July 5, 1938. J. M. ANGELETTI 2,122,971

LAMP SHADE

Filed Nov. 21, 1935 4 Sheets-Sheet 1

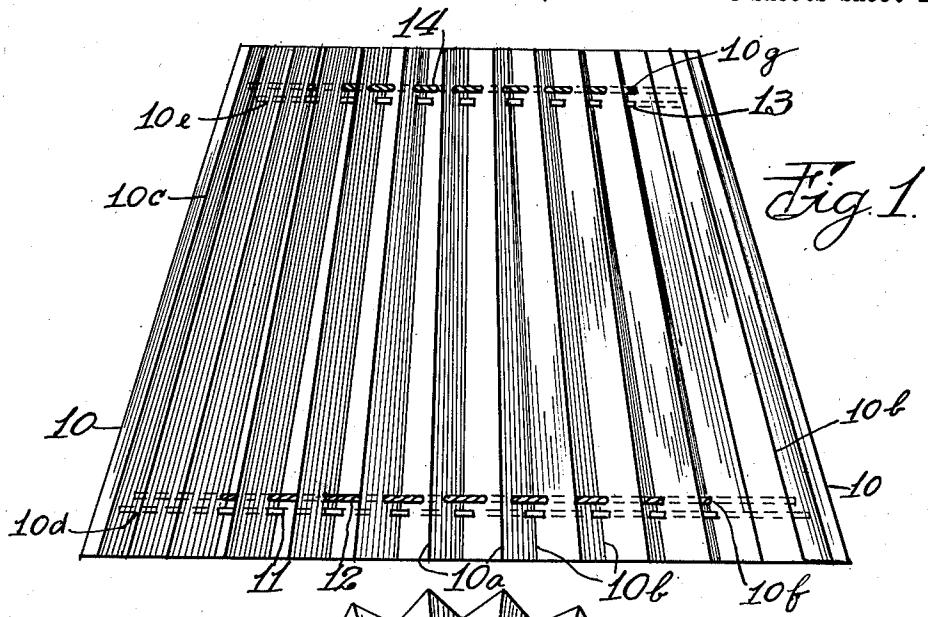


Fig. 1.

