April 28, 1959 L. FOGEL 2,884,515

COLLAPSIBLE LAMP SHADE

Filed March 26, 1956 2 Sheets-Sheet 1

Fig. 1.

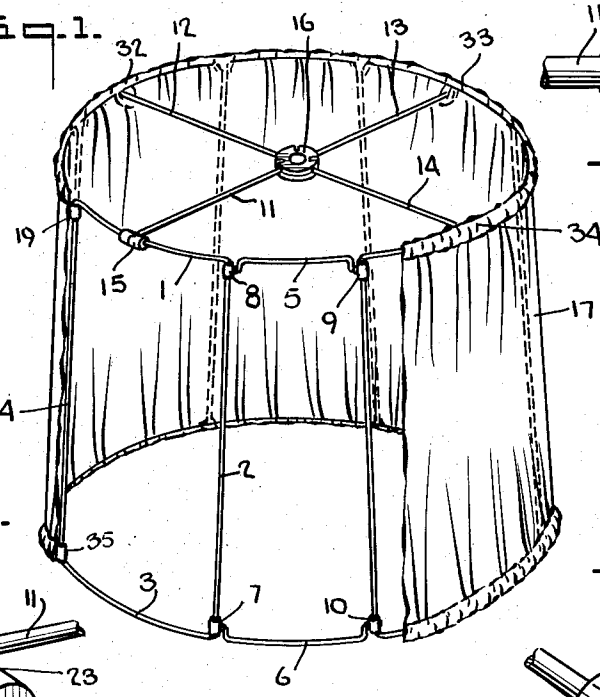


Fig. 11.

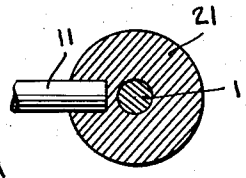


Fig. 9.

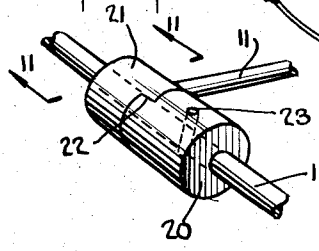


Fig. 10.

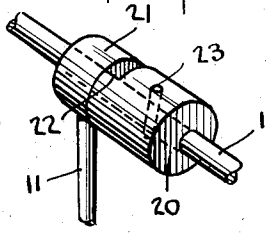
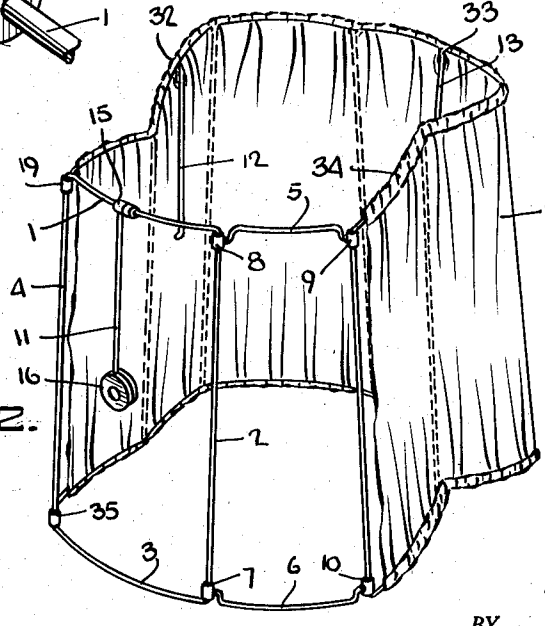


Fig. 2.



INVENTOR.
LOUIS FOGEL

BY

ATTORNEY

April 28, 1959 L. FOGEL 2,884,515

COLLAPSIBLE LAMP SHADE

Filed March 26, 1956 2 Sheets-Sheet 2

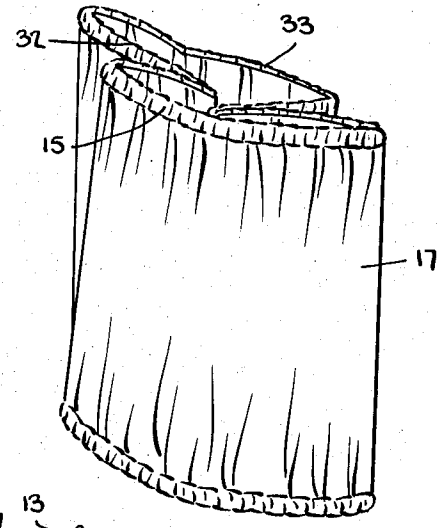


Fig. 3.

