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Kitamura et al.

[11] **3,821,542**

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[54] **COLLAPSIBLE TYPE LIGHTING FIXTURE**

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[30] **Foreign Application Priority Data**

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July 24, 1971 Japan 46-65605

[52] **U.S. Cl.** ..... **240/145,** 240/2 C, 240/6.42, 240/81 C

[51] **Int. Cl.** **F21v 17/00**

[58] **Field of Search** ..... 240/81 C, 36, 1.3, 6.42, 240/109, 145

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Assistant Examiner—E. M. Bero

[57] **ABSTRACT**

A device consisting of a lamp fixture which may be collapsed in a manner similar to an umbrella during shipment and easily reassembled by reversing the collapsing process. The shade ribs of the lamp move along the main body of the lamp to achieve the collapsed position. In one embodiment the main body portion has a cavity for enclosing at least a portion of the shade covering when the lamp is collapsed.

4 Claims, 9 Drawing Figures

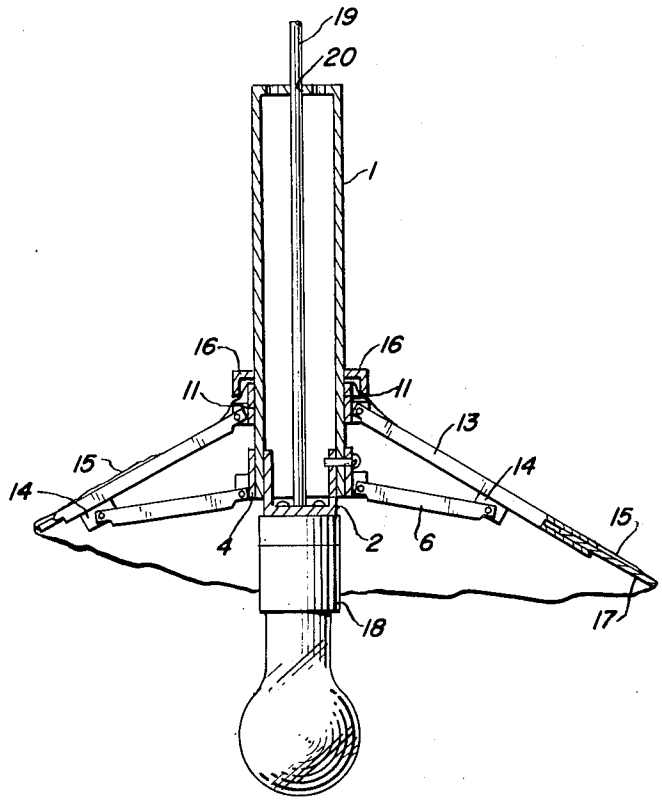


FIG. 1

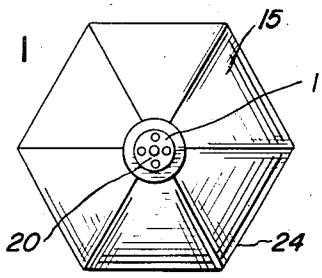


FIG. 2

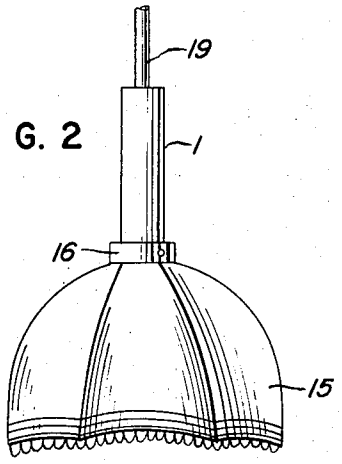


FIG. 3

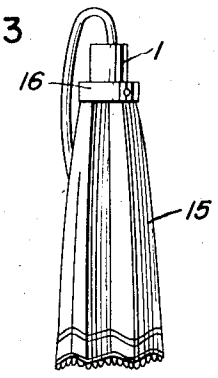


FIG. 4

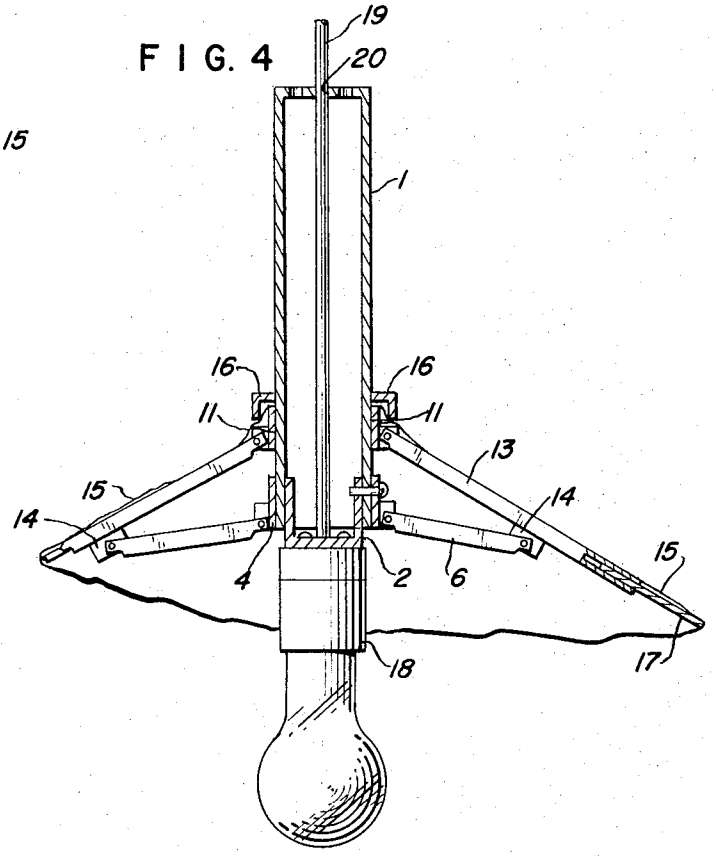
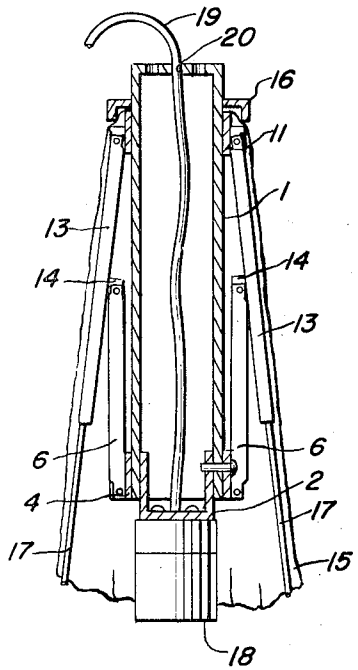


