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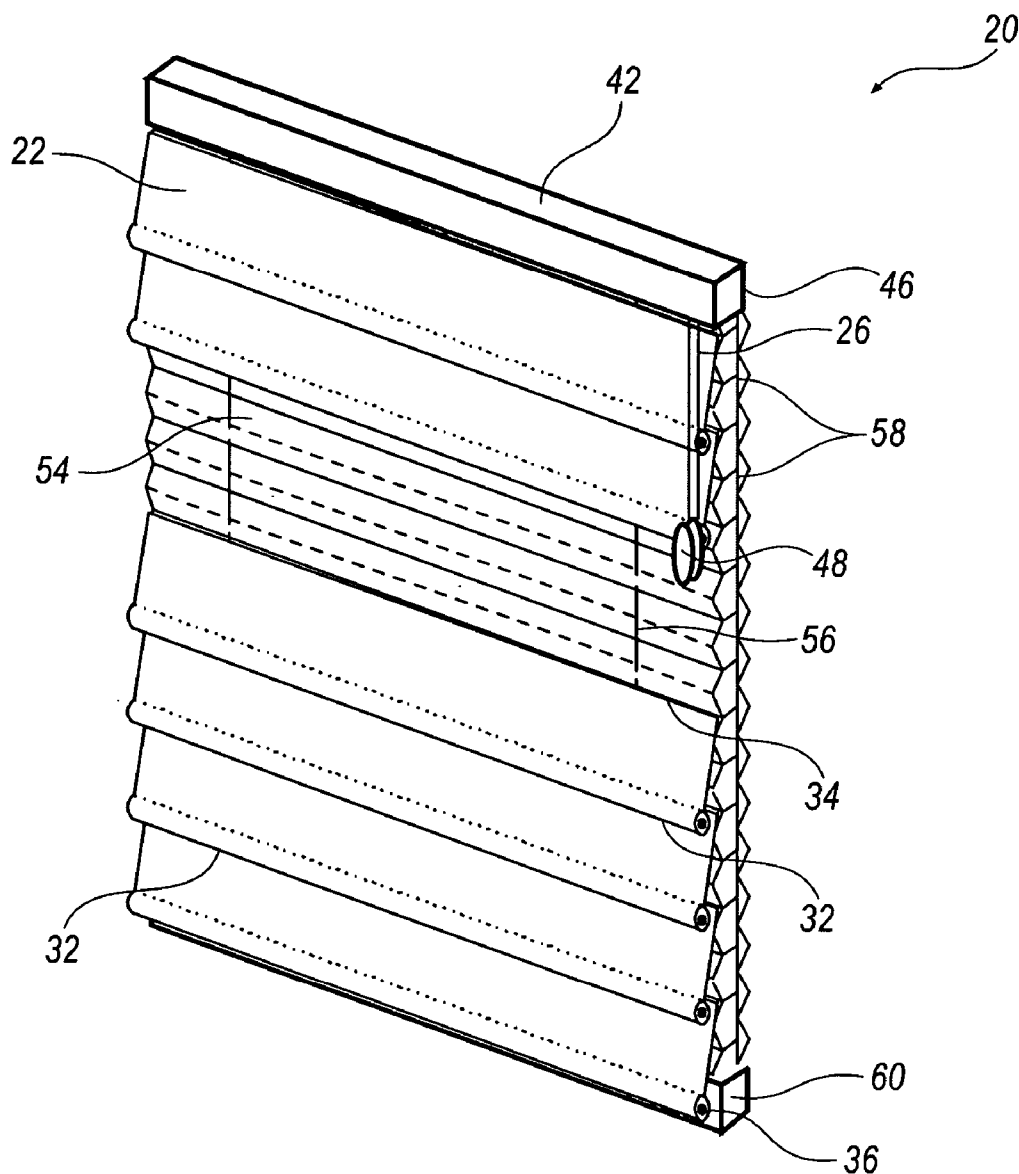
(19) **United States**(12) **Patent Application Publication**
Marusak et al.(10) **Pub. No.: US 2006/0225845 A1**(43) **Pub. Date: Oct. 12, 2006**(54) **SEGMENTED ROMAN WINDOW SHADE****Related U.S. Application Data**(76) Inventors: **Thomas J. Marusak**, Loudonville, NY (US); **Richard D. Watkins**, Lake Luzerne, NY (US); **John A. Corey**, Melrose, NY (US)