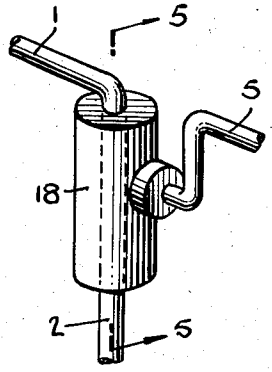


Fig. 4.

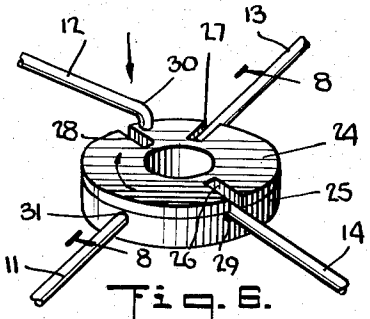


Fig. 6.

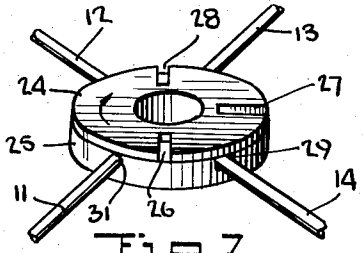


Fig. 7.

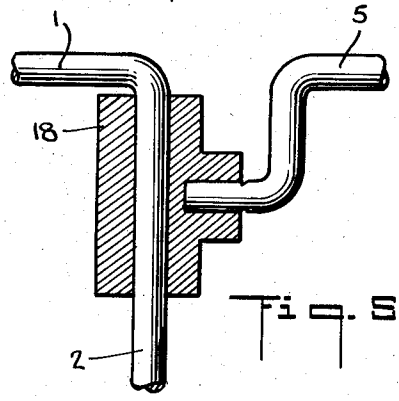


Fig. 5.

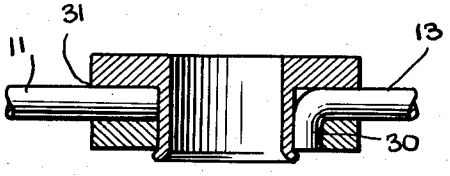


Fig. 8.

INVENTOR.
LOUIS FOGEL

BY

ATTORNEY

United States Patent Office 2,884,515 Patented Apr. 28, 1959

2,884,515

COLLAPSIBLE LAMP SHADE

Louis Fogel, Bellerose, N.Y., assignor to Barney Sherman, Laurelton, and Louis Fogel, Bellerose, N.Y., as tenants in common

Application March 26, 1956, Serial No. 573,678

6 Claims. (Cl. 240—108)

This invention relates to lamp shades, more specifically to a folding lamp shade which may be collapsed for storage purposes.

Up until this time there has been considerable difficulty involved in transporting, storing and handling completed lamp shades. Their large volume necessitates the use of a considerable portion of available storage space for the maintenance of even a small variety of these items. Furthermore, when these items are shipped, transportation costs are high, not because of any particular weight involved but rather because they take up so much room. The prior attempts to correct this situation have been largely unsuccessful in that the lamp shade must be completed after it is assembled, and once assembled it cannot be folded. It is of considerable advantage to be able to manufacture such lamp shades centrally in a large factory where mass production methods may be employed and then to ship them to the marketing areas throughout the country. However, the aforementioned high transportion costs have made this as yet unprofitable. The main difficulty has been that up to now no lamp shade structure has been devised which permits the completion of the shade in one area in such a form that it may be collapsed, transported and then opened up to its operative shape and form without further work done upon it.

It is among the objects of this invention to provide a lamp shade which not only is collapsible but also is of such a structure that it may be restored to its original shape without the addition of any parts, elements or fabric.

It is among the further objects of this invention to provide such a lamp shade which will require no additional work to be done on it in order to convert it from its collapsible to its unfolded position.