FIG. 5



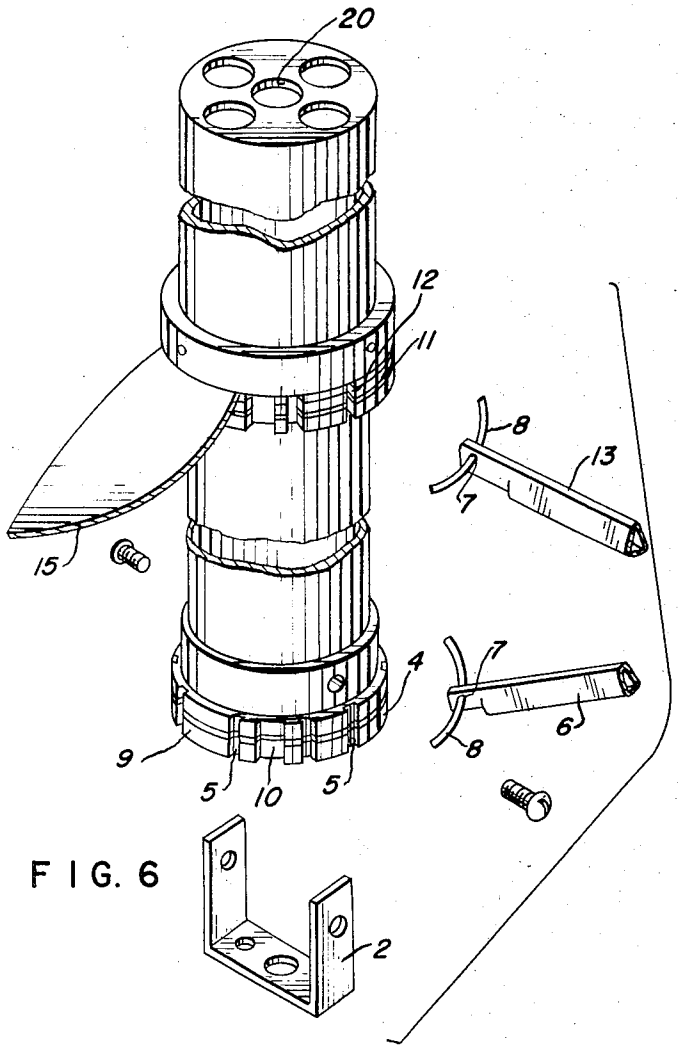


FIG. 6

FIG. 7

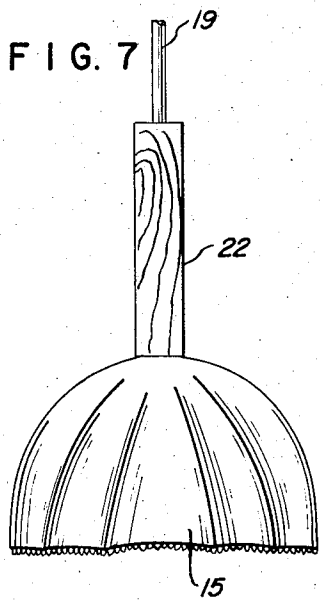


FIG. 8

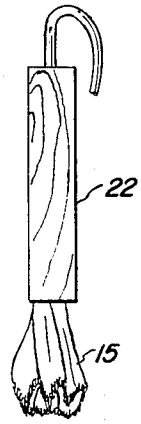
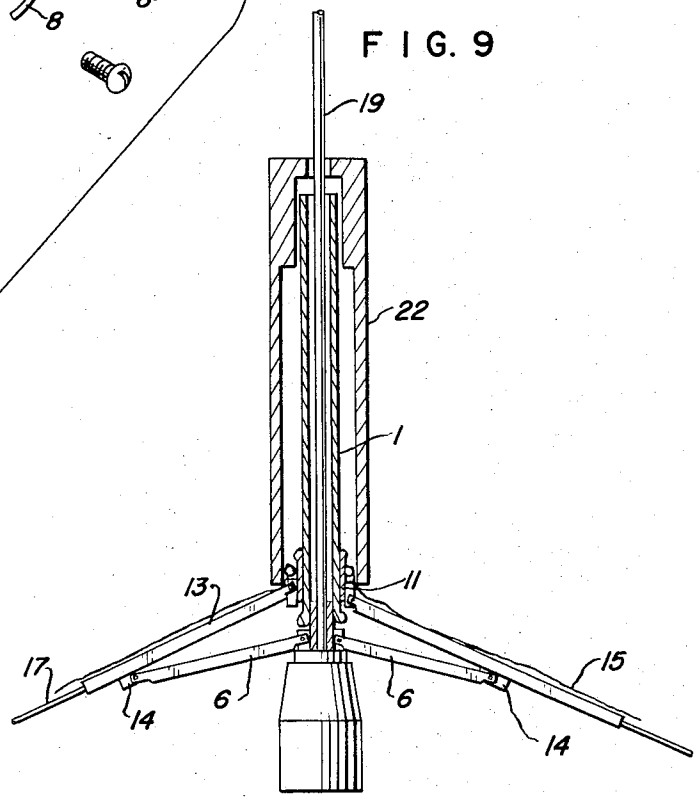


FIG. 9



COLLAPSIBLE TYPE LIGHTING FIXTURE

BACKGROUND OF THE INVENTION

This invention relates to lighting fixtures which are collapsible and adaptable to be shipped in the least expensive manner.