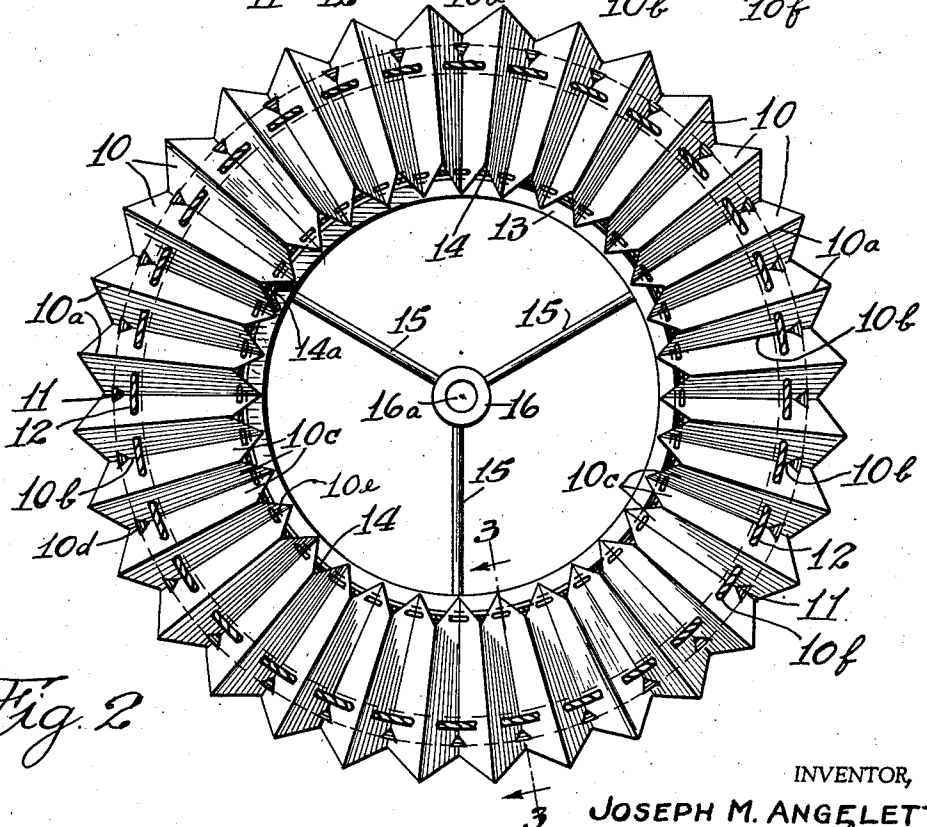


Fig. 2.

INVENTOR,
JOSEPH M. ANGELETTI,
BY Thomas G. Townsend,
ATTORNEY.

