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(54) **WINDOW COVERING WITH CORD SHROUDS**

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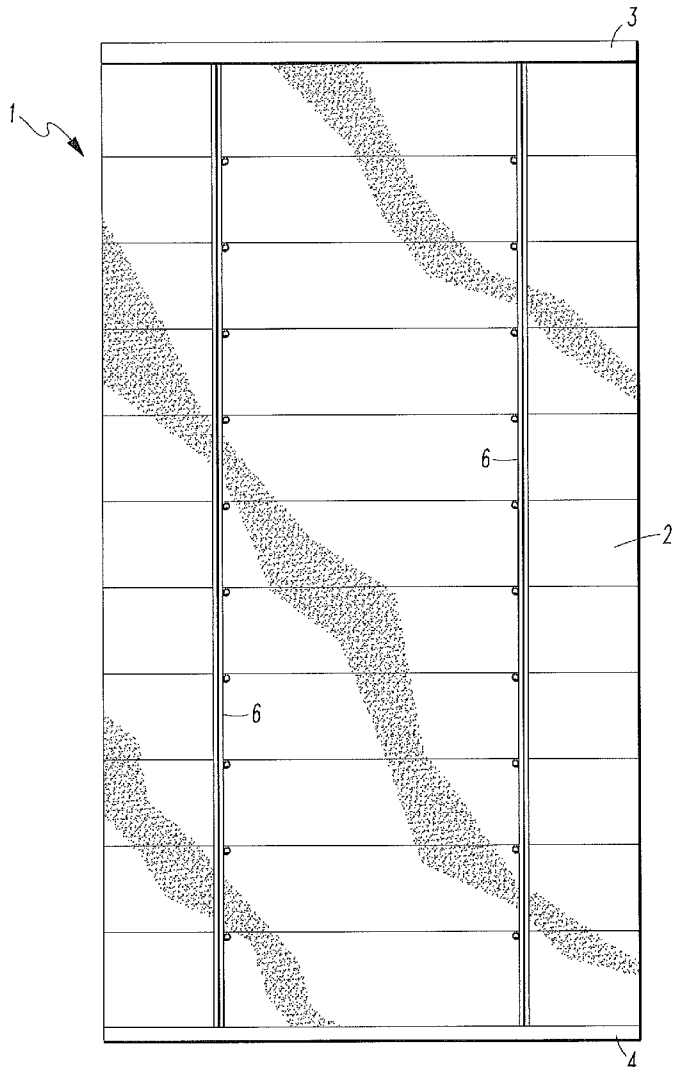
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(57) **ABSTRACT**

A window covering includes a first set of vertically spaced apart connectors and a second set of vertically spaced apart connectors. A first lift cord has a first portion extending from a first rail and passing through or adjacent the connectors of the first set of connectors and the second lift cord has a second portion extending from the first rail and passing through or adjacent the connectors of the second set of connectors. A first cord shroud and a second cord shroud extend from the first rail to a position adjacent to a bottom portion of window covering material. The first cord shroud is attached to the first set of connectors and the second cord shroud is attached to the second set of connectors. The first portion passes through the first cord shroud and the second portion passes through the second cord shroud.