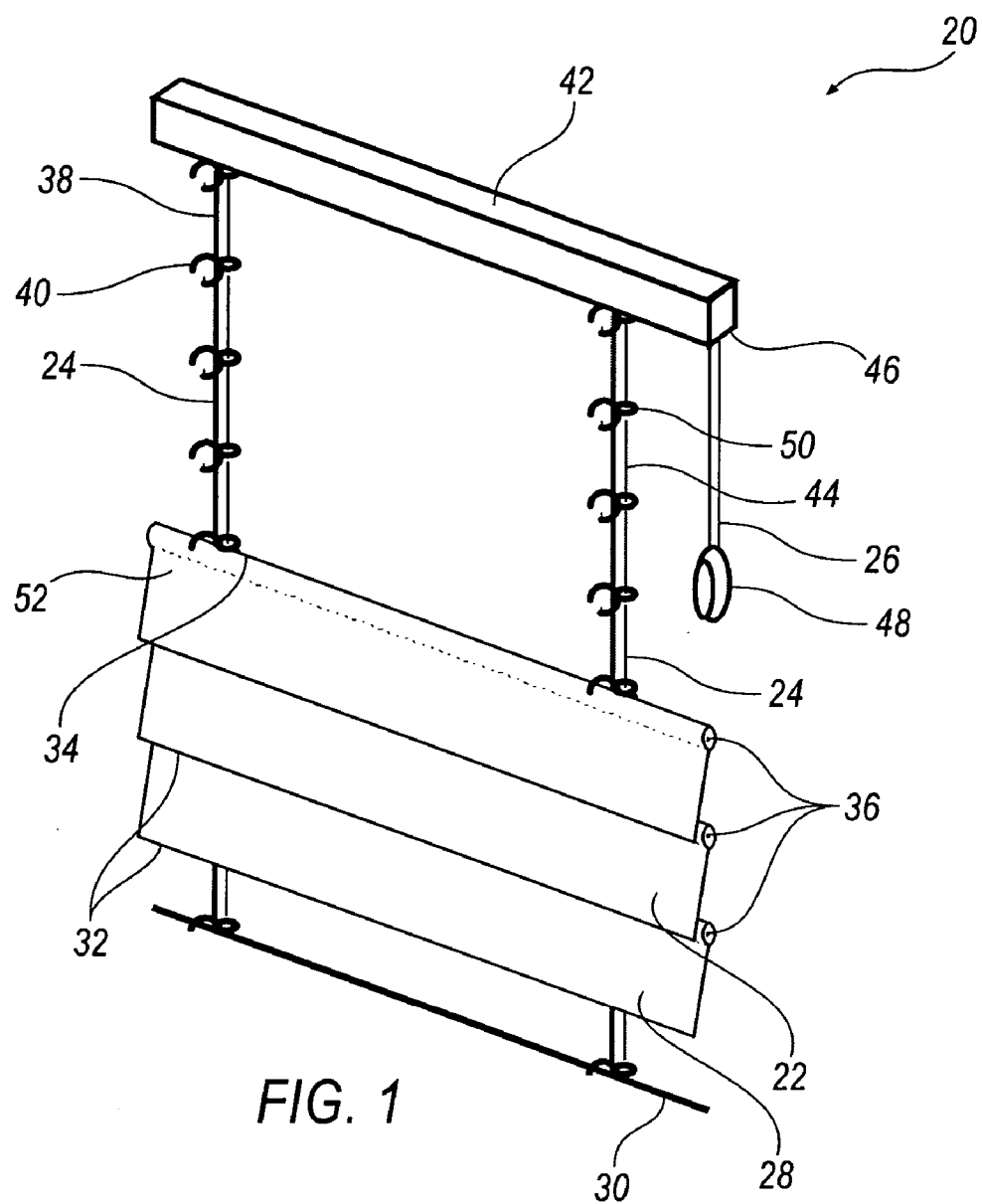
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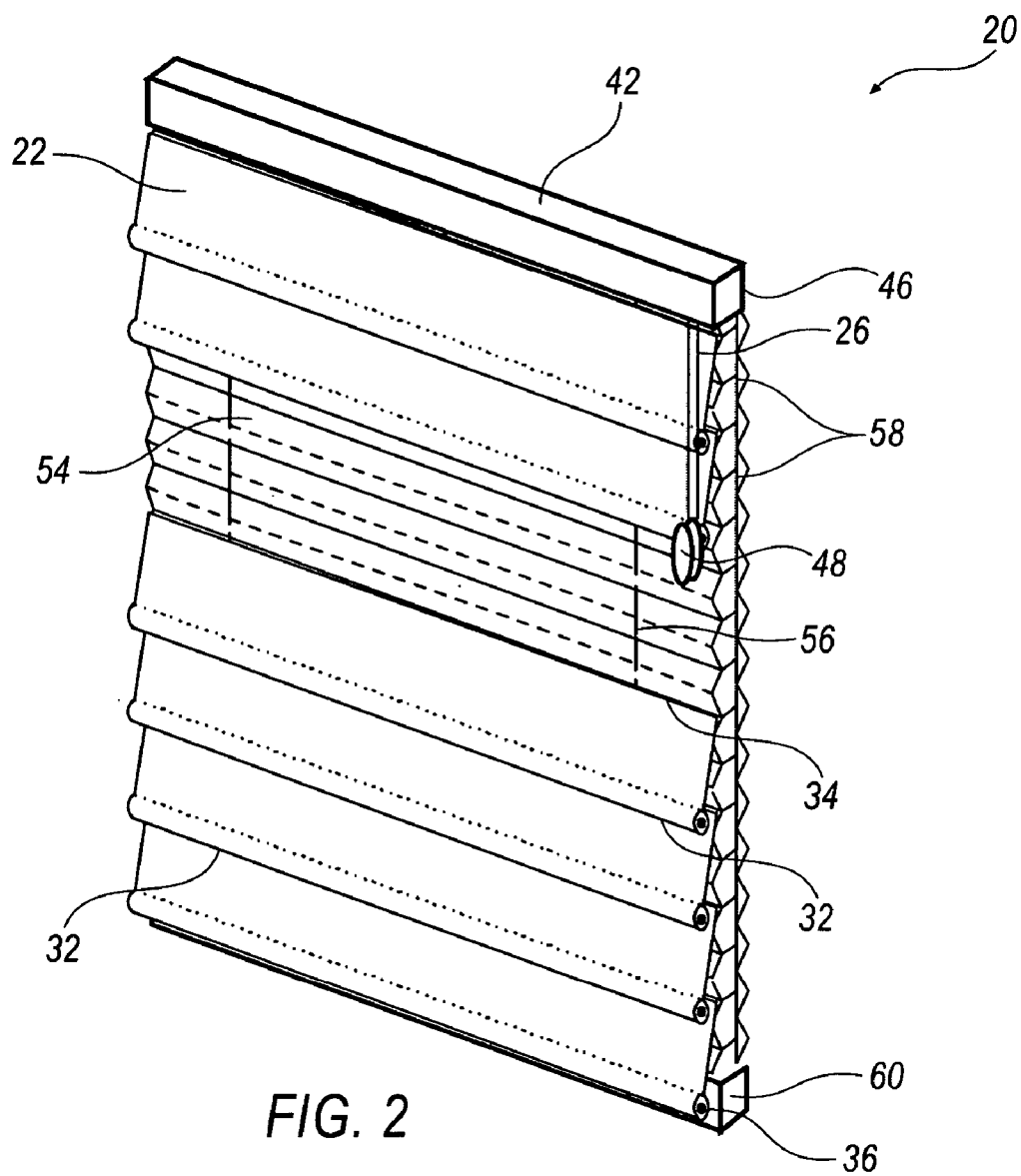
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A47H 1/00 (2006.01)(52) **U.S. Cl.** 160/126(57) **ABSTRACT**