July 5, 1938. J. M. ANGELETTI 2,122,971

LAMP SHADE

Filed Nov. 21, 1935 4 Sheets-Sheet 2

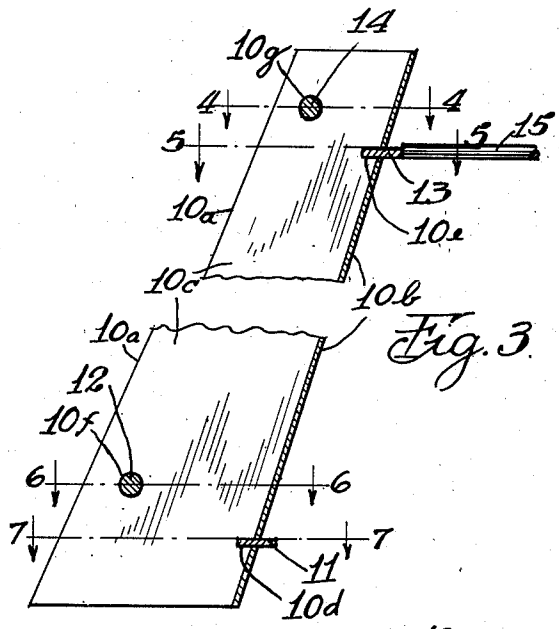


Fig. 3

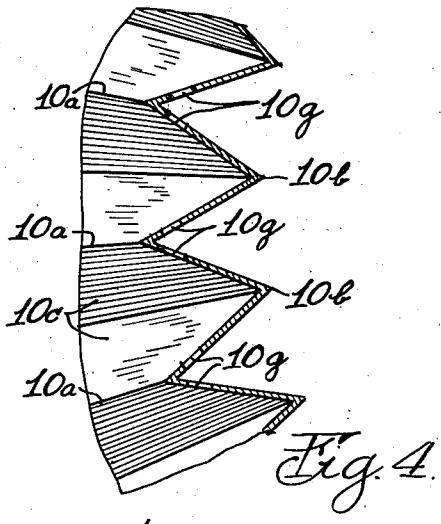


Fig. 4

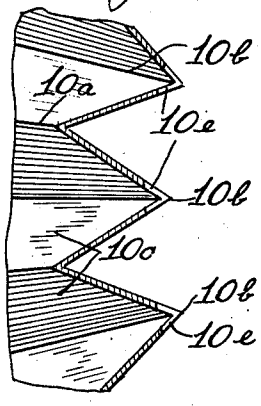


Fig. 5

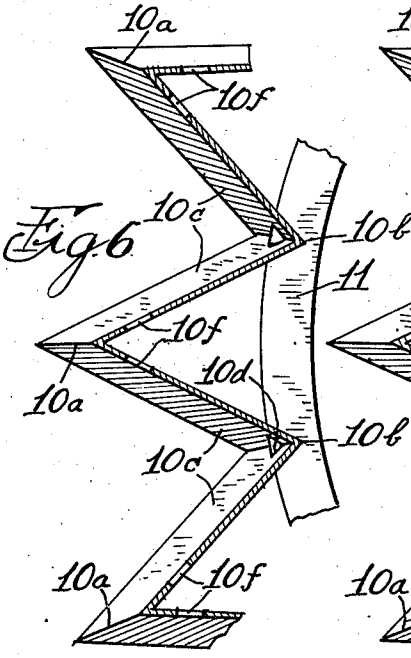


Fig. 6

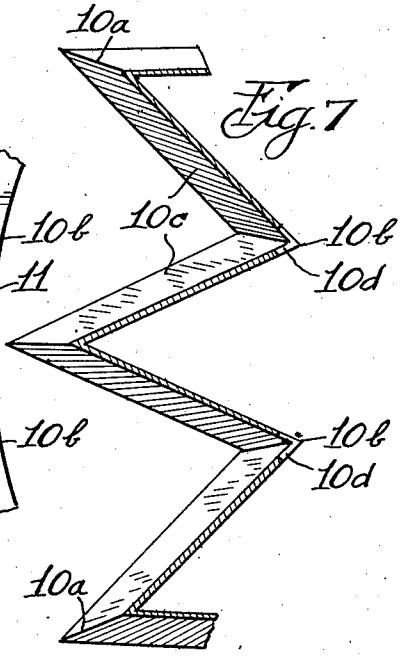


Fig. 7

INVENTOR,
JOSEPH M. ANGELETTI,
BY
Thomas G. Stewart
ATTORNEY.

