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ROTARY SHELF ASSEMBLY MECHANISM

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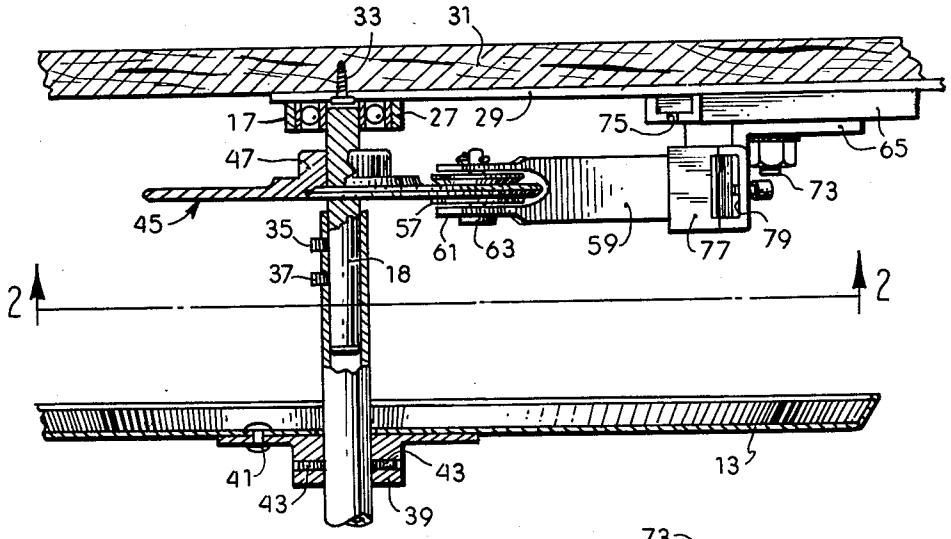


FIG. 1

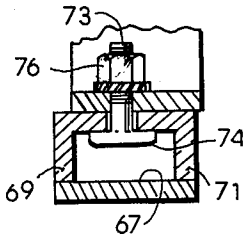


FIG. 3

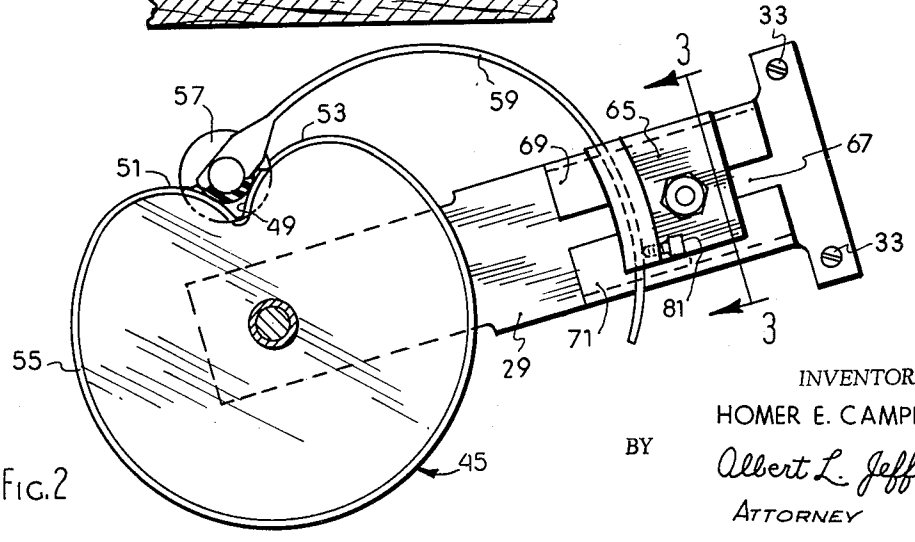


FIG. 2

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ROTARY SHELF ASSEMBLY MECHANISM

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This invention relates to a rotary shelf assembly, and more particularly it relates to a shelf assembly used in corner areas of kitchen cabinets.