The various lamp fixtures employed in the past have the substantial economic disadvantage of a proportionately large part of their shipping volume being taken up by wasted space. This wasted space is caused by a rigid outer frame containing a large inner volume.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a lighting fixture capable of being easily collapsed to a small volume during shipping and easily reopened for installation.

A further object of the present invention is to provide an improved lighting fixture of simple construction and inexpensive materials which is capable of obtaining a small shipping volume.

A still further object is to provide an improved lighting fixture which may be collapsed during shipping and reopened for installation without the use of any tools.

It is another object of the present invention to provide a collapsible lighting fixture which may be collapsed in an umbrellalike manner during shipping and reopened in a similar manner for installation.

Other objects and advantages will become apparent from the description, drawings and claims.

In the preferred form of the present invention, the lighting fixture has a fixture body of a hollow cylindrical shape with a light bulb socket mounted on the lower end of said fixture body. A movable ring is mounted on the periphery of the fixture body, and is allowed to slide vertically along the body exterior. A plurality of ribs are attached at one end to the periphery of said ring and a shade material is secured to the ribs so that the shade may open and close by moving the ring downward or upward.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference will now be had to the accompanying drawings in which:

FIG. **1** is a top view of a lighting fixture embodying the present invention;

FIG. **2** is a side view of the lighting fixture showing the shade in the open position;

FIG. **3** is a side view of the lighting fixture showing the shade in its closed position;

FIG. **4** is a cross-sectional view of the fixture showing the shade in its open position;

FIG. **5** is a cross-sectional view of the lighting fixture showing the shade in its closed position;

FIG. **6** is an exploded view showing the major components of the lighting fixture;

FIG. **7** is a side view showing another embodiment of the present invention;

FIG. **8** is a view of the fixture shown in FIG. **7** in its closed position; and

FIG. **9** is a cross-sectional view of FIG. **7** showing the shade in its open position.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, FIGS. **1** and **2** illustrate a fixture constructed according to the present invention in its open position. Briefly, the fixture includes a cylindrical body portion **1** and a sliding shade support ring **11** to which a cloth shade (other suitable collapsible materials may also be used for the shade) **15** is attached. FIG. **3** illustrates the fixture in its collapsed position with the ring **11** moved to the top of the cylindrical body **1** and the shade **15** in a collapsed condition around the body **1.**

Sectional views **4** and **5** and exploded view **6,** illustrate the construction and operation of the fixture. Referring to FIG. **4,** a conventional electrical socket **18** is attached to the lower portion of the body **1** by means of a U-shaped angle **2** and a fixed ring **4.** A cord **19** is threaded from the socket **18** through a hole **20** in the body **1.**

As shown in FIG. **6,** the fixed ring **4** is provided on its periphery with several grooves **5** (**6** to **12** grooves are suitable). A plurality of supporting ribs **6** are inserted into the grooves **5** for pivotal movement. The tip of the supporting ribs **6** are attached to the ring **4** with a wire **8** which is passed through holes **7** in the ribs **6** and placed in the groove **9** to form a loop therein; the opposite ends of the wire **7** are tied together. One groove **10** in the fixed ring is provided with means for receiving the knot of the wire thus formed.

A movable ring **11** is mounted for vertical sliding movement on the periphery of the fixture body **1** and movable ring **11,** like the fixed ring **4,** is provided with a number of radially extending grooves **12.** The plurality of shade ribs **13** are attached to the ring **11** in the same manner as the rib **6.** As shown in FIGS. **4** and **5,** each shade rib **13** is provided with a projection **14** on the inner side. The free ends of the supporting ribs **6** are attached to the projections for pivotal movement by any conventional fastening means, e.g., rivets.

When the movable ring **11** is in the upper position on said fixture body **1** as shown in FIG. **5** the supporting ribs **6** are disposed vertically and substantially parallel to said fixture body **1.** The shade ribs **13** are then in a collapsed position close to the fixture body **1.** When the ring **11** is at its lowest position as shown in FIG. **4,** the supporting ribs **6** are in a substantially horizontal position and the shade ribs **13** are biased outwardly to open the shade.