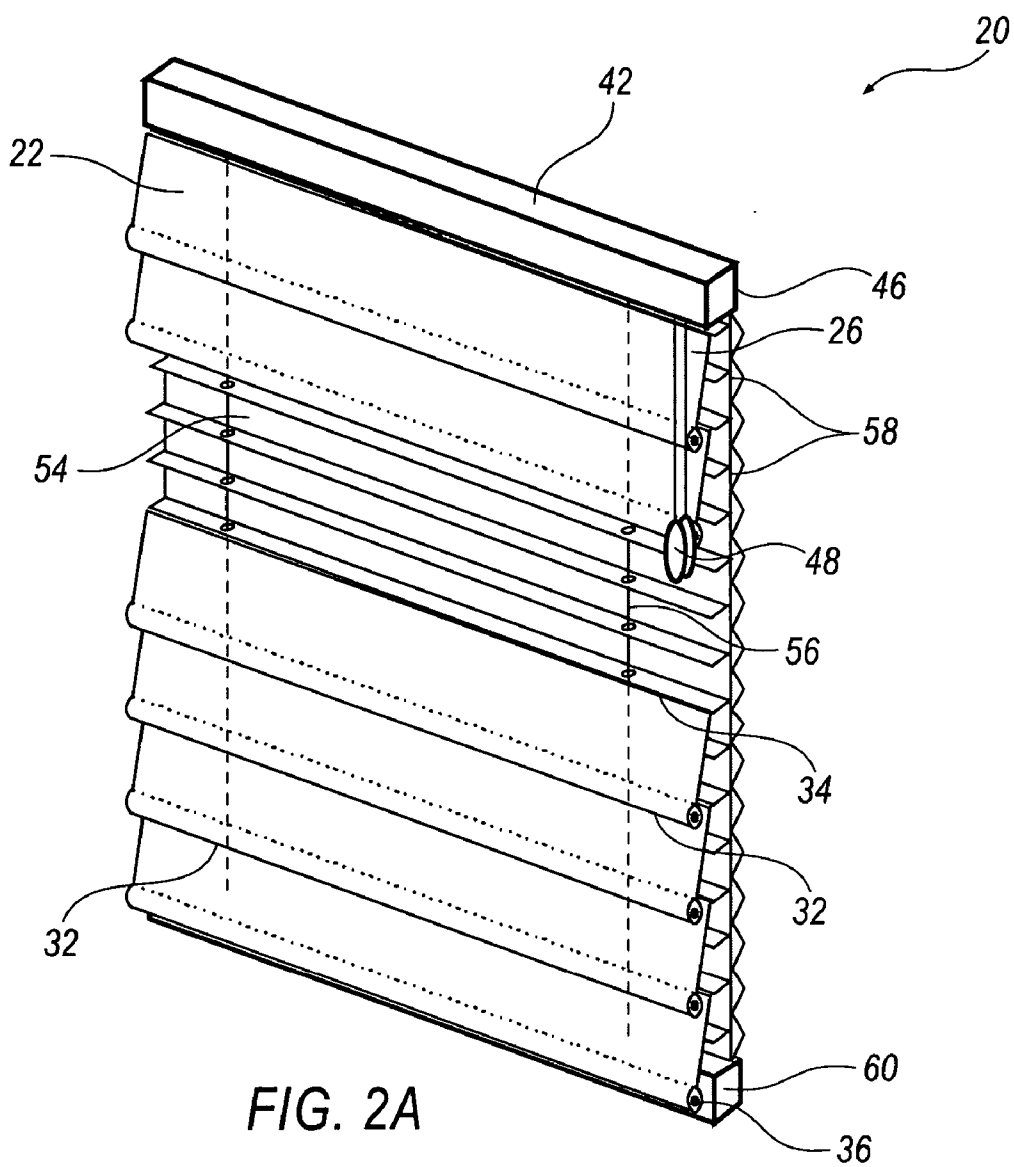
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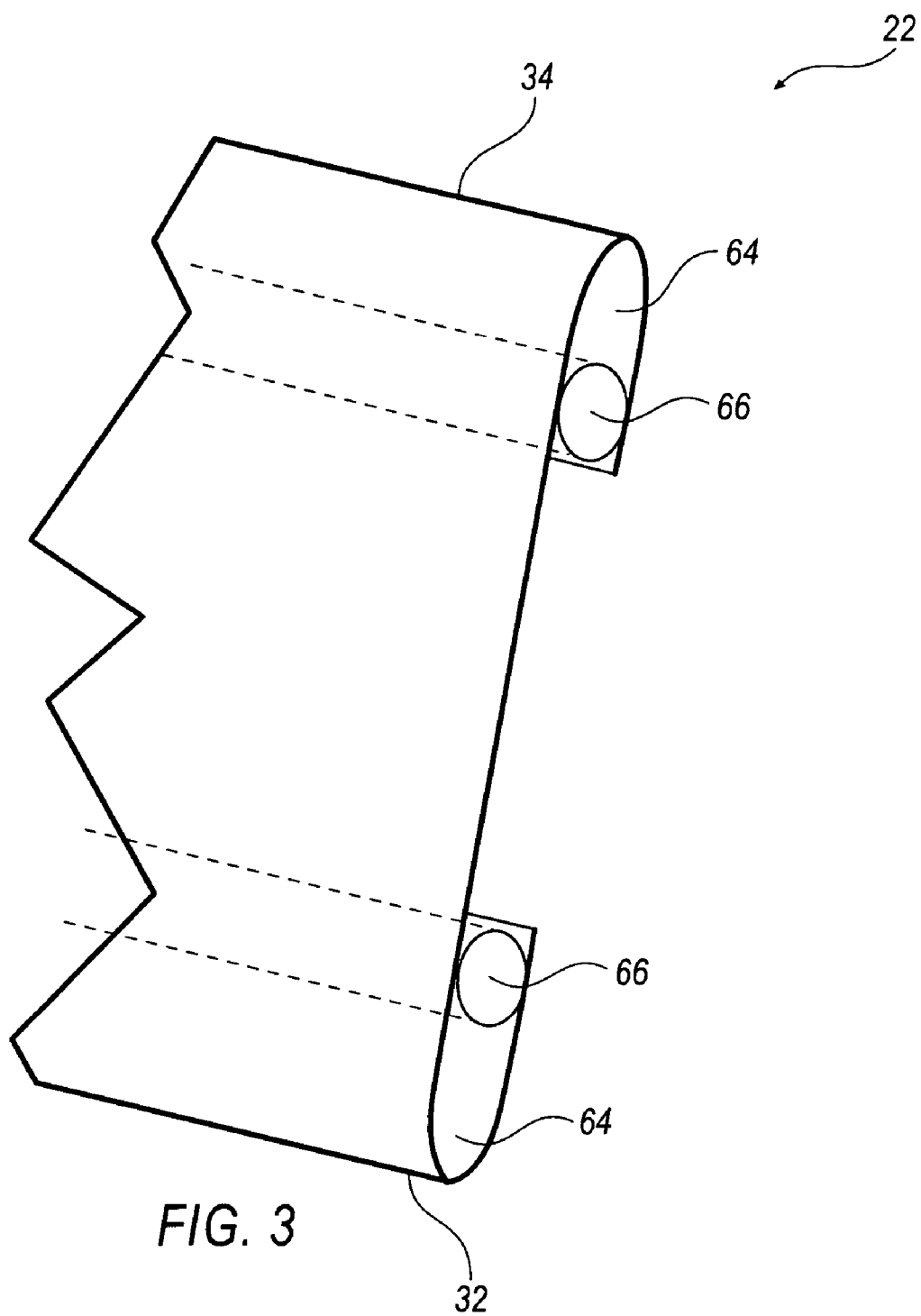
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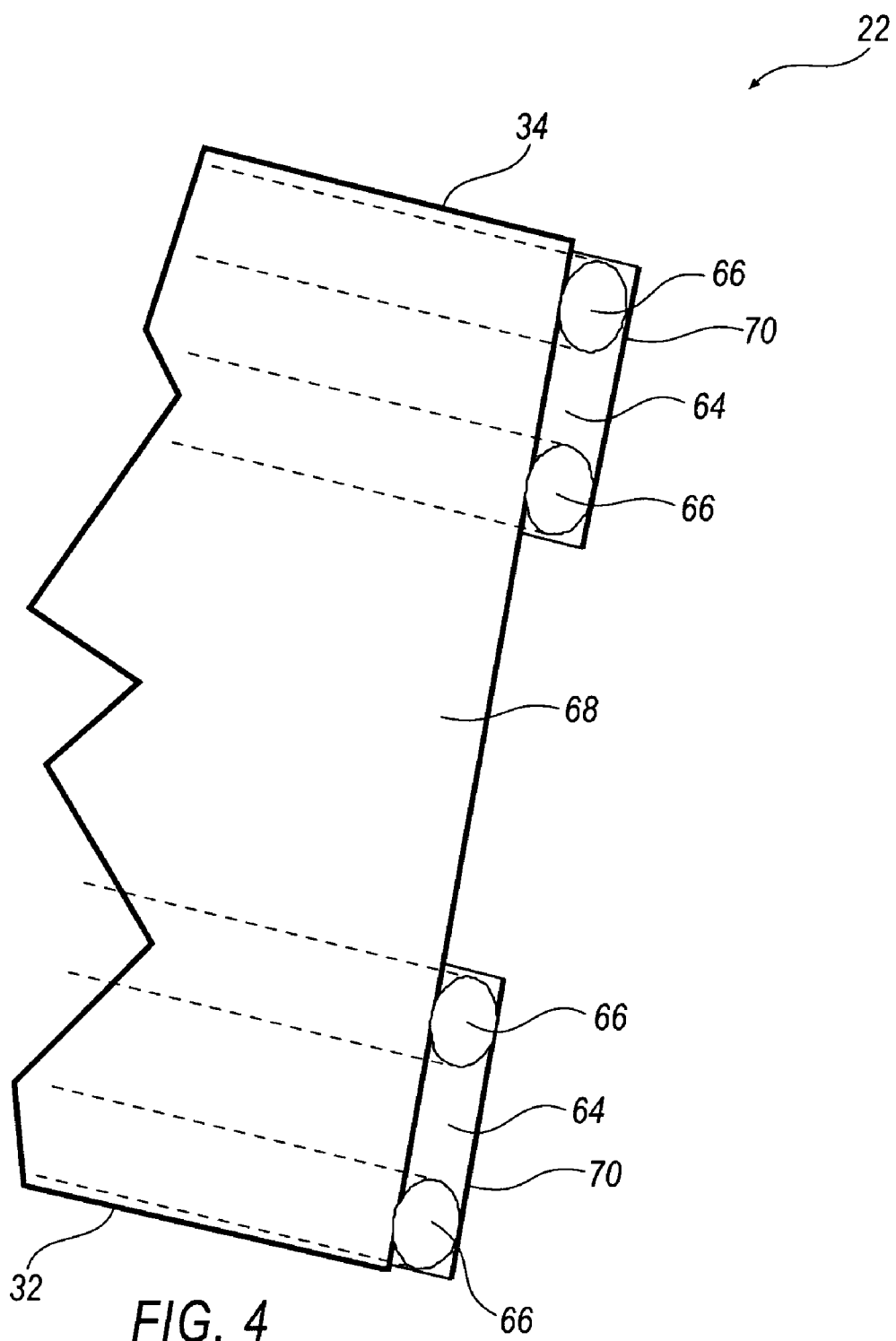
RADER, FISHMAN & GRAUER PLLC
39533 WOODWARD AVENUE**SUITE 140****BLOOMFIELD HILLS, MI 48304-0610 (US)**(21) Appl. No.: **11/348,145**(22) Filed: **Feb. 6, 2006**

