Jan. 13, 1970 M. PEARLSTINE 3,489,157

TILTABLE BEACH UMBRELLA

Filed May 27, 1968 2 Sheets-Sheet 1

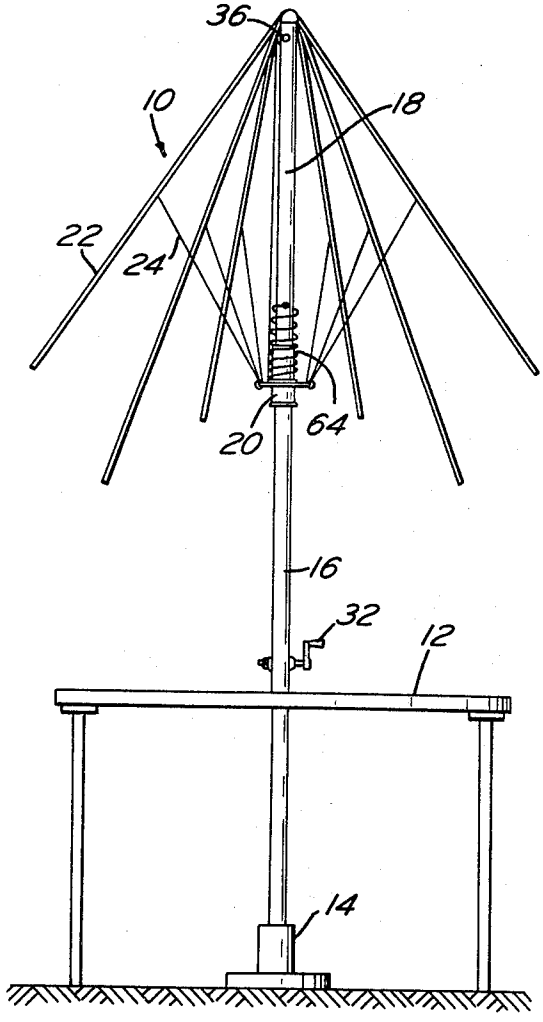


FIG. 1

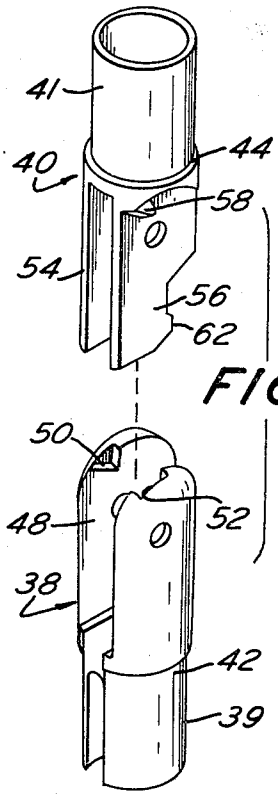


FIG. 4

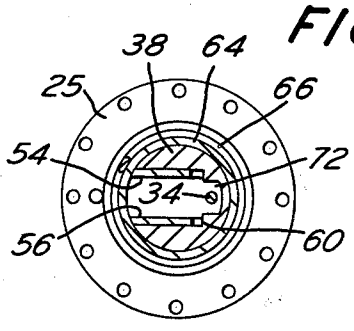


FIG. 5

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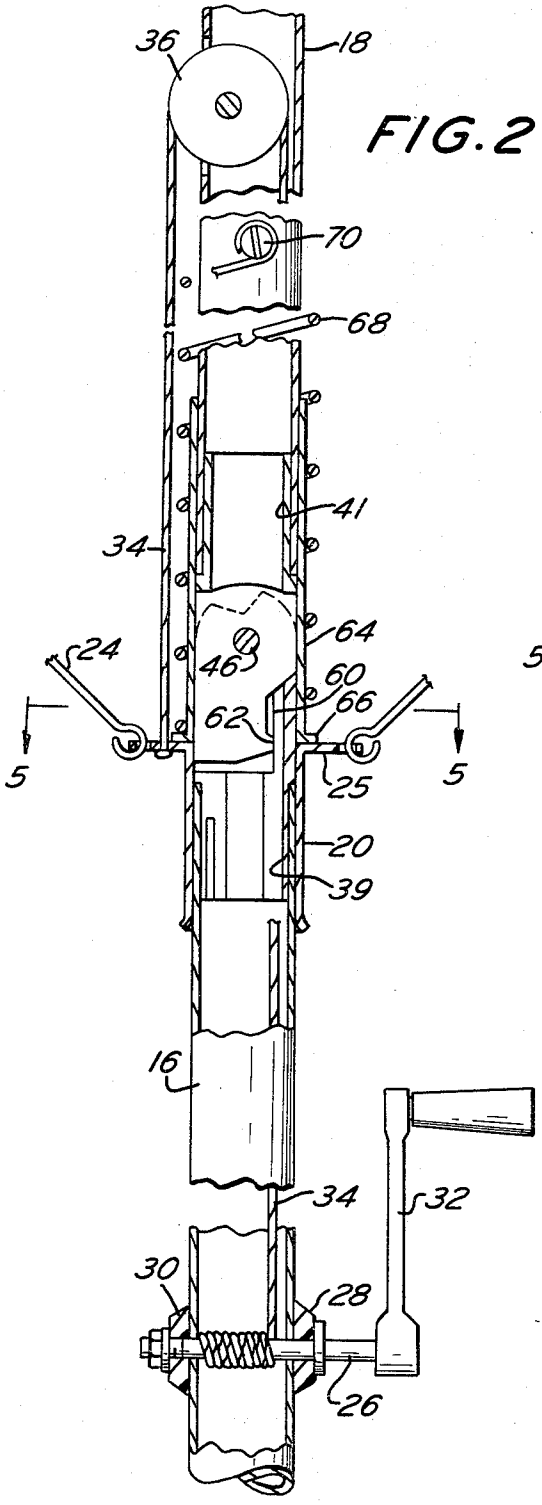


FIG. 2

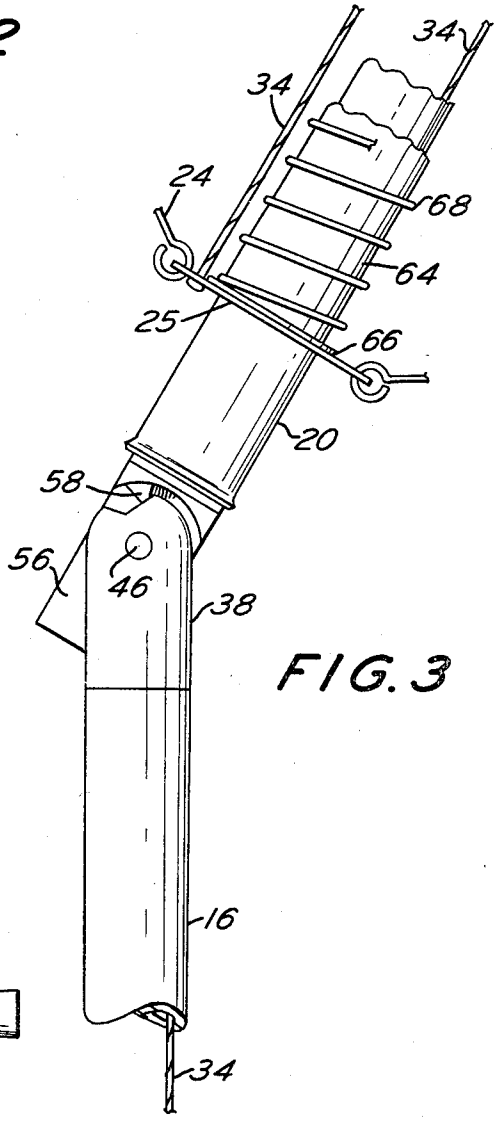


FIG. 3

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TILTABLE BEACH UMBRELLA

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U.S. Cl. 135—20 4 Claims

ABSTRACT OF THE DISCLOSURE

A tiltable beach umbrella is disclosed wherein a main tubular support includes upper and lower portions hinged together. A sleeve is telescoped over the hinged joint to maintain the portions in alignment. A collar surrounding the support is connected to the ribs for supporting the fabric. A cord has one end anchored to a rotatable member on the lower end of the support, the cord extends through the support and out of the upper end of the support, and then downwardly to the collar. As the cord is wound up, it raises the collar so as to expose the hinged joint whereby the umbrella may tilt.