July 5, 1938. J. M. ANGELETTI 2,122,971

LAMP SHADE

Filed Nov. 21, 1935 4 Sheets-Sheet 3

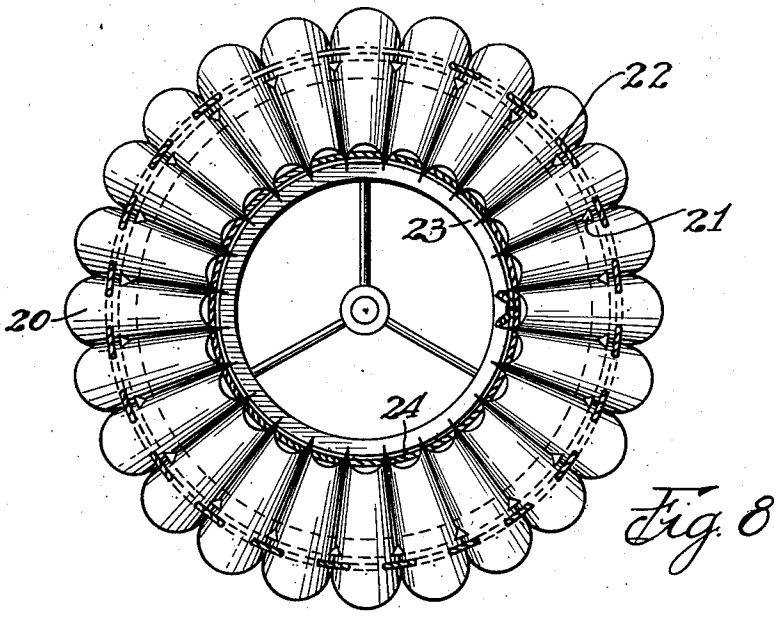


Fig. 8

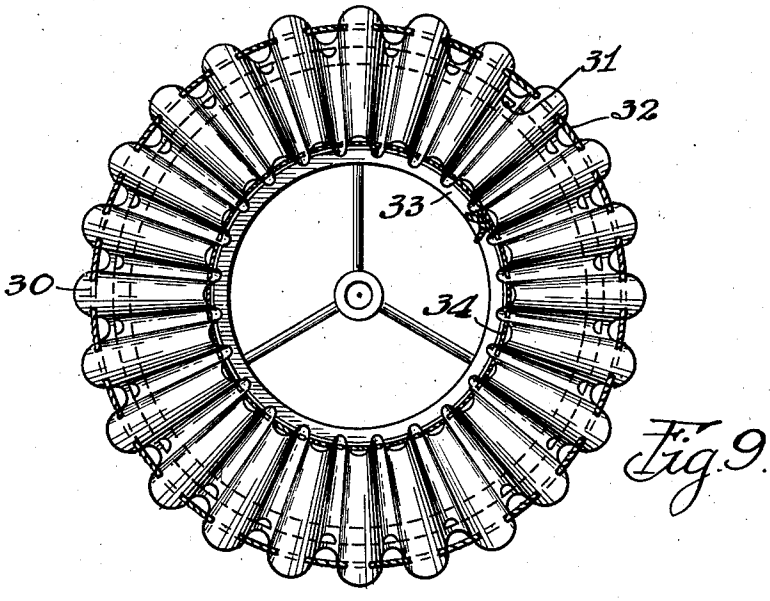


Fig. 9.

INVENTOR,
JOSEPH M. ANGELETTI.
BY Thomas G. Edwards
ATTORNEY.

July 5, 1938. J. M. ANGELETTI 2,122,971

LAMP SHADE

Filed Nov. 21, 1935 4 Sheets-Sheet 4

Fig. 10.

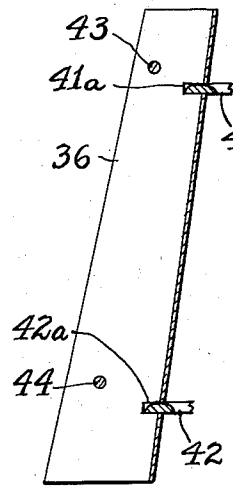


Fig. 11.

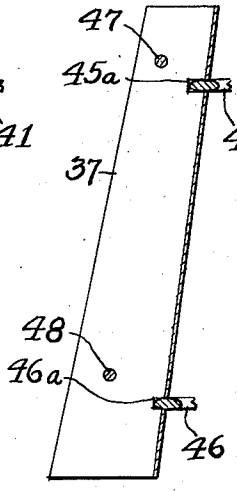


Fig. 12.

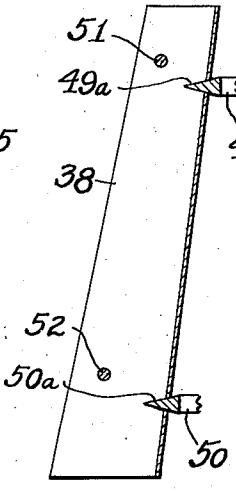


Fig. 13.

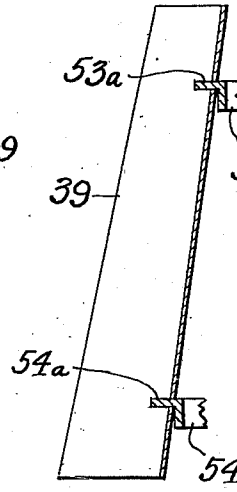


Fig. 14.

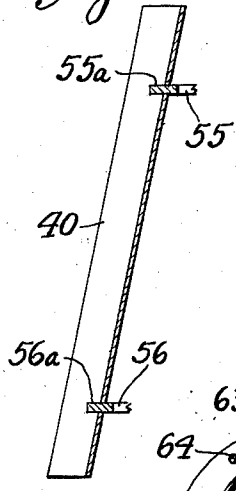


Fig. 15.