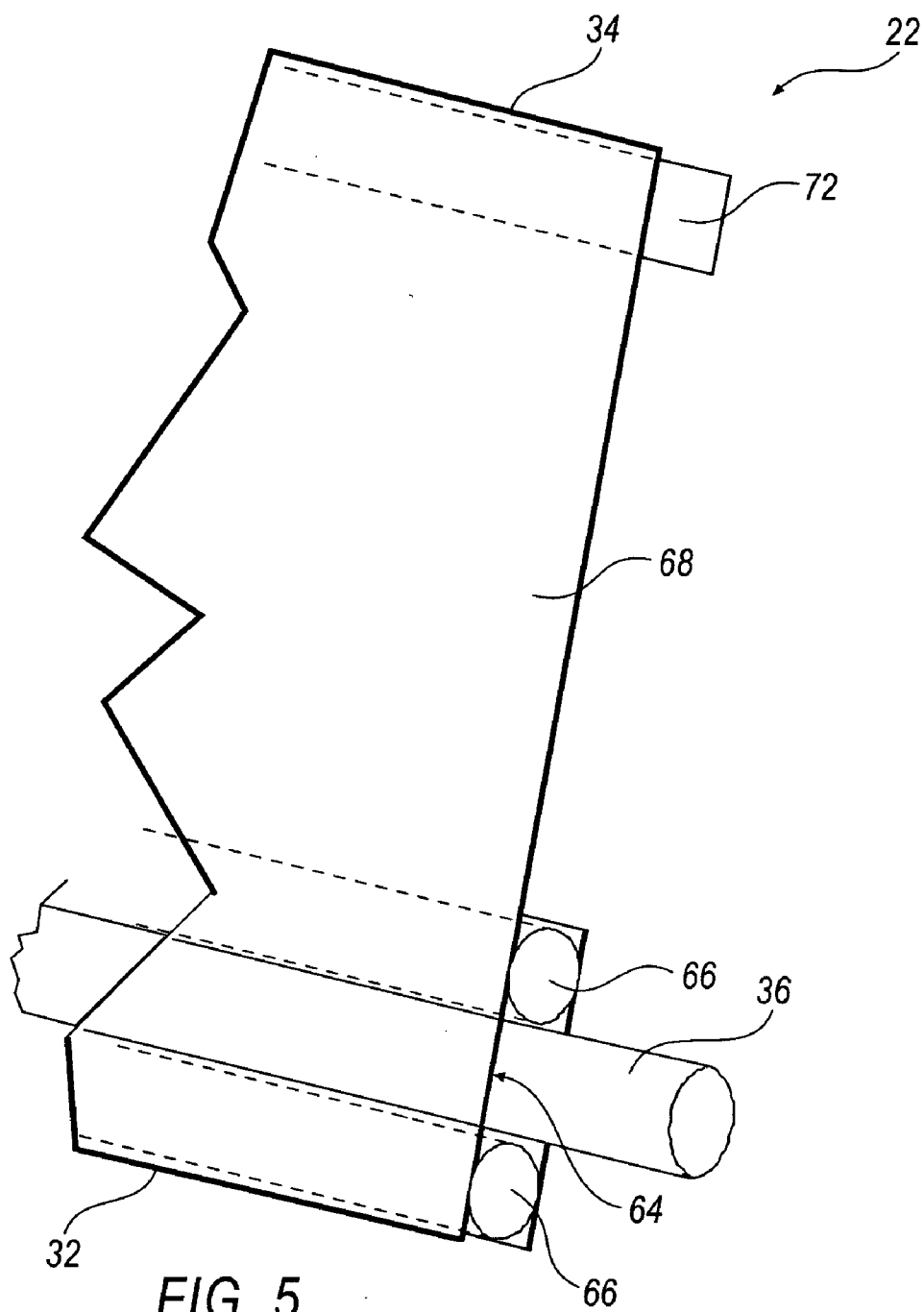


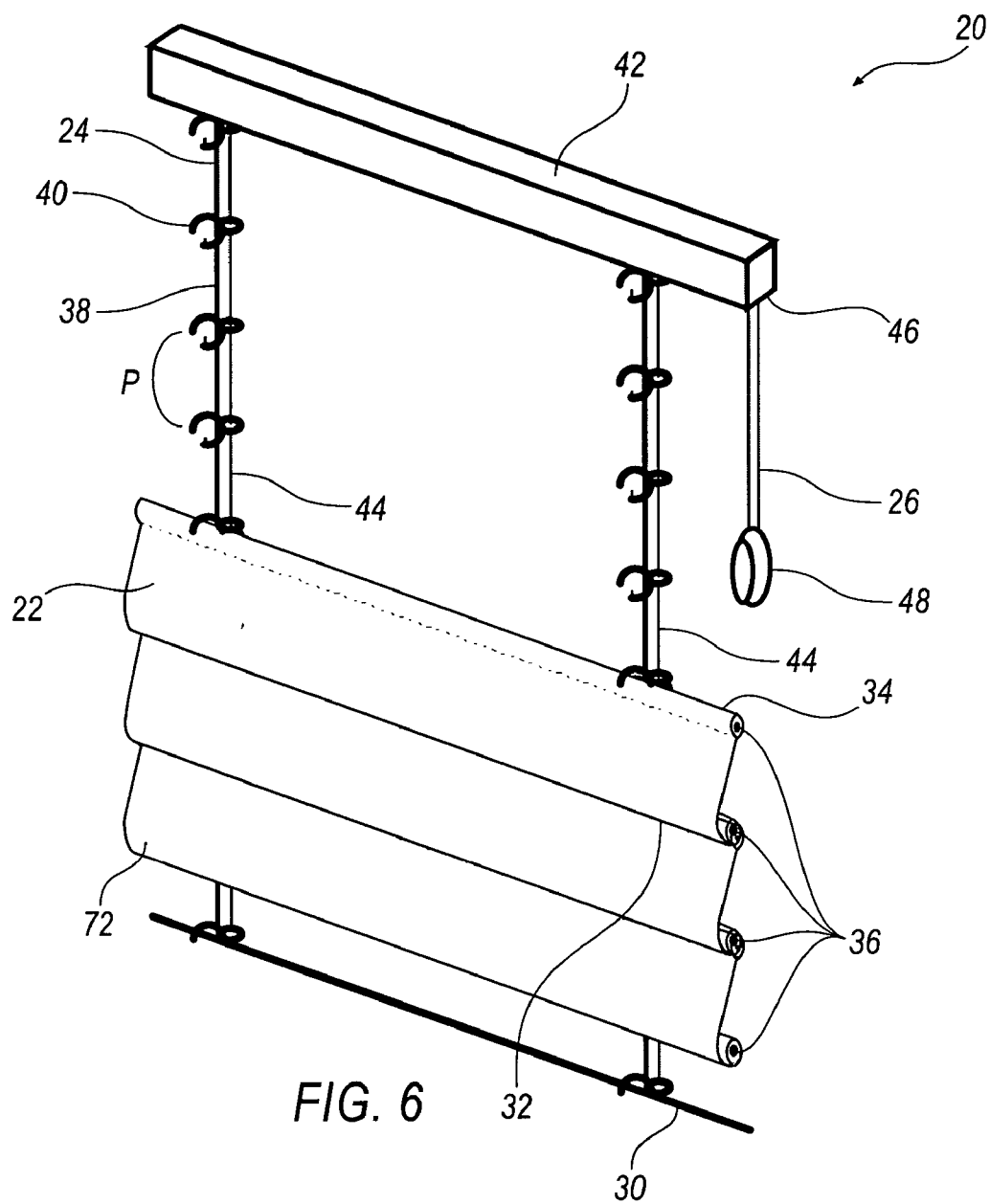












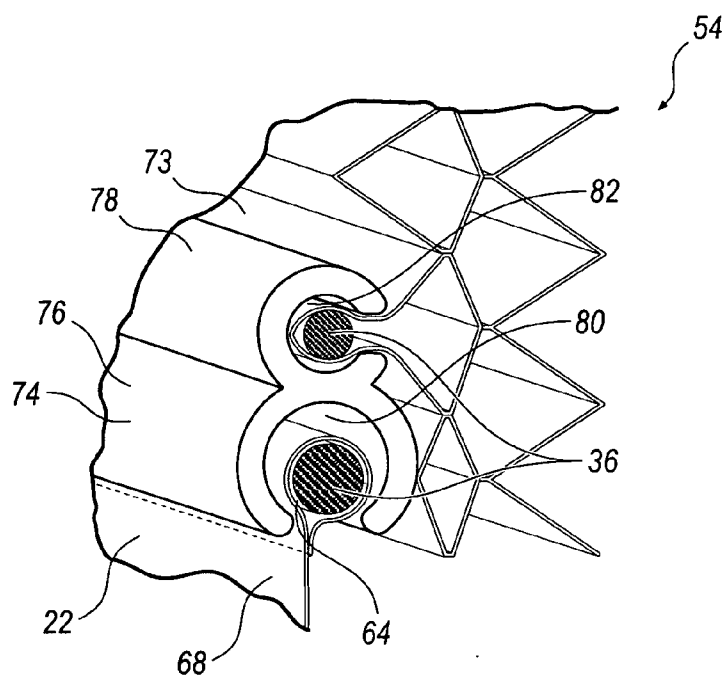


FIG. 7

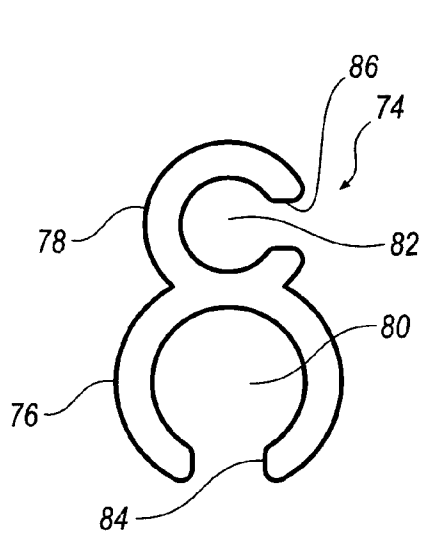


FIG. 8

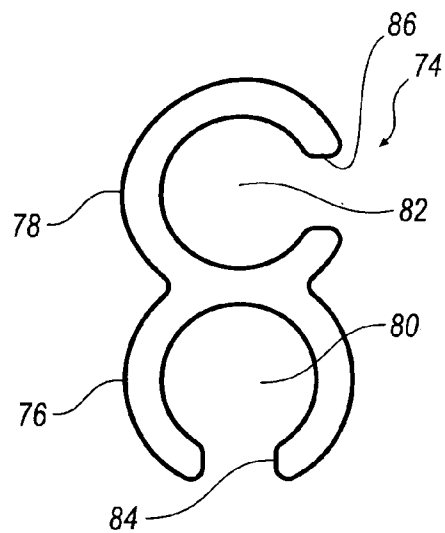


FIG. 9

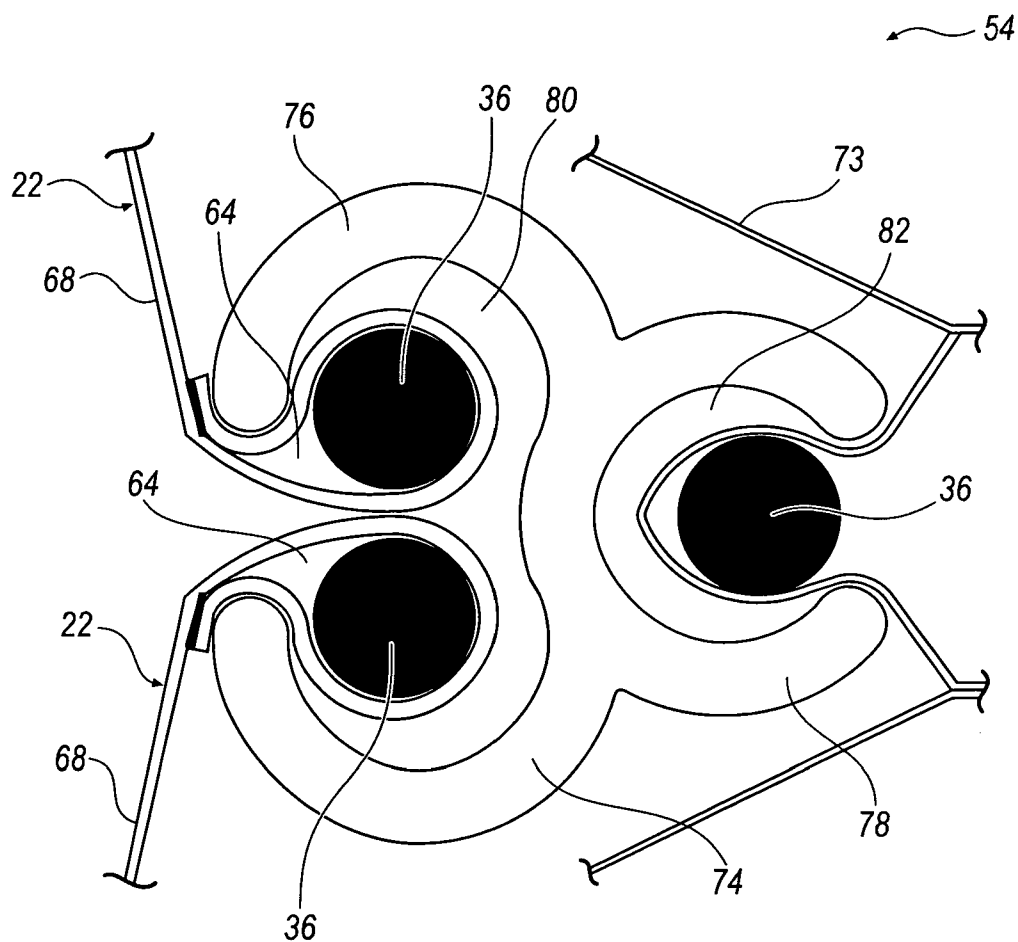


FIG. 10

SEGMENTED ROMAN WINDOW SHADE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 60/669,189 filed Apr. 6, 2005, which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] The embodiments herein are directed to a retractable window covering that can be manufactured from strips of material arranged in overlapping relation to cover an area of a window.