This invention relates to an automatically tiltable beach umbrella of the type shown in my Patent 3,311,119. While the umbrella as disclosed in such patent performs satisfactorily, the present invention has been devised in an attempt to reduce the overall cost of the umbrella. The present invention eliminates the need for threaded shafts and meshing gears as disclosed in said patent while attaining the overall result in a different manner.

In accordance with the present invention, the upper portion of a tubular support is caused to tilt with respect to a lower portion thereof by means of winding up a flexible member such as a nylon cord. One end of the cord is anchored to a rotatable member on the lower portion of the tubular support. The cord extends through both the upper and lower portions of the support and emerges from the upper end of the support. The other end of the cord is anchored to a collar slidably supported by the tubular support. As the cord is wound up, the fabric supporting ribs pivot to their expanded position and the collar is raised until it exposes the pivoted joint. Further winding of the cord causes the upper portion of the tubular support to tilt with respect to the lower portion.

It is an object of the present invention to provide a novel automatically tiltable beach umbrella which is inexpensive and reliable.

It is another object of the present invention to provide an automatically tiltable beach umbrella structurally interrelated in a manner whereby opening of the umbrella and tilting is effected by winding up a chord on a rotatable member of the tubular support.

The above and other objects as may hereinafter are accomplished in a manner which is simple while at the same time sufficiently durable and has sufficient strength so as to resist wind and other forces which might interfere with the proper usage of the umbrella.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a side elevation view of a typical beach umbrella and stand without the umbrella fabric and with the umbrella in a collapsed position.

FIGURE 2 is an enlarged detail view, partly in section, of the tubular support for the umbrella intermediate its ends.

FIGURE 3 is a partial elevation view showing the upper portion of the tubular support tilted with respect to the lower portion thereof.

FIGURE 4 is an exploded view of the joint structure.

FIGURE 5 is a sectional view taken along the line 5—5 in FIGURE 2.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a tiltable beach umbrella designated generally as **10**. The umbrella **10** includes a table **12**. The umbrella **10** includes a tubular support having a lower portion **16** and an upper portion **18**. Portion **16** extends through a hole in the table and is supported by a stand **14**.

A collar **20** is slidably supported by the lower portion **16**. Each of the fabric supporting ribs **22** is pivotably coupled to a flange **25** on collar **20** by means of rods **24**. Each of the ribs **22** is pivotably connected to the upper end of portion **18**.

As shown more clearly in FIGURE 2, a shaft **26** extends through the lower portion **16** and is supported by bearings **28** and **30** made from a polymeric material such as nylon. A friction fit between the bearings and the shaft **26** results in the shaft remaining in any manually indexed position. A flexible member such as nylon cord **34** has one end anchored to shaft **26** and is adapted to be wrapped therearound by rotation of handle **32**.

The cord **34** extends through the lower portion **16** and the upper portion **18**. A pulley **36** is rotatably supported by portion **18** adjacent the upper end thereof as shown more clearly in FIGURES 1 and 2. The cord **34** extends around the pulley **36**, and merges out of the upper portion **18**, extends downwardly along the outer periphery of portion **18**, and has its free end anchored to the flange **25** on collar **20**. Hence, rotation of handle **32** will raise or lower the collar **20** as will be made clear hereinafter.

The portions **16** and **18** of the tubular support are hinged together by sleeve structures **38** and **40**. Sleeve structure **38** includes a tubular portion **39** which is force-fit into the upper end of portion **16**. Likewise, sleeve structure **40** has a tubular portion **41** which is force-fitted into the lower end of portion **18**. A stop shoulder **42** is provided on sleeve structure **38** and a similar stop shoulder **44** is provided on sleeve structure **40**. Sleeve structures **38** and **40** are pivotably interconnected by a pin **46**.

As shown more clearly in FIGURE 4, sleeve structure **38** is bifurcated so as to have a pair of legs spaced from one another by a slot **48**. The slot **48** extends for the entire length of structure **38** but is wider at the upper end than at the lower end. Notches **50** and **52** are provided in the legs defined by slot **48** and are coextensive with said slot.

Sleeve structure **40** is provided with a pair of legs **54** and **56** adapted to be received within slot **48**. Limit stops **58** are provided on the sleeve structure **40**. Each limit stop **58** is adapted to be received within one of the notches **50** and **52**. The limit stops **58** cooperate with an end face of the notches to limit the pivotable extent of the portion **18** with respect to the portion **16** as shown more clearly in FIGURE 3.