A sector-shaped shade cloth **15** covers the shade ribs **13.** The uppermost edge of the shade cloth **15** is secured to the movable ring **11** by a tightening ring **16,** the ring **16** being fitted so as to tighten onto the movable ring **11.** The middle portion of the shade ribs **13** may either be contained within a portion of the shade cloth **15** (for example they may be sewn into the cloth with sufficient room to slide) or simply abut against the cloth, allowing the elasticity of the ribs to hold them taut against the cloth during opening. The lowermost edge of the cloth **15** is secured to the lower edges of the shade ribs **13,** by any suitable means, for example by sewing. The edges of the shade ribs form a diameter such that the lower edge portion of the ribs may be bent inwardly against the elasticity of the ribs as the shade opens.

With the fixture in the closed position as shown in FIG. **5,** the shade is collapsed around the body **1** for ease of shipment or storage. In order to open the shade, the movable ring **16** is pushed downwardly along the body **1** to a point where the supporting ribs **6** pass the dead point, i.e., an essentially horizontal position. When the supporting ribs **6** pass beyond the dead point,

the upward pressure on the movable ring **11** ceases and the forces on the movable ring tend to positively hold the shade in its open position.

The shape of the shade will depend upon the lower edge diameter **24** of the sector-shaped cloth **15.** The lower half portion of the shade ribs **13** may be made of steel wire **17** to obtain greater elasticity.

FIGS. **7** through **9** illustrate another embodiment of the present invention in which an outer casing **22** of a generally cylindrical shape encloses the fixture body **1,** and the upper tightening portion **11** for the shade cloth **15.** The mechanism for opening and closing the shade is essentially the same as the structure shown in FIGS. **1** through **6,** the only difference being that the body **1** is thinner and the other parts are smaller. The hollow portion of the casing **22** is designed to extend to a sufficient depth within the fixture body such that there exists enough space in which to receive a substantial portion of the shade cloth (as shown in FIG. **8**).

As is apparent from the previous description, the present invention provides a lighting fixture collapsible to a small volume, easy to handle, and simple to construct, without the necessity of using any tools, clamps, or the like. In addition, the present invention has the advantage of providing a stable form for the shade after assembly while still permitting single step opening and closing of the lighting fixture. Furthermore, the present invention also provides a lighting fixture which presents a pleasing appearance along with the aforementioned advantages. In addition, it should be noted, that the length of the outer casing **1,** is such that the user of the fixture is protected from any heat radiated from the light source.

While particular embodiments of the present invention have been shown, it is to be understood that many minor modifications may be made which fall within the true spirit and scope of the present invention.

What is claimed is:

1. A collapsible lighting fixture which comprises:

a. a fixture body having an elongated shape and having first and second end portions;

b. a bulb receiving socket attached to said first end portion of said body;

c. a plurality of supporting ribs extending radially from said body, each of said supporting ribs having first and second ends, said supporting ribs first ends being pivotally attached to the periphery of said first end portion of said body;

a movable ring mounted on the periphery of said body and constructed to slide vertically along a portion of said body;

e. a plurality of flexible shade ribs each having first and second end portions and an intermediate portion,

said shade ribs extending radially from and pivotally attached at their first end portions to said movable ring, and pivotally attached in their intermediate portions to said second ends of said support ribs; and

f. a flexible lamp shade having a center portion and a peripheral portion,

said center portion being secured to said movable ring, and said peripheral portion being secured to said second end portion of said shade ribs,

g. whereby upon movement of said movable ring in a direction toward said first end portion of said body said shade portion is forced outwardly by the bending force of said flexible shade ribs to occupy a predetermined open shape, and said movable ring will remain in a predetermined dead point along said body and whereby upon movement of said movable ring in a direction toward said second end portion of said body, said shade portion will occupy a predetermined collapsed position.

2. The fixture of claim **1** wherein the length of the support ribs is less than or equal to the distance between the connection of the shade ribs to the movable ring and the support ribs.

3. The fixture of claim **1** wherein said elongated body is cylindrical in shape.

4. The device of claim **1** and further including a hollow body portion having an inner cavity, said inner cavity constructed so as to contain at least a portion of said shade portion when said collapsible fixture is in its closed position.

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