BACKGROUND

[0003] An ancient, but ever-popular form of window covering is known as a Roman Shade. This type of shade conventionally comprises a fabric sheet as wide as the window to be covered and as long as or longer than the window. A fabric is fitted with periodically-spaced rings or equivalents on the back (outward-facing) surface of the fabric, aligned in vertical columns. Cords are passed through the rings and attached at the bottom of the fabric or sometimes to a rigid bar. When the cords are pulled from their free ends (typically directed through a top rail and cord locking device, so as to be pulled by an operator), the shade is raised, permitting view through the window and cleaning. A variant, called 'hobbled' adds a second set of cords or a second fabric layer with shorter periodicity, joined to the back of the first fabric, to form a sequence of billows in the front fabric. The periodic spacing of the rings causes the fabric to be taken up in sequential folds as lower rings are lifted into contact with rings just above and held together by the cord passing through. Because this type of shade is readily made from any fabric, Roman shades have been associated with expensive custom treatments made by hand in custom-chosen fabrics. As such, they are perceived as having a very desirable appearance.

[0004] In recent years, some attempts have been made to improve on the manufacturability and function of Roman shades. One example is given in U.S. Pat. No. 5,566,735 to Jelic and now manufactured by Comfortex Corporation. The shade uses U-section ribs pressed onto the fabric in a spaced array, combined with snap-on beaded cords that connect to the ribs to set the billows or flat spacing of the flat fabric. Lift cords through eyes in the clips perform the usual Roman gathered lift. This design simplifies the assembly of a Roman shade without altering its basic appearance, but the cutting and measuring of a fabric piece and positioning of the ribs remain labor-intensive.

[0005] Other disadvantages of Roman shades include low thermal insulating value, fragility in shipping as the fabric is gathered in folds and easily crushed or creased in packaging, low solar reflectance (enhanced reflectance is often obtained, for instance in cellular shades, with a white outward surface despite choice of interior face colors), accessible cords (potential safety hazard), and an unattractively large, bulging accumulation of folded fabric when raised. The embodiments described herein address some or all of these shortcomings.

SUMMARY

[0006] In the embodiments described, a window covering is employed having a carrier grid and plurality of horizontal

strips of fabric secured to the carrier grid. The strips are disposed in overlapping and vertically spaced relation to cover an area of a window.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The features and inventive aspects of the present invention will become more apparent upon reading the following detailed description, claims, and drawings, of which the following is a brief description:

[0008] **FIG. 1** is a perspective view of a first embodiment of a partially assembled window covering;

[0009] **FIG. 2** is a perspective view of a second embodiment of a partially assembled window covering showing material strips on a cellular backer material and internal lift cords;

[0010] **FIG. 2A** is a perspective view of the second embodiment of **FIG. 2** showing a partially assembled window covering having lift cords not internal to the ligaments or cells;

[0011] **FIG. 3** is a perspective detailed view of a first example of a material strip having two folded-over pockets;

[0012] **FIG. 4** is a perspective detailed view of a second example of a material strip having pockets formed from joining two smaller pieces of material;

[0013] **FIG. 5** is a perspective detailed view of a third example of a material strip having a pocket on a first side and an attachment strip on a second side;

[0014] **FIG. 6** is a perspective view of a third embodiment of a partially assembled window covering having a stiffener at both the upper edge and lower edge of the material strip;

[0015] **FIG. 7** is a perspective detailed view of an exemplary connection between a pocket segment of the cellular backing material of **FIG. 2** and the material strip using a backing clip;

[0016] **FIG. 8** is a side view of a first example of the backing clip of **FIG. 7**;

[0017] **FIG. 9** is a side view of a second example of the backing clip of **FIG. 7**; and

[0018] **FIG. 10** is a side view of a third example of the backing clip showing a larger opening adapted to receive two stiffeners.

DETAILED DESCRIPTION

[0019] Referring now to the drawings, illustrative embodiments are shown in detail. Although the drawings represent the embodiments, the drawings are not necessarily to scale and certain features may be exaggerated to better illustrate and explain an innovative aspect of an embodiment. Further, the embodiments described herein are not intended to be exhaustive or otherwise limit or restrict the invention to the precise form and configuration shown in the drawings and disclosed in the following detailed description.

[0020] The embodiments described herein are directed to a window covering **20** having a plurality of horizontal, overlapping and vertically-spaced material strips **22**, secured to a carrier grid **24** that maintains their spacing as shown in **FIG. 1**. The window covering **20** may include lift cords **26**

secured to a bottom-most strip 28 or a rail 30 that draws up the strips 22 into a nested stack when the cords 26 are pulled in a downward direction. The lower edges 32 of the strips 22 are free-hanging having either a plain edge or an edge with a stiffening rib as further described below so that the strips 22 remain free-hanging when the strips 22 are drawn up. In another example of the strips 22, the lower edges 32 of the strips 22 are secured to the carrier grid 24 also, for instance near an upper edge 34 attachment of the next lower strip 22, so as to provide a folding of each strip 22 when drawn up and optionally, a hobbled look when the strips 22 are lowered. In the embodiment of the window covering 20 as shown in FIG. 1, the free-hanging lower edges 32 of each strip 22 generally covers and overlaps the upper edge 34 of the strip directly below it.

[0021] FIG. 1 shows a partially-assembled window covering 20 of a basic type, according to a first embodiment. The material strips 22 are shown having edge stiffeners 36 secured to spacing cords 38 by engagement clips 40. A headrail 42 is disposed at an upper portion of the window covering 20 and is formed from a material including plastic, metal, aluminum, wood, polyamide resin and the like. The headrail 42 guides lift cords 44 from a cordlock 46 and pull tassels 48 through spaced drops 50 to bottom rail 30. The pull tassels 48 move the window covering 20 between an open and closed orientation as known in the art. By way of example, four upper strips and one lower strip are omitted from this partial assembly. The engagement of clips 40 to the first strip 52 and stiffener 36 can be seen at the uppermost first strip 52 shown. Further, the securement stiffener 36 of strip 22 is from an exterior orientation of spacing cords 38. In other words, the strips 22 are not secured within the spacing cords 38 so that each strip 22 may not be easily removed independently of the other strips 22. Each strip 22 is secured by the engagement clips 40 allowing a user to remove a single target strip 22 without removing the entire window covering 20 from an installed orientation or disassembling the window covering 20 in order to access the target strip 22. By providing a window covering 20 that permits the removal of a single strip 22 without removal or disassembly of the window covering 20, the user saves time and effort in the replacement of the strip 22.