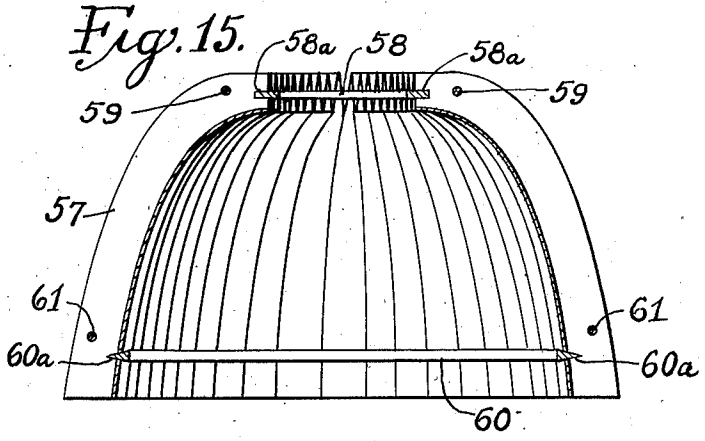
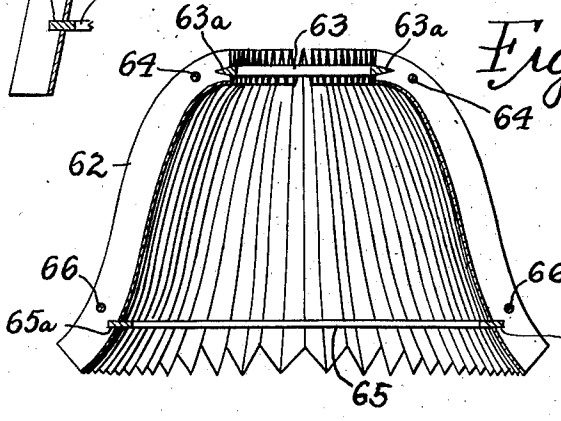


Fig. 16.



INVENTOR.

JOSEPH M. ANGELETTI

BY Thomas G. Durand

ATTORNEY.

Patented July 5, 1938 2,122,971

UNITED STATES PATENT OFFICE

2,122,971

LAMP SHADE

Joseph M. Angeletti, Alexandria, Ind., assignor to The Mantle Lamp Company of America, Chicago, Ill., a corporation of Illinois

Application November 21, 1935, Serial No. 50,863

7 Claims. (Cl. 240—108)

My invention relates to an improvement in shades for use with artificial light, and consists of a novel construction of such shades, in which the shade material, for example, paper or stiffened fabric, is formed into pleated elements connected by inner and outer edge portions, which pleated elements are held in partially opened condition by rigid rings having non-removable engagement with the pleated elements, to produce a shade that has a high degree of stability and rigidity, that is of novel appearance, and that is economical to manufacture.

By my invention, I provide the pleats of the shade material, with notches each having one or more flat sides, to receive rigid, stiffening rings snugly engaging the notches, there being at least two of said rings within the shade, one near the top of the shade and the other near the bottom thereof, which rings hold the shade material in distended condition and in the desired form; and adjacent the notches for each of said rings, for one embodiment of my invention, I perforate the elements of the shade material, and thread through said perforations a cord which is drawn tightly together at its ends with the corresponding ring in its said notches, and tied or otherwise fastened, to press all of the shade elements inwardly and snugly against the corresponding ring, with the result that when this is done at each end portion of the shade, the compression of the shade material between the rings and the binding cords, produces a shade having a high degree of rigidity and permanence, and that neither of the rings, which may be independent of each other, can for that condition of the parts, be removed from the shade material, without seriously damaging the latter. For another embodiment of my invention, the cords and cord apertures are omitted, and the pleats of the shade are permanently secured to the rings by suitable adhesive, for example, cement, lacquer, or other adherent material.

The rings employed preferably have one or more flat or flattened surfaces to tightly engage and be retained in the notches therefor in the shade material, and either of said rings, as desired, may advantageously be provided with radial and inwardly extending rods connected with a central hub for supporting the shade on a lamp fixture. Said rings are preferably of metal, and may have any form it is desired to impart to the shade, whether circular or otherwise, and the pleated elements of the shade material may be held securely as described, with any desired extent of opening, determined by the relation of the size of the rings to the size of the shade material in its fully opened condition.