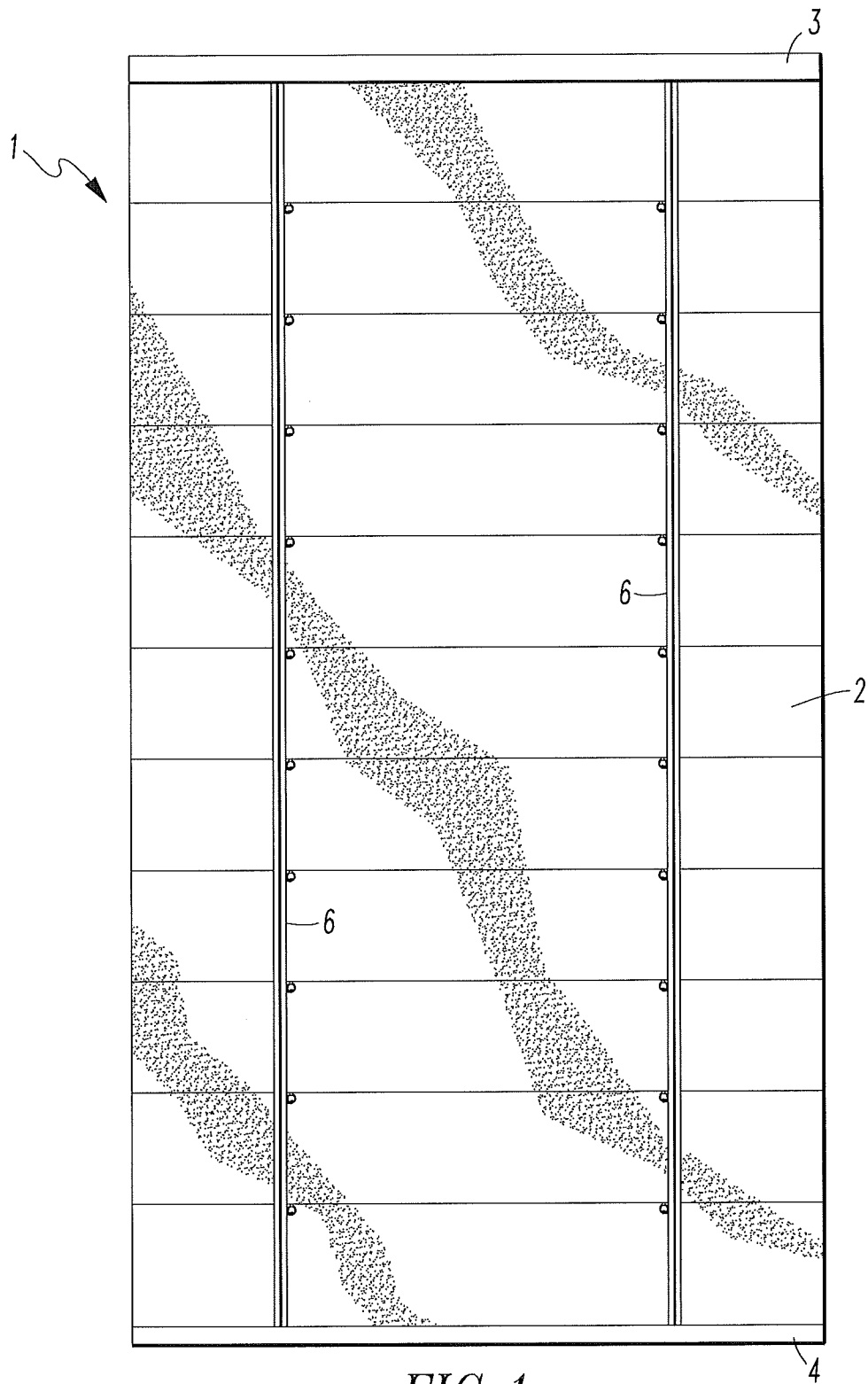


FIG. 1

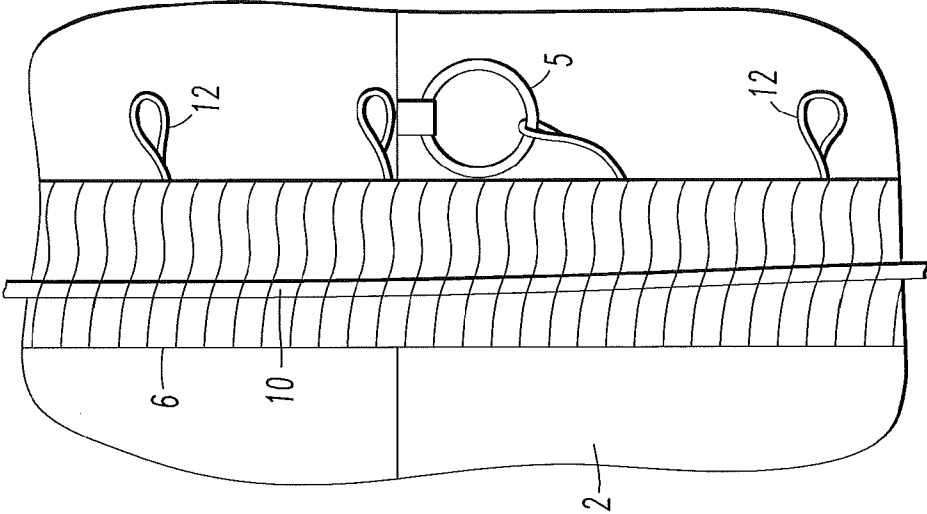


FIG. 2

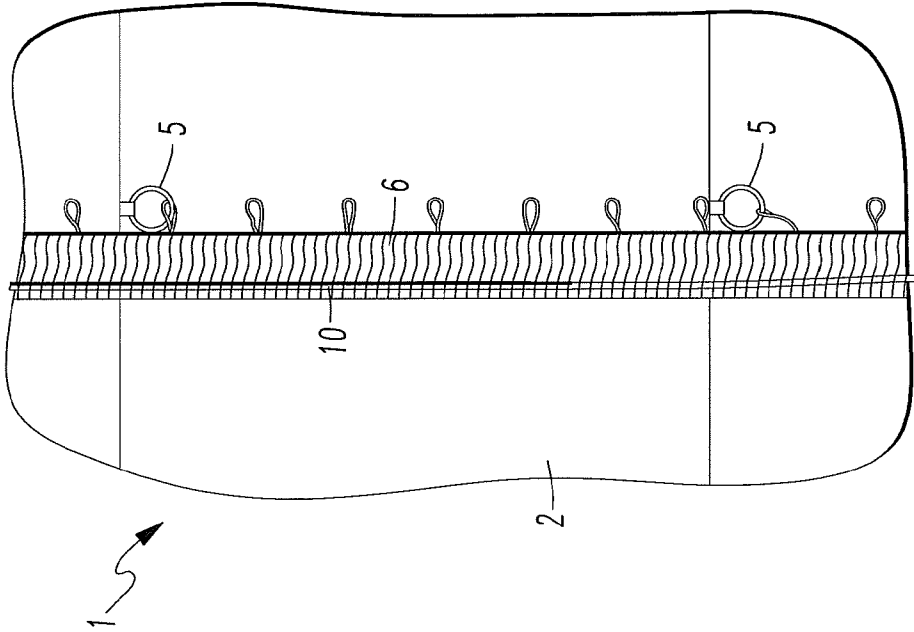