[0022] Referring now to FIG. 2, a second embodiment of the window covering 20 is shown. The covering 20 includes a plurality of material strips 22. Two strips 22 are shown removed to show other parts of the covering 20. The covering 20 further includes a cellular backing material 54 with internal lift cords 56. In this embodiment, the cellular backing material 54 is adapted to generally extend over most of the length of the window covering 20. Because of the weight of the bottom rail 60, cell-wall ligaments 58 are pulled downwardly into general alignment providing a uniform pitch of the exterior of the ligaments 58 so that the cell-wall spacing becomes generally uniform. The material strips 22 secured to consistently-separated cell-wall ligaments 58 also obtain generally uniform spacing in the fully extended orientation. Specifically, the cellular backing material 54 includes an interior portion of the ligaments 58 that are under constant tension by the weight of the bottom rail 60 and are generally vertical while having a pitched exterior portion. FIG. 2A is a perspective view of an alternative window covering 20 showing a partially assembled window covering 20 having lift cords 56 not internal to the ligaments 58.

[0023] The stiffener 36 may be included at the lower edge of each strip 22 to maintain its general flatness and uniformity and to prevent excessive flapping of the strip 22 in a breeze. Attachment to the cellular backing material 54 by any known method such as adhesive, stitching, clamping, fastening, and the like provides securement of the upper-edge 34 of the strip 22. The combination of cellular backing material 54 and the strip 22 material provides excellent thermal insulation.

[0024] FIG. 3 is a detail view of a first embodiment of the material strip 22 of FIGS. 1 and 2. The material strip 22 includes edge pockets 64 that may be formed by folding the lower edge 32 and upper edge 34 of the strip 22 and joining each portion at an attachment area 66. Any joining method may be used including sewing, using an adhesive, adhesive heat welding, stitching, mechanically attaching and the like. The strip 22 may be laminated or include a printed material that presents a white or reflective face on one side and an attractive color or texture on the other side.

[0025] FIG. 4 is a detail view of a second embodiment of the material strip 22 of FIGS. 1 and 2. The material strip 22 includes a face material 68 and may include at least a partially-laminated back material 70. The material may be fabric, plastic, vinyl, polyester, a woven and non-woven film, and the like. Attachment areas 66 are adapted to form pockets 64 and may be formed by any joining method including sewing, using an adhesive, adhesive heat welding, stitching, mechanically attaching and the like. The back material may be white for reflectivity or any color for uniformity.

[0026] FIG. 5 is a detail view of a third embodiment of the material strip 22 of FIGS. 1 and 2. The material strip 22 includes the face material 68, at least one stiffener 36, and at least one attachment strip 72. The stiffener 36 is disposed inside pocket 64 between attachment areas 66. The attachment strip 72 is shown to be secured to the upper edge 34. However, the attachment strip 72 may be secured to the strip 22 at any location along the width of the strip 22 by any known attachment method including using pressure-sensitive or heat-sensitive adhesive, stitching, and the like.

[0027] FIG. 6 is a third embodiment of a window covering 20. The window covering 20 includes stiffeners 36 at both the upper edge 34 and the lower edge 32. Each edge 34, 32 is secured to the carrier grid 24. The carrier grid 24 may include spacing cords 38 or a cellular backing material 54 as shown in FIG. 2 and described above. When the width of the strip 22 is greater than the distance between engagement clips 40, represented by grid pitch P, the strips 22 form billows 72 and resemble conventional hobbled Roman shades. When the width of the strip 22 is generally the same length as grid pitch P, then the strip 22 resembles a conventional flat Roman shade. In one example, the stiffeners 36 engage one another within the engagement clip 40. The upper edge 34 of a first strip 22 having a first stiffener 36 abuts the lower edge 32 of an adjacent strip 22 having a second stiffener 36. This can be achieved, for instance, by making the strips 22 interlocking along their length. Alternatively, the stiffeners 36 may be adjacent, and be clipped together by the carrier grid 24. Where the carrier grid 24 is cellular material, one or both of the edge stiffeners 36 may be omitted.

[0028] FIG. 7 is a detailed view of an exemplary connection between a pocket segment 73 of the cellular backing

material 54 using a backing clip 74 and the material strip 22. The backing material 54 includes a plurality of pocket segments 73. A section of cellular backing material 54 is shown securing one material strip 22. The material strip 22 includes the face material 68 projecting in a downward direction from the backing clip 74. The stiffener 36 is disposed within the pocket 64 thereby securing the strip 22 to a first portion 76 of the backing clip 74. A second portion 78 of the backing clip 74 is secured to the cellular backing material 54 by having a stiffener 36 placed inside the pocket segment 73 and secured within the second portion 78 of the backing clip 74. The backing clip 74 captures the cellular backing material 54 at a predetermined line of connection. A first portion opening 80 is sized to secure the strip 22 and the stiffener 36 and minimize any slipping between the strip 22 and the backing clip 74. A second portion opening 82 is sized to secure the pocket segment 73 to the backing clip 74 and minimize distortion of the cellular backing material 54.

[0029] In operation, the backing clip 74 is slid over the pocket 64 and stiffener 36, thereby securing the strip to the backing clip 74. The backing clip 74 is then slipped over the pocket segment 73 and stiffener 36, thereby securing the backing clip to the cellular backing material 54. As shown in FIGS. 8 and 9, to enable the above described assembly, the backing clip 74 includes at least two receiving openings: the first portion opening 80 and the second portion opening 82. A first portion mouth 84 is configured to allow the stiffener 36 and pocket 64 to pass through during installation while providing securement of the stiffener 36 and pocket 64 in the installed orientation. A second portion mouth 86 is configured to allow the stiffener 36 and a portion of the pocket segment 73 to pass through during installation while providing securing of the stiffener 36 and the pocket segment 73 in the installed orientation. The orientation between the first portion 76 and the second portion 78 is shown to be generally ninety degrees to one another. However, any angle between the first portion 76 and the second portion 78 is contemplated. FIG. 8 shows a generally larger first portion 76 than the second portion 78 and FIG. 9 shows the first portion 76 generally equal in size to the second portion 78. However, any combination of the first portion 76 and the second portion 78 is contemplated. Furthermore, in yet another example, one or both ends of the openings 80, 82 may be sealed, either at the time of segment cutting to length or later to retain the stiffeners 36. For material segments, cutting to length may be done with a sealing cutting. By way of example, hot wire cutters, ultrasonic cutters, and the like may be used to seal the pocket ends at generally the same time. A small slit (not shown) may also be made in the backside of the pocket 64 to insert the stiffener 36.

[0030] Three distinct appearances are achieved by the variant embodiments described above: hobbled, flat-continuous, and flat-shingled. For the hobbled appearance, the clip 74 is disposed at both the lower edge 32 and the upper edge 34 of each strip 22, with the lower edge 32 secured to a pocket segment 73 at the same location as the upper edge 34 of the next lower strip 22, and at a distance less than the width of the strip 22, such that each strip 22 bows out over the next lower strip 22, at least generally covering the clip 74 with a billow. For the flat-continuous application formed from strips 22, two smaller-diameter stiffeners 36 may be used to fit the lower edge 32 of one strip 22 and the upper edge 34 of the adjacent strip 22 into a single larger opening 80 of clip 74 as shown in FIG. 10 showing two adjacent

strips 22 sharing the opening 80. Alternately, the clip 74 may have three pockets (not shown), with the two pockets for adjacent strips 22.