In practicing this invention, there is provided a frame composed of rectangular supports spaced apart horizontally, links connecting the supports and a locking holder adapted to be mounted on a lamp base located at the center of the circle formed by the upper horizontal members and connected thereto by arms extending radially from the locking holder. The rectangular supports have pivotal joints mounted upon the vertical members thereof, each consisting of a cylinder rotatably mounted on the vertical support with a horizontal opening in the side thereof into which a link is permanently mounted. The cylinder is permitted to rotate about the vertical member, thus allowing the side of the shade to fold either inward or outward at that point. It is locked in the open position by means of the horizontal arms extending from the locking joints mounted on the upper horizontal members to the locking holder located at the center of the circle formed by the upper horizontal members. The aforementioned locking joints consist of pairs of notched cylinders, one rotatably mounted and the other rigidly mounted on the horizontal member. The horizontal arms are permanently mounted in the rotatable cylinder and the whole is so interfitted and proportioned

that the notches on the respective cylinders lock against one another, preventing further upward rotation about the horizontal member at the point when the arms are in a horizontal position.

The locking holder comprises two disks, one surmounting the other and coextensive with it. The lower disk has one radial hole in its side into which one of the aforementioned arms is permanently fitted. The upper disk is adapted to rotate about its axis with respect to the lower disk, and contains a plurality of radial slots corresponding to the number of arms. These slots are so positioned that they coincide with openings in the lower disk adapted to receive the ends of the horizontal arms, permitting the arms to pass through them and locking on the lower disk, said arms being provided with hooks at the extremity nearest the locking holder for this purpose. The rotatable upper disk upon turning so that the radial slots are no longer alined with the corresponding openings in the lower disk, completes the locking arrangement.

In operation, the lamp shade may be collapsed by first rotating the upper disk of the locking holder until the slots therein are in alinement with the openings in the lower disk. The arm which is permanently affixed to the locking holder is then allowed to rotate downward, the remaining arms passing through the openings in the upper disk and then also rotating downward until they are parallel to the vertical members of the rectangular supports. The rectangular supports are then folded in or out, as is required to effectuate an accordion-like fold, thus compressing the shade into a very small volume.

To open the shade, it is only necessary to open the accordion folds, raise the arm permanently connected to the locking holder, at the same time inserting the remaining arms into the radial slots in the upper locking disk, passing through the upper locking disk and locking in place in the lower locking disk. A turn of the upper disk serves to lock the entire structure in place, making the whole rigid and serviceable.

The accompanying sheets of drawings constitute a part of this invention in which like reference characters indicate like parts, and in which—

Fig. 1 shows the lamp shade in perspective in its unfolded or functional position;

Fig. 2 shows the lamp shade partly folded;

Fig. 3 is a perspective drawing of the lamp shade in its fully folded position;

Fig. 4 is a perspective drawing of one pivotal joint;

Fig. 5 is a cross-section of that joint;

Fig. 6 is a perspective view of the locking holder with the top disk so positioned that the horizontal arms may be slipped either in or out;

Fig. 7 is a perspective drawing of the locking holder in its locked position;

Fig. 8 is a cross-sectional view of Fig. 7;

Fig. 9 is a perspective view of a locking joint;

Fig. 10 is another perspective view of a locking joint, showing the arm in its vertical or folded position; and

Fig. 11 is a section of the locking joint.

The lamp shade is provided with a plurality of rectangular supports composed of elements **1**, **2**, **3**, **4**, connecting links **5** and **6**, said connecting links being rigidly mounted in pivotal joints **7**, **8**, **9**, **10**, **19** and **35**; arms **11**, **12**, **13** and **14** rigidly mounted in locking joints **15**, and locking holder **16** permanently mounted on arm **11** and adapted to receive arms **12**, **13** and **14**. The whole is provided with a cover **17** of any suitable decorative material. Each pivotal joint is composed of a cylinder **18** through which vertical member **2** passes axially, and an opening in the side thereof into which link **5** is rigidly mounted. Cylinder **18** is adapted to rotate about its axis so that the entire panel may be folded.

Each of identical locking joints **15**, **32**, **33** and **34** is composed of rigidly mounted cylinder **20** and rotatably mounted cylinder **21**, each containing a notch **22**. Cylinder **20** is prevented from rotating by pin **23** which passes through the cylinder and through horizontal member **1**; the rotatably mounted cylinder **21** is provided with a hole into which arm **11** is permanently fitted; the hole and cylinders **20** and **21** being so positioned that the notch on the rotatable cylinder **21** bears against the notch of cylinder **20** when arm **11** is horizontal, thus preventing arm **11** from rotating upward past the horizontal.

The locking holder is composed of ring **25** and locking disk **24**, which is adapted to rotate with respect to ring **25**. Locking disk **24** is provided with slots **26**, **27** and **28**, through which arms **12**, **13** and **14** may pass into openings **29** in ring **25** adapted to receive them. Arms **12**, **13** and **14** are provided with hooks **30** which prevent them from sliding out of openings **29**. Arm **11** is rigidly and permanently affixed to ring **25** at **31**.