FIG. 3

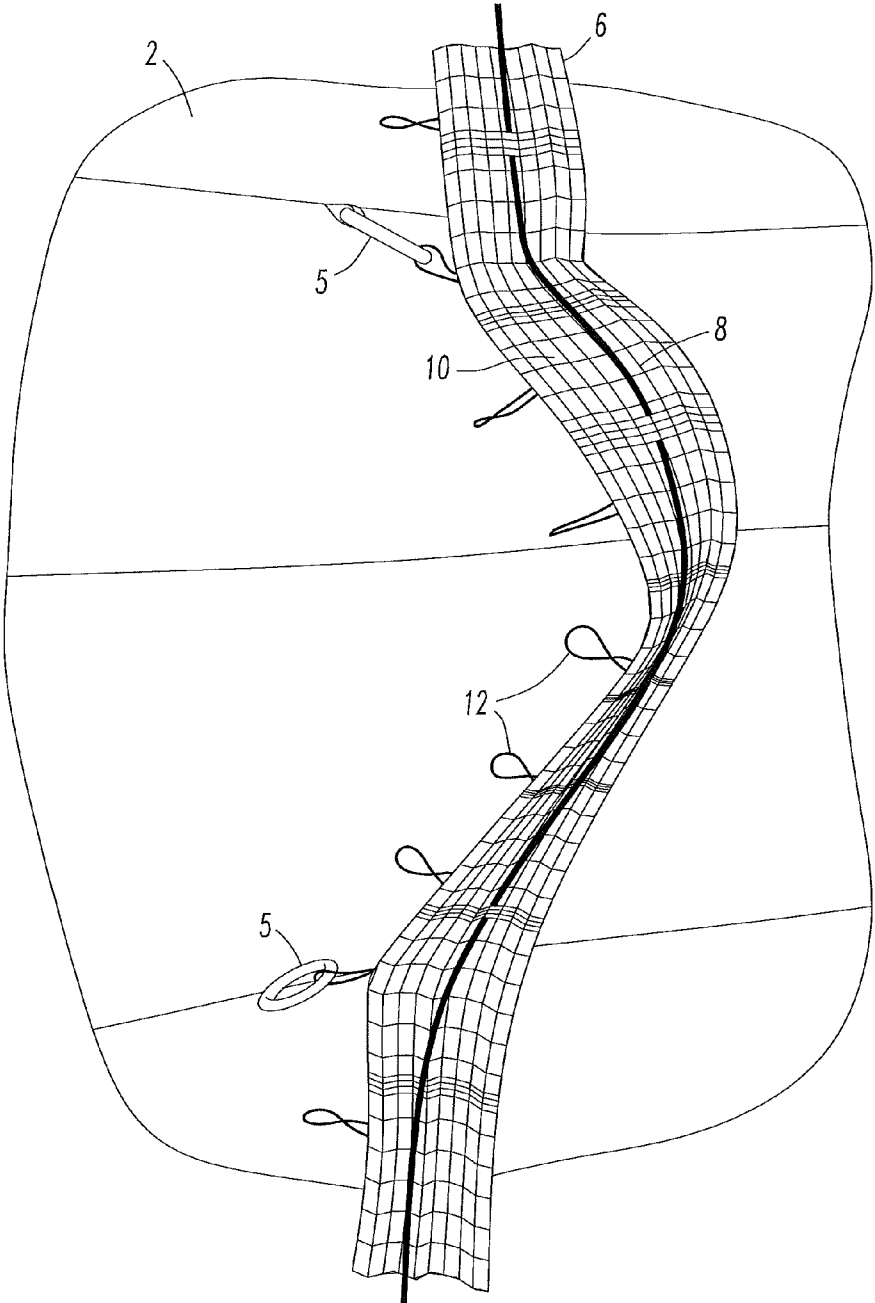


FIG. 4

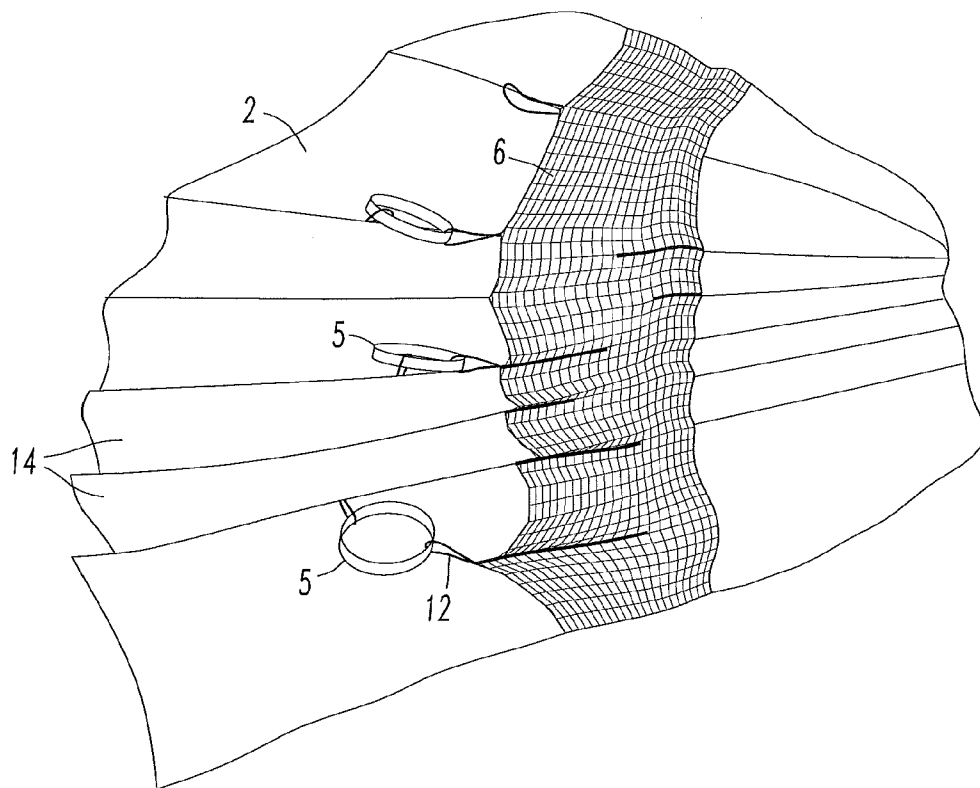


FIG. 5