My invention will be best understood by reference to the accompanying drawings illustrating a preferred embodiment thereof, in which—

Fig. 1 illustrates my shade in side elevation;

Fig. 2 shows said shade in plan view;

Fig. 3 is a vertical sectional view to an enlarged scale, of a part of the structure shown in Fig. 2 taken along the line 3—3;

Figs. 4 to 7 inclusive, are horizontal sectional views of the structure shown in Fig. 3, taken respectively along the lines 4—4, 5—5, 6—6 and 7—7;

Fig. 8 shows in a view similar to Fig. 2, a modified shade in which the shade elements are connected by folds at their inner edges and by curved portions at their outer edges;

Fig. 9 shows in a view similar to Fig. 2, a still further modified shade in which the shade elements are connected at both their inner and outer edges, by curved portions of the shade material;

Figs. 10 to 14 inclusive show in views similar to Fig. 3, modified forms of grooves and cross-sections of retaining rings, embodying my invention, and

Figs. 15 and 16 show in vertical, central, sectional views, the embodiment of my invention in pleated shades of the dome and bell type respectively.

Similar numerals refer to similar parts throughout the several views.

As shown in Figs. 1 and 2, my improved shade consists of a sheet of suitable material 10, such as, for example, paper or other fibrous material, stiffened fabric, or other material adapted to the purpose, which sheet is secured together at its ends, to form the sheet into a continuous band, which is of larger diameter than the finished shade. The said sheet is provided with pleated elements 10c, extending from top to bottom of the sheet. In Figs. 1 and 2, said pleated elements are connected by folds, alternate or outer ones of said folds as shown at 10a, 10a being in one direction, and intermediate or inner ones of said folds as shown at 10b, 10b, being in the opposite direction. Near the bottom of the sheet, a first rigid, internal ring 11, for example, of metal, is held by a first cord 12 extending through the pleated elements 10c of the sheet, between the folds 10a and 10b, and near said ring 11. Near the top of the sheet, a second rigid, internal ring 13, for example, of metal, is held by a second cord 14 extending through the elements 10c near said ring 13. The ring 13 has rigidly secured thereto, the outer ends of radial arms 15, the inner ends of which are rigidly secured to a hub 16, said arms and hub being of any suitable material, for example, metal, and said hub having an aperture 16a to facilitate engagement with a lamp fixture (not shown), to support the shade upon said fixture.

As more clearly shown in Fig. 3, the rings 11 and 13 are of rectangular cross-section and are seated at their outer portions in notches 10d and

10e respectively, which notches are cut through the inner edges 10b and are of a shape to tightly engage the top, bottom and outer edge surfaces of said rings. Each of the rings 11 and 13 is of a cross-section having sufficient thickness and width, depending upon the material of which the ring is made, to impart stability to the completed shade, and the notches 10d and 10e need overlap but a part of said rings to tightly secure the shade to the rings. Apertures 10f and 10g are formed through the shade elements 10c, for the cords 12 and 14 respectively, to hold said cords in place, said apertures being respectively adjacent the rings 11 and 13.

In Figs. 4 and 6 the relation of the apertures 10g and 10f respectively to the outer edges 10a, is more clearly shown, the cords 14 and 12 being removed in these figures. In Figs. 5 and 7 the relation of the notches 10e and 10d respectively to the inner edges 10b, is more clearly shown, the rings 13 and 11 being removed in these figures.

In assembling the shade, the cords 12 and 14 are loosely threaded through the apertures 10f and 10g, and with the edges 10b spaced from each other substantially uniformly, the rings 11 and 13 are pressed into and to the bottoms of the notches 10d and 10e respectively, entirely around the shade. Then the cords 12 and 14 are drawn tightly, and the ends of each cord are tightly tied or fastened together, preferably inside of the shade, as shown for the cord 14 at 14a in Fig. 2, thereby tightly clamping the pleated elements of the shade between each of the rings 11 and 13 and the adjacent one of the cords 12 and 14, the tension on each of said cords tending to compress the material of the shade towards the axis thereof, and the adjacent ring opposing and preventing such compression. The result is a shade that is rigid and stable, and in which the parts cannot be separated from each other without mutilation of the shade material, unless the cords 12 and 14 are first released. In addition, the shade is economical to manufacture.