The primary object of this invention is to provide a rotary shelf assembly wherein a novel mechanism serves to provide a firm stop to position the shelf or shelves in a predetermined position, and to provide a rotating assembly which will require equal pressure to turn the mechanism in either direction and to hold the shelf in substantially any position desired.

A further object of the invention is to provide a novel spring mechanism adapted to be adjusted to provide equal pressure on a cam so that the shelf assembly mechanism may be rotated in either direction with equal results.

Another object of the invention is to provide a rotary shelf assembly mechanism for use in corner areas of kitchen cabinets primarily known as a lazy Susan wherein no latch mechanism is required to hold the door in a predetermined position.

Other objects and features of the present invention will become apparent from a consideration of the following description which proceeds with reference to the accompanying drawing in which a selected example of construction is set forth to illustrate the invention and wherein:

FIGURE 1 is a cross sectional view of the rotary shelf assembly mechanism; and

FIGURE 2 is a view taken along line 2—2 in FIGURE 1.

FIGURE 3 is a detailed view taken along line 3—3 in FIGURE 2.

Referring now to the drawing, the reference numeral **11** designates a rotary shelf assembly with a portion of the cabinet removed. A rotary shelf **13** which is generally circular in shape having a cutout portion, or a V-shaped portion corresponding to cabinet door (not shown) which normally fits into the corner area of the kitchen cabinet. A detail view of the kitchen cabinet or shelf is not disclosed because they are conventional in the art.

A vertical shaft **15** is mounted for rotation about its central axis by means of a thrust and roller bearings **17** and **19**. A bearing housing **21** for holding the bearing **19** is mounted to the floor **23** of the cabinet by screws **25**. The bearing **17** is mounted in a bearing housing **27** attached to a plate **29** which is secured to the cabinet top **31** by screws **33**. The shaft **15** is provided with a telescoping member **18** for adjustment of the shaft vertically within the cabinet. A stub shaft **16** is disposed in the other end of the shaft and adapted to rotate in the bearing **19**. When the shaft is extended to its proper position it is secured by a pair of screws **35** and **37**.

The tray **13** is provided with a hub **39** secured thereto by a rivet **41**. The tray and hub are adjustable vertically on the shaft **15** by allen set screws **43**.

A rotatable cam **45** having a hub portion **47** is mounted on the telescoping member **18** substantially parallel to the shelf **13**. The cam **45** is provided with a shallow circular peripheral notch **49** and the gradual rise portion **51** and a general rise portion **53** which are substantially equal. The cam is provided with a rest portion **55** connecting the highest points of the rise portions **51** and **53**. A follower roller **57** constructed of hard rubber is mounted on a leaf spring **59** having a fork portion **61**. The follower **57** is secured thereon by means of a pin **63**. The leaf spring **59** is disposed substantially in the plane of the cam and arched to follow the periphery of the cam **45**. The leaf spring **59** is held in the plane of the cam by

means of a holder or mounting bracket **65** which is slidable in a track **67** formed by a pair of angle irons **69** and **71** connected to the plate **29**. The bracket **65** is secured in the track **67** by means of a bolt **73** having a head **74** which is larger than the slot **75** formed by the angle irons **69** and **71**. The bracket **65** is provided with a side member or projection **77** having an opening or passageway **79** extending therethrough. The leaf spring **59** is secured in the passageway **79** by means of an allen set screw **81**.