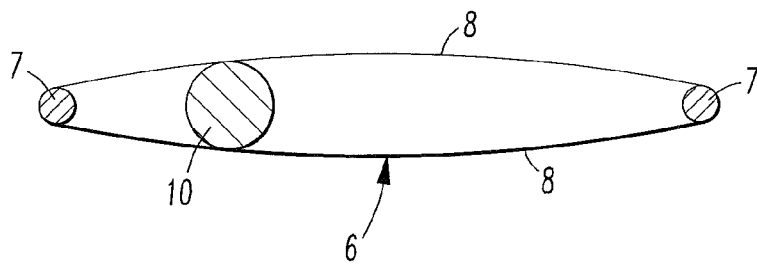
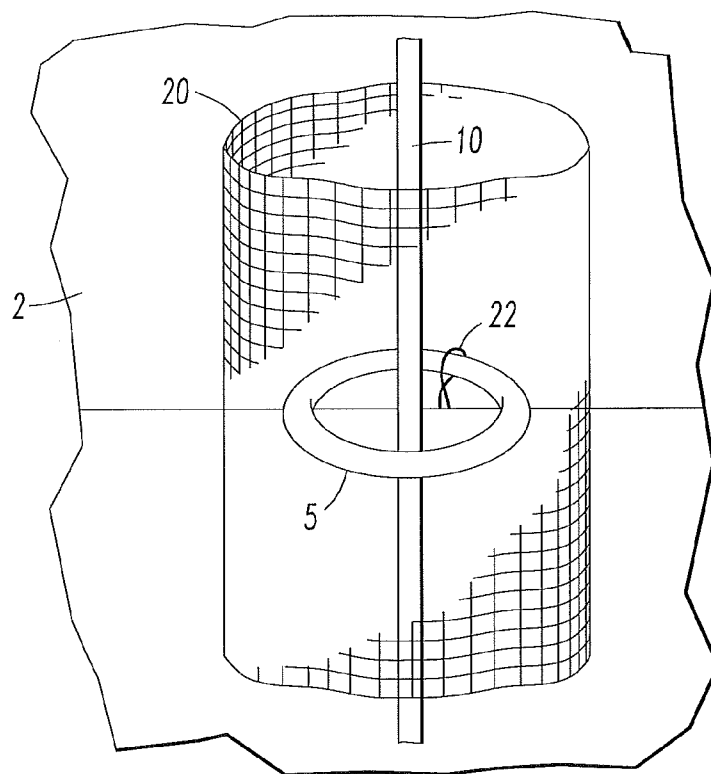
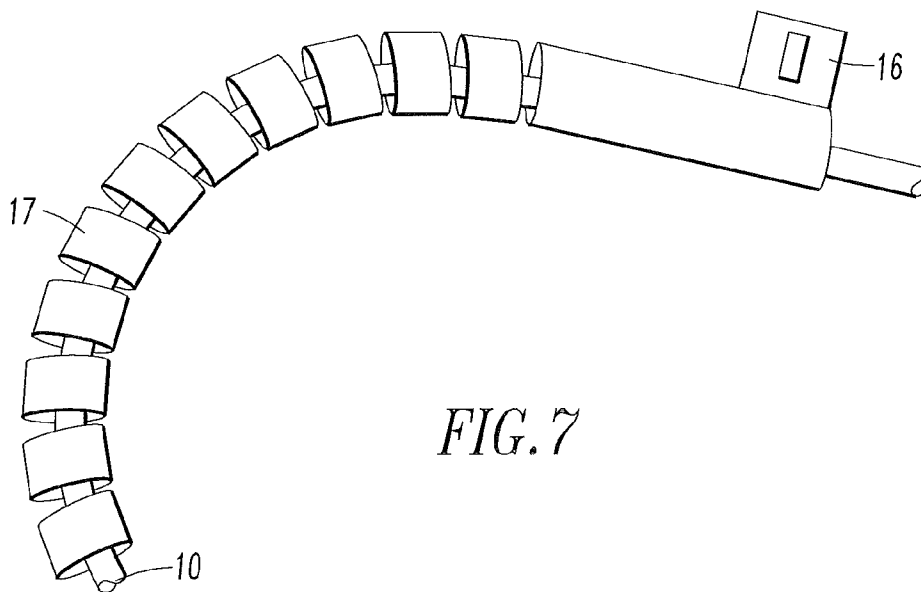