In Fig. 8, I illustrate a modified form of shade 20, having upper and lower retaining rings 23 and 21 respectively, and associated binding cords 24 and 22, cooperating substantially as described above for the structure shown in Figs. 1 and 2. The shade 20 differs from the shade 10 shown in Figs. 1 and 2, in that its pleated elements are connected at their outer edges by curved portions instead of by folds as shown in Figs. 1 and 2.

In Fig. 9, I illustrate another modified form of shade 30, having upper and lower retaining rings 33 and 31 respectively, and associated binding cords 34 and 32, cooperating substantially as above described for the structure shown in Figs. 1 and 2. The shade 30 differs from the shade 10 shown in Figs. 1 and 2, and from the shade 20 shown in Fig. 8, in that the inner edges of its pleated elements are connected by curved portions instead of by folds, its construction in other respects being similar to the shade 20.

In Figs. 10 to 14 inclusive I show at 36, 37, 38, 39 and 40 respectively, pleated shades, each of which may be of any of the types above described. The shade 36 is provided with upper and lower retaining rings 41 and 42 and binding cords 43 and 44; the shade 37 is provided with upper and lower retaining rings 45 and 46 and binding cords 47 and 48; and the shade 38 is provided with upper and lower retaining rings 49 and 50 and binding cords 51 and 52. The shade 39 is provided with upper and lower retaining rings 53 and 54, and the shade 40 is provided with upper and lower retaining rings 55 and 56, neither of these shades having cord apertures and binding cords, since the retaining rings are held securely in engagement with the shades by suitable adhesive, for example, cement, lacquer, or other adherent material. The shade 40 illustrates a type of shade in which the pleats are of so small a depth radially of the shade, that binding cords cannot be used satisfactorily.

The retaining rings 41 and 42 shown in Fig. 10, are of half-oval cross-section, with their flat sides towards the larger end of the shade 36, and engaging similar flat surfaces of the notches 41a and 42a made in the pleats of the shade 36 to receive said retaining rings. The retaining rings 45 and 46 shown in Fig. 11, are of oval or elliptical cross-section and have flattened lower surfaces engaging similar surfaces of the notches 45a and 46a made in the pleats of the shade 37 to receive said retaining rings. The retaining rings 49 and 50 shown in Fig. 12, are of wedge-shaped cross-section having lower flat surfaces engaging similar surfaces of the notches 49a and 50a made in the pleats of the shade 38, to receive said retaining rings; the outer edge angles of the retaining rings 49 and 50 are sufficiently acute, so that the lower flat surfaces of the retaining rings, although not perpendicular to the axis of the shade 38, quite as effectively prevent axial movement of the retaining rings in the shade, as the other forms of retaining rings described.

The retaining rings 53 and 54 shown in Fig. 13, are of angle cross-section having horizontally and vertically extending flanges, which horizontally extending flanges engage the similar surfaces of the notches 53a and 54a, made in the pleats of the shade 39 to receive said retaining rings. The retaining rings 55 and 56 shown in Fig. 14, are of flat cross-section horizontally, engaging similar flat surfaces of the notches 55a and 56a made in the pleats of the shade 40, to receive said retaining rings.

The pleated shade 57 shown in Fig. 15, is of the dome type, the pleats being curved vertically so that their upper ends extend radially towards each other, the lower portions of the pleats extending downwardly and nearly or quite parallel with the axis of the shade. In this case, the upper retaining ring 58 is of the type shown in Fig. 14, and engages similar flat notches 58a, made in the upper ends of the pleats of the shade 57 to receive said retaining ring. A binding cord 59 is shown, to hold the upper ends of the pleats firmly in engagement with the ring 58. A lower retaining ring 60 is provided, which is of the type shown in Fig. 12, engaging similar notches 60a made in the lower, inner portions of the pleats of the shade 57, to receive said retaining ring. A binding cord 61 is shown, to hold the lower portions of the pleats firmly in engagement with the retaining ring 60.