To fold this lamp shade, locking disk **24** is rotated about its axis until slots **26**, **27** and **28** are alined with slots **29**. Then arm **11** is depressed, permitting arms **12**, **13** and **14** to be lifted free of locking holder **16**. Arms **12**, **13** and **14** and arm **11**, together with locking holder **16**, are permitted to rotate about locking joints **15**, **32**, **33** and **34**, respectively until they are substantially vertical. The sides of the shade are then folded accordion-wise at the pivotal joints, such as **7** and **8**. To unfold, first the accordion folds are opened, then arms **11**, **12**, **13** and **14** are raised to approximately a horizontal position. Arms **12**, **13** and **14**, provided with hooks **30**, are passed through slots **26**, **27** and **28** into slots **29** and locking disk **24** is rotated so that slots **26**, **27** and **28** are no longer in alinement with slots **29**.

While only one specific embodiment of this invention has been described, nevertheless the principle may be applied in other ways without departing from the spirit of this device. For example, instead of a plain drum shade as is illustrated, such variations as bell shades, scallops, galleries, V-cuts, waterwaves, out-curves, loops, diamonds or any other shape, form or style which may be aesthetically pleasing or popular in the lamp shade industry may be used. Although an octagonal shade with curved horizontal supports and links is described here, this invention is by no means limited to such shape, but a round, square, hexagonal, decagonal, or other polygonal shape may be provided. It is well-known in the art that the forms of lamp shades vary greatly with the vagaries of style and it is not without the scope of this invention to substitute another such style for the one described.

These and other changes may be made in the details of the invention, which is to be broadly construed and not to be limited except by the character of the claims appended hereto.

What is claimed is:

1. A folding lamp shade comprising a frame and finishing material affixed to said frame, said frame when mounted on a lamp base being composed of substantially rectangular supports, locking joints on the horizontal portions of some of said supports, said supports being spaced apart horizontally, links connecting adjacent supports and constituting additional rectangular supports, a locking holder adapted to be mounted on said lamp base, radial arms extending from said locking holder and attached to at least some of said locking joints, and means on said rectangular supports for permitting the shade to fold accordion-wise.

2. A folding lamp shade comprising a frame and finishing material affixed to said frame, said frame when mounted on a lamp base being composed of substantially rectangular supports comprising horizontal and vertical members, said supports being spaced apart horizontally, links connecting adjacent supports and constituting additional rectangular supports, a locking holder adapted to be mounted on said lamp base, radial arms extending from said locking holder and attached to locking joints, pivotal joints consisting of cylinders rotatably mounted on vertical members of said supports, said joints having a horizontal opening in the side thereof into which said links are fitted.

3. A lamp shade according to claim 2 in which the said pivotal joints are located near each corner of each of said rectangular supports.

4. A lamp shade according to claim 2 in which said joints consist of pairs of notched cylinders, one of each pair rigidly mounted and the other rotatably mounted on some of the upper horizontal members and links of the frame, and a hole in the side of each rotatable cylinder into which the radial arms fit permanently, said cylinders and holes being so positioned that the notch on the rotatable cylinder prevents said cylinder and said arms from further rotation upward by bearing against the notch on the right cylinder when the said arms are horizontal.

5. A lamp shade according to claim 2 in which the locking holder comprises an annular ring, an annular locking disk coextensive with and surmounting the ring and adapted to rotate about its axis relative to the said ring, a hole in the side of the ring in which one arm is permanently mounted, said locking disk being provided with radial openings adapted to permit the other radial arms to pass through said locking disk, hooks on the ends of said other radial arms adjacent to the locking holder, notches in the fixed ring adapted to receive said hooked ends, the shade so proportioned that by rotating said locking disk, the radial arms are locked in the horizontal position.

6. A lamp shade according to claim 2 with four radial arms and four rectangular supports separated from each other by four sets of links, said links affixed at the top and bottom of each rectangle.

References Cited in the file of this patent

UNITED STATES PATENTS

480,989	Berthelemy	Aug. 16, 1892
1,452,773	Amores	Apr. 24, 1923
1,673,665	Cruse	June 12, 1928
2,538,676	Enright	Jan. 16, 1951

FOREIGN PATENTS

16,839	Great Britain	1909
1,042,050	France	June 3, 1953
1,072,877	France	Mar. 17, 1954