FIG. 6



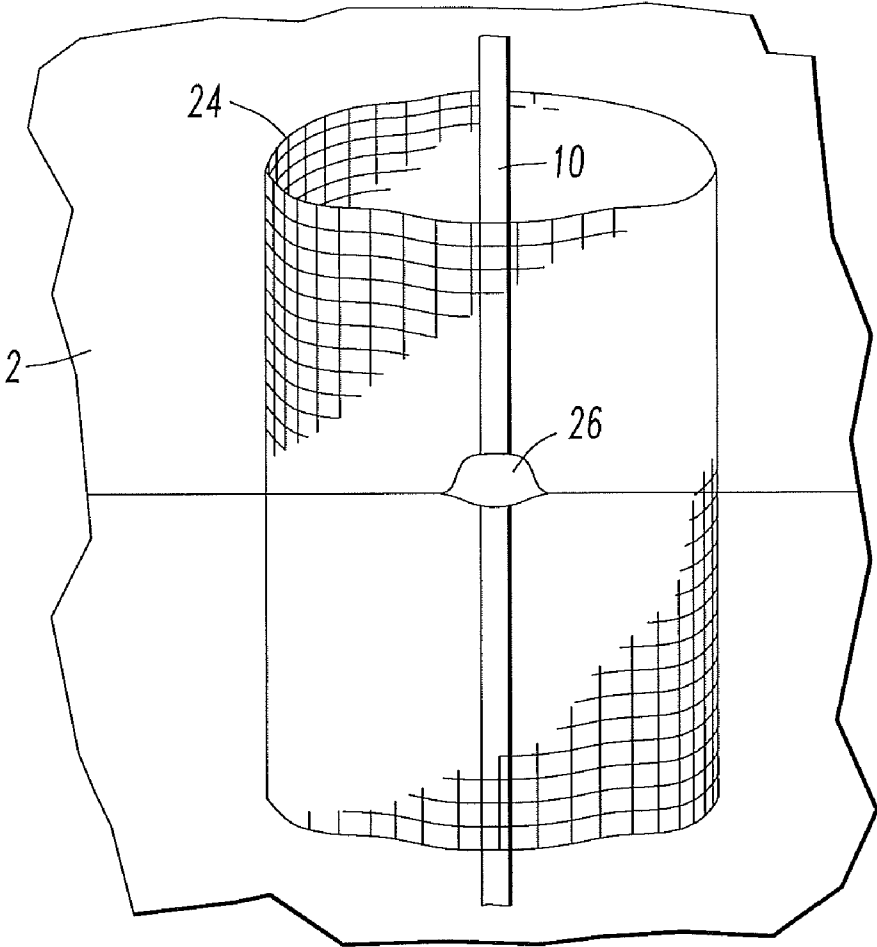


FIG. 9

## WINDOW COVERING WITH CORD SHROUDS

### CROSS REFERENCE TO RELATED APPLICATION

**[0001]** The present application claims priority to U.S. Provisional Patent Application Ser. No. 61/428,281, which was filed on Dec. 30, 2010.

### FIELD OF INVENTION

**[0002]** The present invention relates to window coverings, such as Roman shades or other types of shades.

### BACKGROUND OF THE INVENTION

**[0003]** One popular type of window covering is known as a Roman shade which may also be called a Roman blind, an Austrian shade, a Balloon Shade, or a Soft Shade. This type of shade consists of a panel or sheet of material attached along its top edge to a headrail and gathered at spaced intervals to provide a series of soft transverse folds across the face of the fabric. Consequently, the typical Roman shade has a cascaded or softly pleated appearance. Such Roman shades are usually constructed so that when they are raised from an extended position, they gather from the bottom in generally horizontal folds or pleats until the entire shade resides near the top of the window covering in a retracted position. Often, ballast members such as metal rods or metal bars are positioned within pockets formed in the shade material to provide weight to the shade to form the soft transverse folds. The Roman shades are often operated by pulling on lift cords which pass through rings or similar guides attached to the shade.

**[0004]** In other versions of Roman shades, such as a Roman shade product sold under the AudraGuard name, the shades are operated by pulling on a beaded looped cord of a loop cord drive. Actuation of the loop cord drive causes a shaft or roller to rotate to wind or unwind a plurality of lifting tapes that pass through metal clips or loops attached to the rear face of the shade material and have a terminal end attached to a bottom portion of the shade material. The winding of the lifting tapes causes the shade material to be raised, or retracted. The unwinding of the lifting tapes causes the shade material to lower, or extend.

**[0005]** Cordless Roman Shades have at least one spring motor in the headrail which is connected to spools on which the lift cords are wound and unwound.

**[0006]** Most prior art Roman shades have window covering material that is formed either of a sheet of a flexible material, such as a fabric or film, a plurality of segments of material connected together or woven wood. The material or interconnected segments are typically provided with a plurality of horizontal folds at points vertically spaced from one another to form folds when the shade is raised. A common method for making a Roman shade is to sew or attach at least two sets of rings or connectors along vertical lines down the back of the fabric material as is shown, for example, in U.S. Pat. No. 1,321,800. The spacing of the rings or connectors affects the aesthetic effect of the shade and how the window covering material may look when being raised or lowered. Lift cords pass through the rings and each lift cord is attached to a bottom rail or the lowermost fold. Opposite ends of the lift cords are wound on a spool or shaft in the headrail. The spool or shaft may be turned by a cord loop device or a spring motor

to raise and lower the shade. Alternatively, the lift cords may pass through a cord lock and be moved by a user to turn the spool or shaft.

**[0007]** The shade may also include spacer cords that pass through the rings. The spacer cords are typically attached to the headrail of the shade and the rings and are configured to help improve the aesthetic effect of the shade when the window covering material is raised or lowered. A liner may also be included in such shades. Additionally, Roman shades may be configured as a top down bottom up shade. Roman shades may also have other configurations, such as the configurations disclosed in U.S. Pat. Nos. D473,743, D468,950, and 7,624,784, 6,988,526, 6,662,845, and 5,787,951 and U.S. Patent Application Publication Nos. 2008/0295975, 2008/0277074, 2007/0175593, 2006/0060308 and 2006/0157204.

**[0008]** On occasion, children have been able to get behind a lowered Roman shade, pull a lift cord to form a loop and become entangled in the loop. If the lift cord is around the child's neck and the child falls, the cord could act as a noose and strangle the child. Indeed, reports of such incidents have prompted at least one major retailer to issue a recall of one product line of Roman shades and the United States Consumer Product Safety Commission (CPSC) has issued a warning about the danger of child entanglement and hanging from the cords in Roman shades. In addition the CPSC has issued guidelines, rules and proposed rules that require window covering manufacturers to make shades with inaccessible cords or to construct the window covering product in a manner so that a child cannot form a loop in the lift cord which is large enough, greater than 8 inches in diameter, for a child's head to fit through the loop.

**[0009]** There have also been incidents of child entanglements in lift cords of venetian blinds and other types of window coverings. As a result, the art has developed various types of child safety devices that are intended to prevent deaths of children who become entangled in lift cords. For instance, U.S. Pat. Nos. 7,318,251, 7,261,138, 7,225,850, 7,117,918, 7,086,446, 7,000,672, 6,948,546, 6,918,425, 6,860,312, 6,637,493, 6,484,787, 6,431,248, 5,630,458, 5,533,559 and 4,909,298 and U.S. Patent Application Publication Nos. 2008/0110581, 2007/0023149 and 2006/0144526 disclose child safety devices for blinds. U.S. Pat. Nos. 5,495,883 and 5,613,540 disclose cord shrouds used on the front of a blind. Child safety devices may be configured to keep the lift cords taught so that the cords cannot be pulled away from the window covering material and form a noose or release the cord from the shade when a child becomes entangled in the shade. Most, if not all of the cord release devices are not well suited for use on Roman shades. Moreover, many conventional child safety devices for window coverings are visible from the front of the shade and detract from the aesthetic effect of the shade.