As shown more clearly in FIGURES 2 and 5, the structure **38** is provided with vertical limit stop surfaces **60** which are adapted to contact a projection **62** on each of the legs **54** and **56**. When projections **62** contact the surfaces **60**, the structures **38** and **40** are coaxial and aligned with one another. The structures **38** and **40** are maintained coaxial and aligned with one another by means of a locking sleeve **64** telescoped over at least a portion of the joint.

Locking sleeve **64** has a radially outwardly directed flange **66** which overlies flange **25** on collar **20**. Collar **20** and sleeve **64** are in abutting end-to-end engagement with one another.

A helical coil spring **68** surrounds the locking sleeve **64**.

One end of the coil spring **68** abuts the flange **66** on locking sleeve **64**. The other end of the coil spring **68** is anchored to the upper support portion **18** by means of a screw **70**.

The operation of the tilting beach umbrella **10** is as follows:

It will be assumed that the fabric supporting ribs **22** are collapsed. Hence, the collar **20** will be in its lowermost position. As the handle **32** is turned, the cord **34** is wound up on shaft **26** and collar **20** is pulled upwardly in sliding contact with the lower support **16**. As the collar **20** moves upwardly, the rods **24** cause ribs **22** to move to an open disposition. Also, as collar **20** moves upwardly, it pushes the locking sleeve **64** upwardly.

Before the collar **20** uncovers the joint, the ribs **22** will assume a completely open disposition. Continued winding of the cord **34** around the shaft **26** will cause the collar **20** to slide upwardly for a sufficient distance so as to uncover the joint whereby legs **54** and **56** may pivot out of the slot **48** about the axis of pin **46**. Cord **34** is connected to flange **25** on collar **20** at a location between the legs **54** and **56** on structure **40**. Hence, continued winding of the handle **32** causes the upper portion **18** to tilt with respect to the lower portion **16** until lugs **58** engage a limit stop surface in the notches **50** and **52**. Thereafter, continued winding of handle **32** has no effect on the disposition of the umbrella. Due to the friction between shaft **26** and the bearings **28** and **30**, the shaft **26** stays in any preset position.

When it is desired to collapse the umbrella, the handle **32** is rotated in an opposite direction so that the cord **34** is unwound from shaft **26**. The spring **68** was collapsed as the sleeve **64** slid upwardly. The spring **68** now expands and slides the sleeve **64** and collar **20** downwardly and cams the structure **40** to an upright disposition until projections **62** engage surface **60**. In order that the cord **34** does not interfere with the tilting operation, structure **38** is provided with a channel **72** within which the cord **34** is disposed. Thereafter, continued unwinding of the cord **34** causes the ribs **22** to collapse to their inoperative position.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof.

I claim:

1. A beach umbrella comprising a main tubular support including an upper and lower portion hinged together at a joint, a collar slidably disposed around said support, a locking sleeve slidably disposed around said support and above the elevation of said collar, said locking sleeve being telescoped over at least a portion of the joint to maintain said upper and lower portions aligned, a flexible member having one end anchored to a rotatable member supported by said lower portion, said flexible member having a major portion of its length disposed within said support, said flexible member extending out of said upper member adjacent the upper end thereof and extending along the outer periphery of said upper portion, the other end of said flexible member being anchored to said collar, fabric supporting ribs connected to said collar so that the ribs assume an open disposition as the collar moves upwardly, spring means biasing said sleeve downwardly to a position wherein said locking sleeve surrounds the joint and prevents the upper portion from tilting with respect to the lower portion until the sleeve is moved upwardly by the collar to a position wherein both the collar and the locking sleeve are above the joint, whereby rotation of said rotatable member winds up said flexible member and causes said collar and locking sleeve to slide upwardly to uncover said joint.

2. An umbrella in accordance with claim **1** wherein said flexible member is a nylon cord, said joint including sleeve structures pivotably coupled together, and said cord extending through said sleeve structures.

3. An umbrella in accordance with claim **2** including a pulley supported by said upper portion of the support, said cord extending around said pulley and through an opening in said upper support adjacent said pulley.

4. An umbrella in accordance with claim **3** including limit stops on said sleeve structures to limit the angle of inclination between the upper and lower portions as well as limiting the aligned position of the body structures.

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PETER M. CAUN, Primary Examiner

U.S. Cl. X.R.

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