Operation

The vertical shaft, including the telescoping members **16** and **18**, is positioned in the corner area of the kitchen cabinet and the shelf **13** is positioned on the shaft **15** by the allen set screws **43** so that the notched portion (not shown) is disposed in position with relation to the doors of the cabinet (also not shown). The follower **57** is then positioned on the periphery of the cam by sliding the bracket **65** in the track **67** radially to or away from the cam **45**, and secured therein by means of the bolt **73**. The leaf spring is then adjusted in the passageway **79** so that the proper regulated pressure of the follower roller is obtained against the cam **45**. The adjustment of the holder radially toward and away from the cam by means of the bracket **65** and the adjustment of the leaf spring in the passageway **79** provides the proper adjustment for the cam follower **57** so that the follower has equal pressure on the two rise portions **51** and **53** of the cam so that the cam will rotate with equal ease in either directon. As the cam **45** is rotated the leaf spring **59** will be elongated as the follower rises on either the rise portion **51** or **53** so that pressure of the roller **57** on the cam periphery will be decreased thereby making it easier to start the rotation of the shelf assembly. It has been found in practice that when the shelf **13** is rotated the cam follower, when disposed on the rest portion **55**, will hold the tray in any predetermined position desired by the operator and it will not automatically return to the notched portion **49**. It is believed that this is accomplished by proper tension being placed on the leaf spring **59** by the two adjustments above described and the fact that roller **57** is constructed of rubber which will flatten out to hold the cam in the predetermined position.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A rotary shelf assembly comprising, in combination:
(*a*) a vertical shaft mounted for rotation about its central axis,
(*b*) at least one substantially circular shelf mounted on said shaft,
(*c*) a cam mounted on said shaft substantially parallel to said shelf,
(*d*) said cam having a shallow circular peripheral notch and having a gradual rise portion disposed on each side of said cam,
(*e*) said cam having a rest portion connecting the highest points of said rise portions and merging therewith,
(*f*) a follower roller for said cam,
(*g*) a leaf spring disposed substantially in the plane of the cam and arched to follow generally the periphery of the cam,
(*h*) means for rotatably mounting said roller on one end of said spring with its axis substantially parallel to that of the shaft,
(*i*) a holder for the other end of said spring,

(*j*) means mounting said holder for adjustment in a substantially radial path toward and away from said cam,

(*k*) said holder having means defining a passageway through which the other end of the spring is passed, said passageway being substantially perpendicular to said radial path,

(*l*) said holder having means for securing said spring in the passageway, whereby

(*m*) the adjustment of said holder radially toward and away from said cam and the adjustment of the spring in the passageway serving jointly to regulate the pressure of said follower roller against the cam notch to provide a firm stop and to equalize the pressure on the two rise portions of the cam so that the cam will rotate with equal ease in either direction.

2. The combination as set forth in claim 1 wherein:

(*a*) said shaft comprises two axially aligned telescoping portions,

(*b*) said cam and shelf being mounted on the center portion of the shaft, and

(*c*) means for connecting the two axially aligned portions of the shaft so that they will rotate together.

3. A rotary shelf assembly comprising, in combination:

(*a*) a vertical shaft mounted for rotation about its central axis,

(*b*) at least one substantially circular shelf mounted on said shaft,

(*c*) a cam mounted on said shaft substantially parallel to said shelf,

(*d*) said cam having a shallow circular peripheral notch and having a gradual rise portion disposed on each side of said cam,

(*e*) said cam having a rest portion connecting the highest points of said rise portions and merging therewith,

(*f*) a follower roller for said cam,

(*g*) a leaf spring disposed substantially in the plane of the cam and arched to follow generally the periphery of the cam,

(*h*) means for rotatably mounting said roller on one end of said spring with its axis substantially parallel to that of the shaft,

(*i*) adjustable mounting means for the other end of said spring,

(*j*) said mounting means including a track disposed in a radial path with respect to the cam,

(*k*) said mounting means including an L-shape member adapted to slide on said track and having a passageway through one side of the member to receive the spring so that the other end of the spring is positioned substantially perpendicular to the track, whereby

(*l*) the adjustment of the mounting means on the track toward and away from the cam and the positioning of the spring in the passageway of the L-shape member the pressure of said follower roller is regulated to provide a firm stop and to equalize the pressure on the two rise portions of the cam so that the cam will rotate with equal ease in either direction.

4. The combination as set forth in claim 3 wherein:

(*a*) said shaft comprises two axially aligned telescoping portions,

(*b*) said cam and shelf being mounted on the center portion of the shaft,

(*c*) a thrust and roller bearing mounted at each end of the shaft, and

(*d*) means for connecting the two axially aligned portions of the shaft so that they will rotate together.

5. The combination as set forth in claim 4 wherein:

(*a*) a mounting plate is provided to support the track and one of the thrust and roller bearings.

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