**[0010]** A new window covering is needed to replace or change a conventional Roman shade design to help prevent the entanglement of children within exposed cords.

### SUMMARY OF THE INVENTION

**[0011]** A window covering may include window covering material that extends from a first rail. The window covering material is moveable from a retracted position to an extended position. A plurality of connectors is attached to the window covering material. The connectors include a first column of vertically aligned connectors and a second column of vertically aligned connectors. A first lift cord extends from the first

rail and through a cord shroud attached to the connectors in a first column of vertically aligned connectors. A second lift cord extends from the first rail and through a second cord shroud attached to a second column of vertically aligned connectors. Each shroud may be attached to the connectors by loops that extend from the shroud such that one loop encircles a connector in a column of vertically spaced connectors. A similar arrangement may be used for additional lift cords used on a window shade.

**[0012]** In some embodiments, the shroud may be a ladder-like structure having a series of webs extending between rungs. The webs define openings through which a lift cord passes. The webs may be a single thread or a series of threads. The webs are configured so that there is an opening between adjacent webs through which the lift cord passes. The webs may define a tubular structure such that the openings are in a horizontal plane. Alternatively the webs may define openings in a vertical plane like the rungs on a ladder.

**[0013]** In yet another embodiment the shroud is a spiral structure that encircles a lift cord. Clips, loops or other connectors are provided along the spiral of the spaced apart intervals for attaching the spiral to the rings. The spiral may be a cord or ribbon made from fabric shrouds or plastic.

**[0014]** In all of the embodiments the shroud allows the lift cord to pass through the shroud when the shade is raised and lowered. But the structure of the shroud prevents the lift cord from being separated from the shroud because the shroud is attached to the rings. A small child is not able to pull a lift cord or shroud away from the window covering material. Consequently, the lift cord will not form a loop that could pose a strangulation threat to a child. Nor will the cord shroud form such a loop.

**[0015]** Embodiments of the window covering may include a cord lock positioned in the first rail. Alternatively, the lift cords could be connected to spools or a rotating shaft positioned in the first rail. An actuation mechanism or lift cord control mechanism could be connected to the spools or rotating shaft. For instance, the lift cord control mechanism could be a spring motor, a spring motor unit, a loop cord drive, or other lift cord control mechanism.

**[0016]** In some embodiments, the first rail may be a headrail and the window covering may include a bottom rail connected to the bottom edge of the window covering material or a terminal end of each lift cord.

**[0017]** In one embodiment, a window covering includes a first rail and window covering material adjacent the first rail. The window covering material is moveable from a retracted position to an extended position. A plurality of connectors are attached to the window covering material. The connectors comprise a first set of vertically spaced apart connectors and a second set of vertically spaced apart connectors. The second set of connectors are parallel or substantially parallel to the first set of connectors. A plurality of lift cords extend from the first rail. The lift cords may include a first lift cord and a second lift cord. The first lift cord has a first portion extending from the first rail and passing through or adjacent the connectors of the first set of connectors and the second lift cord has a second portion extending from the first rail and passing through or adjacent the connectors of the second set of connectors. A first cord shroud extends from the first rail to a position adjacent to the bottom portion of the window covering material and is attached to the first set of connectors. A second cord shroud extends from the first rail to a position adjacent to the bottom portion of the window covering mate-

rial and is attached to the second set of connectors. The first portion of the first lift cord passes through and is covered by the first cord shroud and the second portion of the second lift cord passes through and is covered by the second cord shroud.

**[0018]** In some embodiments of the window covering, the first cord shroud is attached to each of the connectors of the first set of connectors and the second cord shroud is attached to each of the connectors of the second set of connectors.

**[0019]** The first end of the first cord shroud may be attached to the first rail and the first end of the second cord shroud attached to the first rail. The second ends of the first and second cord shrouds may be attached to the bottom portion of the window covering material or to a bottom rail attached to the window covering material. It should be appreciated that the first rail may be a headrail for some embodiments of the window covering.

**[0020]** Embodiments of the window covering may be configured as a Roman shade. Alternative embodiments may be configured as blinds or other types of shades.

**[0021]** The first cord shroud and the second cord shroud may be positioned on or adjacent the rear side of the window covering material. For instance, if the window covering is configured as a Roman shade the first and second cord shrouds may be positioned on the rear side of the window covering material.

**[0022]** The first and second set of connectors may be any of a number of types of fasteners or connector devices. For instance, the connectors of the first set of connectors can be rings and the connectors of the second set of connectors can be rings. In some embodiments, loops attach the first cord shroud to the connectors of the first set of connectors and loops attach the second cord shroud to the connectors of the second set of connectors. Of course, other embodiments may utilize other fastening mechanisms for attaching the connectors to the cord shrouds.

**[0023]** Other details, objects, and advantages of the invention will become apparent as the following description of certain present preferred embodiments thereof and certain present preferred methods of practicing the same proceeds.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0024]** Present preferred embodiments of my window covering are shown in the accompanying drawings and certain present preferred methods of practicing the same are also illustrated therein.

**[0025]** FIG. 1 is a rear view of a first present preferred embodiment of the window covering in a lowered or fully extended position.

**[0026]** FIG. 2 is an enlarged view of a portion of the first present preferred embodiment of the window covering shown in FIG. 1.

