7 and blind holes 7*c* which are arranged upon a circular path positioned concentrically with respect to the axis of the trunnion 3. The holes 7 and 7*c* are equally spaced and aligned with the rib enlargements to obtain maximum rigidity. Further, an assembling aperture 8 is provided so that as one disc is rotated with respect to the other, each of the holes 7 can be brought into alignment. This feature allows a screw to be inserted through the assembly aperture 8 into each of the holes 7 so that the rotary table may be secured to a selected surface without having to remove the discs from the supporting trunnion 3.

The alternate embodiment illustrated in FIGS. 3 and 4 includes two substantially equal plates 1*a* each of which is rectangular in shape. The plates 1*a*, which may also be constructed of plastic material, define upon their outwardly disposed surfaces, bracing ribs 2*a*. The plates are rotatably connected by a central trunnion 3*a*. As is apparent from FIG. 3, in addition to the radially positioned bracing ribs 2*a*, additional bracing ribs 14 are provided which run parallel to the longitudinal and transverse edges of the rectangular discs 1*a*. The plates 1*a* are provided with a plurality of blind holes 9*a* which are aligned with the enlargements in the bracing ribs 2*a* and 14. The blind holes 9*a* are shaped to receive feet 12 constructed of a suitable material such as rubber. According to FIG. 6, the upper plate is supported upon the lower plate by means of a slide ring 4*a* sandwiched between them and secured to channel 5*a*.

As previously mentioned, the embodiment illustrated in FIGS. 3 and 4 provides maximum stability. The bracing ribs 2*a* and 14, which respectively extend radially and parallel to the longitudinal and transverse edges, provide an extra ordinarily high mechanical rigidity to the plates 1*a*. The holes 9*a* are advantageously arranged so that at least one hole is located at each of the four corners of the plates 1*a*.

Thus, when an object such as a television receiver chassis is placed upon the table, the object will rest almost exclusively upon the supporting pins 15 which are inserted into the holes. The weight of the receiver is transmitted through the slide ring 4*a* to the object which supports the rotary table. Thus, it will be noted that the plates 1*a* are not subject to bending loads under normal conditions. During relative rotation of the plates, the television receiver which is placed on the rotary table is supported by the supporting members 10 which are inserted into the outer holes 9.

The rotary table, according to FIGS. 3 and 4, is particularly adapted for the supporting of television receivers. Since such receivers frequently do not have a flat bottom surface, supporting members 10 are provided for insertion into the holes 9*a* of the rotary table and serve to compensate for such differences in level of the bottom surface of the television receiver. Such a supporting member is shown in FIG. 5 and consists preferably of the same construction material as used for the plates 1*a*. A conically shaped blind hole 11, having a shape similar to the holes 9*a* and into which a rubber stopper 12 is inserted, is centered upon the upwardly disposed surface of the supporting members 10.

The arrangement and significance of the supporting members 10 is apparent from FIG. 6 in which the bottom surface of a television receiver is indicated in phantom. This bottom surface displays an irregular shape. Rubber stoppers 12 are inserted into the blind hole 11 of the supporting members 10. The supporting members 10, in turn, are inserted into the holes 9*a* to prevent sliding of the rotary table support with respect to the television receiver.

Although only two embodiments of this invention have been shown and described, it should be understood that the details of the construction illustrated may be altered without departing from the scope and spirit of the invention.

I claim:

1. A rotary table particularly adapted for supporting a television receiver during assembly comprising first and second adjacently positioned plates,

said first plate defining a circular channel upon a first surface thereof, said first surface of said first plate being positioned adjacent a surface of said second plate,

radially extending bracing ribs formed upon outwardly disposed surfaces of each of said first and second plates, a support trunnion centrally disposed with respect to each of said plates so as to facilitate relative rotational movement between said plates,

a ring displaying low surface friction characteristics, said ring displaying low surface friction characteristics, said ring being positioned coaxially with said trunnion and at least a portion thereof being received within the circularly shaped channel so as to facilitate relatively low frictional rotational movement between said plates, said outwardly disposed surfaces of said first and second plates having openings which serve to receive support members, wherein each of said plates are rectangular in shape and further define linear bracing ribs which extend parallel to the edges of said rectangular plate,

and a plurality of support members are positioned within said openings.

2. A rotary table in accordance with claim 1 wherein said ring is constructed of graphite.

3. A rotary table in accordance with claim 1 wherein said openings defined by the outwardly disposed surfaces of said plates are located proximate the corners of said plates.