The pleated shade 62 shown in Fig. 16, is of the bell type, the upper portions of the pleats of the shade being curved vertically in the same general manner as the upper portion of the shade 57 shown in Fig. 15, so that the upper ends of its pleats extend radially towards each other, said upper ends having notches 63a formed in them to receive the upper retaining ring 63, which in this case is of the type shown in Fig. 12. A binding cord 64 is shown, to hold the upper ends of the pleats of the shade 62, firmly in engagement with the retaining ring 63. A lower retaining ring 65 is provided, which in this case

is of the type shown in Fig. 14, engaging similar notches 65a made in the lower, inner portions of the pleats of the shade 62, to receive said retaining ring. A binding cord 66 is shown, to hold the lower portions of the pleats firmly in engagement with the retaining ring 65.

It will be understood that the several types of retaining rings shown and described, are illustrative only, and that any of said types, or any combination of them, or equivalents thereof, may be employed, as desired, since I consider my invention broadly, to consist of the combination of notched pleated shades with retaining rings of any cross-section or form effecting a positive, interlocking engagement between the rings and the shade elements, which prevents removing a retaining ring from the shade without tearing or damaging the shade, when the shade and retaining rings are firmly held together by any suitable means. It will also be understood, that either binding cords, or adhesive material, or the equivalent, may be employed with any type of retaining rings, as such holding means. My invention also includes the pleated shades themselves, constructed and intended to receive retaining rings as described, before they are assembled with such retaining rings, since it is sometimes the practice of the manufacturers of shade material, to make the shades themselves and sell them to other concerns who assemble them on their supporting structures.

While I have shown my invention in the particular embodiment above described, I do not limit myself thereto in carrying out my invention, as I may employ equivalents thereof known to the art at the time of the filing of the present application, without departing from the scope of the appended claims.

What I claim is:

1. In a lamp shade, the combination of retaining rings each having upper and lower surfaces including straight radial elements, and a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches.

2. In a lamp shade, the combination of retaining rings each having upper and lower surfaces including straight radial elements, a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches, and a cord holding the pleated sheet material in engagement with at least one of said rings.

3. In a lamp shade, the combination of retaining rings each having upper and lower surfaces including straight radial elements, a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches, and adhesive material holding the pleated sheet material in engagement with at least one of said rings.

4. In a lamp shade, the combination of retaining rings each having upper and lower and substantially parallel surfaces including straight radial elements, and a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches.

5. In a lamp shade, the combination of retaining rings each having upper and lower and substantially parallel surfaces including straight radial elements, a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches, and a cord holding the pleated sheet material in engagement with at least one of said rings.

6. In a lamp shade, the combination of retaining rings each having upper and lower and substantially parallel surfaces including straight radial elements, a band of pleated sheet material having notches to receive said rings and engaging the said surfaces thereof and holding said rings against movement relative to and axially of said band, said notches opening through the inner portion of said band into the interior of the shade and having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to hold the band and rings against relative movement resulting from axial pressure between said rings and said notches, and adhesive material holding the pleated sheet material in engagement with at least one of said rings.

7. In a lamp shade, the combination of a retaining ring having at least one flat surface extending radially of the ring, and a band of sheet material having pleated elements provided with inner notches opening through the inner portion of said band to receive said ring and engage the upper and lower surfaces of said ring at substantial distances from the inner edges of said notches, said notches having upper and lower edges in surfaces at angles sufficiently near a right angle to the axis of the shade to positively hold the band and ring against relative movement axially of the shade.

JOSEPH M. ANGELETTI.