**[0027]** FIG. 3 is another enlarged view of a portion of the first present preferred embodiment shown in FIG. 1 which shows the connection between the shroud and a ring.

**[0028]** FIG. 4 is an enlarged view of the first present preferred embodiment shown in FIG. 1 showing the shroud and lift cord being moved away from the window covering material.

**[0029]** FIG. 5 is a rear perspective view of a portion of the first present preferred embodiment of the window covering shown in FIG. 1 in a retracted position.

**[0030]** FIG. 6 is a sectional view taken through the cord shroud shown in FIGS. 1 through 5.

[0031] FIG. 7 is a side view of a portion of a second present preferred embodiment of a cord shroud that can be used.

[0032] FIG. 8 is a perspective view of a portion of a third present preferred embodiment of a cord shroud attached to the window covering material.

[0033] FIG. 9 is a perspective view of a portion of a fourth presented preferred embodiment of a cord shroud which is attached directly to the window covering material.

#### DESCRIPTION OF PRESENT PREFERRED EMBODIMENTS

[0034] Referring to FIGS. 1-6, a window covering 1 configured as a Roman shade includes window covering material 2 that is attached between a headrail 3 and a bottom rail 4. The window covering material may be composed of any of a number of different types of material such as woven fabric, non-woven fabric, interconnected fabric segments, woven wood, woven grass, woven bamboo, film, or other material. The window covering material may be moveable from a retracted position, or raised position, to an extended position, or lowered position.

[0035] A lift cord control mechanism may be attached to the headrail. The lift cord control mechanism may include a cord lock (not shown) through which lift cords 10 pass. An operator may manipulate the cords that extend from the cord lock and out near the front of the window covering 1 to raise or lower the window covering material.

[0036] In alternative embodiments, the lift cord control mechanism may include a rotatable shaft. The lift cords may be wound and unwound from the shaft via rotation of the shaft. The shaft may be rotated by a loop cord drive connected to the shaft. A user could then manipulate the loop cord of the loop cord drive to adjust the position of the window covering.

[0037] As yet another alternative embodiment, the window covering could include a lift cord control mechanism that includes a spring motor or one or more spring motor units. The position of the window covering could then be adjusted by a user pulling the window covering material down or pushing the window covering material slightly upwards to actuate the one or more spring motors.

[0038] Rings 5 are attached to the rear side of the window covering material. The rings 5 may define a plurality of vertically aligned columns of spaced apart rings. A cord shroud 6 is attached to each column of rings by loops 12 or other connectors. One or more lift cords 10 extend from the headrail 2. Each lift cord may pass through the headrail 3 or be connected to a spool in the headrail. The other terminal end of each lift cord 10 may be attached to the window covering material adjacent to a bottom portion of the window covering material 2. In the embodiment shown in FIG. 1, a terminal end of each lift cord 10 is attached to a bottom rail 4 attached to the window covering material 2.

[0039] As seen in FIG. 5, the window covering material may form generally transverse or horizontal folds 14 in the front side of the window covering material when the window covering material is raised. The formation of the folds may be created via connections formed between rings 5 attached to the window covering material and lift cord 6 that extend through the shrouds 6 attached to the rings 5. Weighted rods, bars, or other members (not shown) may also be positioned in the window covering material 2 to help form the folds 14 when the window covering material is raised.

[0040] The shroud 6 preferably is formed by a pair of spaced apart rails 7 and threads which form webs 8 that

extend between the rails as can be seen most clearly in FIG. 6. The rails 7 are preferably woven material and have a diameter of between 0.025 and 0.050 inches. At least one thread 8 is wrapped around or woven through the rails 7 to define spaced apart webs extending between the rails. Each web contains at least one thread extending back and forth between the rails to define more than two substantially parallel thread segments passing between the rails. The webs are spaced apart so that between each pair of adjacent webs there is an aperture through which a lift cord 10 passes. The webs may be constructed to form a tubular structure having an aperture through a horizontal cross section as shown in FIG. 6. Alternatively, the webs may lie in a single vertical plane with apertures provided between adjacent webs like a ladder. The apertures may be approximately the same size as the webs. For example, the rails can be spaced apart 0.175 inches and both the webs and apertures have a height of 0.3 inches. The lift cords may be 0.030 inches in diameter. This size of cord is conventionally used on Roman shades. One could utilize lift cords of about 0.040 inches to about 0.080 inches in which case the size of the web and aperture should be doubled in all directions. When the window covering is raised the shroud will collapse to a stacked position such as is shown in FIG. 5.

[0041] Each shroud 6 has loops 12 or eyelets that extend from the shroud and are attached to a ring 5. The loops may be adjustable loops such as adjustable ties or zip ties. As another example, each adjustable loop may have one end portion attached to another portion of the loop to provide an adjustable sizing of the loop.

[0042] The attachment of the shroud to the successive rings 5 as well as the spacing of the rings prevents the lift cord within the shroud from being pulled sufficiently far from the window covering material to form a loop that is large enough to be a strangulation hazard to a child. Preferably, the spacing between immediately adjacent rings of a vertical column of rings is between four and eight inches or between ten and twenty centimeters. A small child would not have the dexterity necessary to separate the lift cord from the shroud for purposes of pulling the lift cord away from the window covering material to form a noose or loop that may be a strangulation threat to the child.

[0043] In alternative embodiments, shown in FIG. 7 shroud 17 is a spiral structure that encircles the lift cord 10. Clips 16 are provided in the spiral for attachment to the rings 5. The spiral may be tight when the window covering is raised but have larger spaces between adjacent segments when the window covering is lowered.

[0044] Referring to FIG. 8, a third present preferred embodiment of the cord shroud 20 is a tubular structure preferably made of a mesh fabric which collapses easily. In this embodiment, the tubular structure surrounds rings 5 which are attached either to the window covering material or the cord shroud. The shroud may be attached to the window covering material adjacent each ring or be attached to the loop 22 which connects the ring to the fabric. In this embodiment, the lift cord 10 passes through the ring 5.

[0045] In yet another present preferred embodiment showed in FIG. 9 a tubular shroud 24 is provided which is attached directly to the window covering material. A loop 26 is provided at spaced apart intervals within the shroud. The lift cord 10 passes through the spaced apart loops. The shroud is preferably made of a mesh material; however, other fabrics can be used. One could also design the shroud to have rings

formed in the fabric material of the shroud at spaced apart intervals. A lift cord could pass through these rings.

**[0046]** In all of the embodiments discussed above the width or diameter of the shroud could be as small as 5 millimeters or as large as a few inches.

**[0047]** It should be understood that changes may be made to address different design objectives. For instance, rings **5** could be replaced with other types of connectors to meet a desired design objective. For instance, the rings could be adjustable zip ties, adjustable ties or other attachment mechanisms. As another example, the window covering material could be composed of any of a number of different material options for shades or blinds. As yet another example, the lift cords may differ from the cords shown herein and may alternatively be tape, flexible elongated members, or other lift cord structures.

**[0048]** While certain present preferred embodiments of the window covering and certain embodiments of methods of practicing the same have been shown and described, it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied and practiced within the scope of the following claims.

**1.** A window covering comprising:

a first rail;

window covering material adjacent the first rail, the window covering material moveable from a retracted position to an extended position, the window covering material having a top portion adjacent to the first rail and a bottom portion opposite the top portion;

a plurality of connectors attached to the window covering material, the connectors comprising a first set of vertically spaced apart connectors and a second set of vertically spaced apart connectors, the second set of connectors being parallel or substantially parallel to the first set of connectors;

a plurality of lift cords extending from the first rail, the lift cords comprising a first lift cord and a second lift cord, the first lift cord having a first portion extending from the first rail and passing through or adjacent the connectors of the first set of connectors and the second lift cord having a second portion extending from the first rail and passing through or adjacent the connectors of the second set of connectors;

a first cord shroud extending from the first rail to a position adjacent to the bottom portion of the window covering material, the first cord shroud attached to the first set of connectors;

a second cord shroud extending from the first rail to a position adjacent to the bottom portion of the window covering material, the second cord shroud attached to the second set of connectors;

the first portion of the first lift cord passing through and covered by the first cord shroud; and

the second portion of the second lift cord passing through and covered by the second cord shroud.

**2.** The window covering of claim **1** wherein the first cord shroud is comprised of a series of webs extending between spaced apart rungs to define a generally tubular structure and the second cord shroud is comprised of a series of webs extending between spaced apart rungs to define a generally tubular structure.

**3.** The window covering of claim **1** wherein the first cord shroud is attached to each of the connectors of the first set of connectors and the second cord shroud is attached to each of the connectors of the second set of connectors.

**4.** The window covering of claim **1** wherein the first cord shroud has a first end and a second end opposite the first end and the second cord shroud has a first end and a second end opposite the first end, the first end of the first cord shroud attached to the first rail and the first end of the second cord shroud attached to the first rail.

**5.** The window covering of claim **4** wherein the second end of the first cord shroud is attached to the bottom portion of the window covering material and the second end of the second cord shroud is attached to the bottom portion of the window covering material.

**6.** The window covering of claim **4** further comprising a bottom rail, the second end of the first cord shroud being attached to the bottom rail and the second end of the second cord shroud being attached to the bottom rail.

**7.** The window covering of claim **6** wherein the first cord shroud is attached to each of the connectors of the first set of connectors and the second cord shroud is attached to each of the connectors of the second set of connectors.

**8.** The window covering of claim **1** wherein the first cord shroud is comprised of a spiral structure defining an aperture through which the first portion of the first lift cord passes, the spiral structure being attached to the connectors by clips or being attached to the window covering material, the spiral structure being tight when the window covering material is retracted and moving to define larger spaces between adjacent segments of the spiral structure when the window covering material is moved from the retracted position to the extended position.

**9.** The window covering of claim **1** wherein the first cord shroud is directly attached to the window covering material and the second cord shroud is directly attached to the window covering material.

**10.** The window covering material of claim **9** wherein a plurality of spaced apart loops directly attach the first cord shroud to the window covering material and a plurality of spaced apart loops directly attach the second cord shroud to the window covering material.

**12.** The window covering of claim **1** wherein the first cord shroud covers the connectors of the first set of connectors and the second cord shroud covers the connectors of the second set of connectors.

**13.** The window covering of claim **1** wherein the first cord shroud encloses the connectors of the first set of connectors and the second cord shroud encloses the connectors of the second set of connectors.

**14.** The window covering of claim **1** wherein the first cord shroud encloses the first portion of the first lift cord and the second cord shroud encloses the second portion of the second lift cord.

**15.** The window covering of claim **1** wherein the first cord shroud is comprised of mesh material and the second cord shroud is comprised of mesh material.

**16.** The window covering of claim **1** wherein the window covering material is one of: woven fabric, non-woven fabric, interconnected fabric segments, woven wood, woven grass, woven bamboo, and a film.

**17.** The window covering of claim **1** wherein the window covering is a Roman shade.

**18.** The window covering of claim **1** wherein the window covering material has a front side and a rear side opposite the front side, the first cord shroud and the second cord shroud being positioned on or adjacent the rear side of the window covering material.

**19.** The window covering of claim **1** wherein loops attach the first cord shroud to the connectors of the first set of

connectors and loops attach the second cord shroud to the connectors of the second set of connectors.

**20.** The window covering of claim **1** wherein the connectors of the first set of connectors are rings and the connectors of the second set of connectors are rings.

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