[0031] As will be clear to one skilled in the art, the described embodiments, though having the particular advantages of compactness and convenience, are not the only embodiments or arrangements that fall within the scope of the present invention. Some exemplary variants may include: a) use of a pleated grid in place of the cellular backing material 54 for spacing; b) using external instead of internal, pocketed stiffeners 36; c) including quilted or other multi-layer material strips 22; d) having non-linear (wavy or scalloped) free edges 34, 36 on strips 22, especially for the flat-shingled embodiment; e) using rigid or resilient, stiff strips 22 instead of a fabric material, especially on the flat-shingled embodiment where the strips 22 are generally flat; f) having top-down instead of bottom-up actuation; and g) the use of two spacer cords in the hobbled embodiment, instead of sharing attachments to one set, whereby raising the spacer set attached to the lower edges 32 of the strips 22 provides a Venetian-like view through mode by opening gaps between adjacent strips 22.

[0032] The embodiments described above offer a number of advantages over various prior art shades. Some of these advantages are aesthetic and others are practical, either in manufacturing cost or serviceability of the end product. Below are some exemplary elements of the described embodiments with notes of comparison to earlier approaches.

[0033] Rollable strips: The strips 22 as described above could provide the appearance and function of a single sheet covering an entire window; but made instead from controlled strips 22 of material that allows efficient use of goods and minimal scrap in fabrication. Strips 22 (before insertion of stiffeners 36) also ease packaging and stock storage before fabrication because they can be stored in rolls. Damage is easily replaced at minimal cost, rather than losing the entire window covering 20.

[0034] Fast assembly: In comparison to the handling of a conventional Roman window covering, made from a single, large sheet of material equal in extent to a window, a strip-fabricated system can be built rapidly with minimal floor space demand and convenient equipment. No large flat cutting table is required. No marking and measuring of the broad goods is required to locate multiple rings or other attachments that are automatically located by the dimensions intrinsic to the strips.

[0035] Insulation: By comparison to ordinary Roman window coverings, the cellular-backed embodiments provide multiple air cells behind the facing to significantly increase the thermal insulation value of the product.

[0036] White back: In modern homes, interior rooms are commonly decorated in different colors, yet the house presents a more formal, uniform face to the outside world. Products which can present a white outer face sustain that uniformity, even as the interior faces carry the differing room colors. The embodiments described above enable such a dichotomy through its layered or laminated construction.

[0037] Cord contained: Safety is a primary concern in the window coverings 20. One of the primary risks is associated with accessible cords that can entangle small children in a

choking hazard. The embodiments described, in one of the cellular-backed embodiment, fully encapsulate the cords that lift the covering **20** within the cells, unlike any other Roman-style product, reducing that hazard. The second example of the cellular backed embodiment shown in **FIG. 2A**, though not completely encapsulating cords, nonetheless shields them from accidental entanglements by enclosing them between the strips **22** and backing material **54**.

[0038] View-through option: Conventional Roman-look shades are made from continuous material. The embodiments described, by mimicking the look of such a continuous piece, although made from multiple strips, offer the option of independent articulation of those strips to allow a view-through mode more like that of a Venetian blind.

[0039] Multiple product looks from same stock: The embodiments described may all be assembled from the same basic parts (material strips, cord or cellular backing material, and hardware), providing a significant economy of scale and lower stock-carrying costs for fabricators and retailers. This latter feature is of particular importance in lowering the costs of such custom-made window treatments through direct finishing at the retail level and elimination of one level in the distribution.

[0040] Low waste from strip construction, including flaw removal and cutting efficiency: When large rectangles must be cut from yard goods, as in the conventional Roman process, there is always a higher waste factor as differing sizes of rectangle are fitted to finite-width goods. In the embodiments described, continuous ribbon is cut to strips of window size, with little or no waste between succeeding strips. Even when a flaw occurs in the ribbon, the loss can be no more than the length of one strip, where in a broad-goods cutting, an inconveniently located flaw can prevent the usage of a large area of fabric.

[0041] Unlimited width and length: In conjunction with to the low waste with ribbon-strip construction comes the better orientation of raw material run with respect to finished product dimension. If cut from broad goods, either the length or width is constrained by the width of the source material. With ribbons to strips, the unlimited length of their ribbons (corresponding to the production run direction of the original material) is oriented to the width of the window covering **20** and so can provide unlimited width to the shade. Because the window covering **20** length is then built up from unlimited numbers of such strips, the length of the shade, too, is unlimited. This is becoming more important in modern homes where "window walls" are part of the design: high and wide glass areas too large for conventional window coverings.

[0042] Ready replacement of damaged or soiled areas without total loss: This is another feature of economy and convenience that derives from the strip construction. Not being a single expanse of material, a window covering **20** may be repaired at low cost by replacing only those strips **22** that suffer damage or discoloration in service. With some materials, it may even be possible to remove individual strips **22** for cleaning and replacement.

[0043] The present invention has been particularly shown and described with reference to the foregoing embodiments, which are merely illustrative of the best modes for carrying out the invention. It should be understood by those skilled in

the art that various alternatives to the embodiments of the invention described herein may be employed in practicing the invention without departing from the spirit and scope of the invention as defined in the following claims. It is intended that the following claims define the scope of the invention and that the method and apparatus within the scope of these claims and their equivalents be covered thereby. This description of the invention should be understood to include all novel and non-obvious combinations of elements described herein, and claims may be presented in this or a later application to any novel and non-obvious combination of these elements. Moreover, the foregoing embodiments are illustrative, and no single feature or element is essential to all possible combinations that may be claimed in this or a later application.

What is claimed is:

1. A window covering comprising:

a carrier grid; and

a plurality of horizontal strips of fabric secured to an exterior portion of said carrier grid, said strips being in overlapping and vertically spaced relation to cover an area of a window, each of said plurality of horizontal strips having an upper edge and a lower edge; and

at least one of said upper edge and said lower edge being secured to said exterior portion.

2. The window covering of claim 1, wherein said carrier grid includes spacing cords for spacing and securing each of said plurality of horizontal strips from one another.

3. The window covering of claim 2, wherein said spacing cords include engagement clips adapted to secure at least one of said upper edge and said lower edge.

4. The window covering of claim 1, wherein said carrier grid is a backing material.

5. The window covering of claim 4, wherein said backing material includes at least one side that is non-pleated.

6. The window covering of claim 4, wherein said backing material is a cellular backing material.

7. The window covering of claim 6, wherein said cellular backing material includes a plurality of cell wall ligaments.

8. The window covering of claim 7, wherein at least one of said upper edge and said lower edge is secured to at least one cell wall ligament by a backing clip.

9. The window covering of claim 8, wherein said backing clip includes at least two generally "C" shaped portions.

10. The window covering of claim 1, wherein each of said plurality of horizontal strips includes a stiffener proximate at least one of an upper edge and a lower edge.

11. The window covering of claim 10, wherein said stiffener is secured by at least one engagement clip secured to said carrier grid.

12. The window covering of claim 1, wherein each of said plurality of horizontal strips includes a first stiffener proximate an upper edge and a second stiffener proximate a lower edge.

13. The window covering of claim 12, wherein both said first stiffener proximate said upper edge and said second stiffener proximate said lower edge are secured to said carrier grid.

14. The window covering of claim 13, wherein a width of each of said plurality of horizontal strips is greater than a distance between said first stiffener and said second stiffener forming a billow at each of said plurality of horizontal strips.

15. A backing clip for securing a fabric strip of a window covering comprising:

an elongated body;

a first portion of said body being adapted to secure the fabric strip and a stiffener to said body;

a second portion of said body being adapted to secure said body to a window covering material.

16. The backing clip of claim 15, wherein said first portion is generally C-shaped.

17. The backing clip of claim 15, wherein said second portion is generally C-shaped.

18. The backing clip of claim 15, wherein said second portion is adapted to engage said window covering material and a stiffener.

19. The backing clip of claim 15, wherein said first portion includes a first opening and said second portion includes a second opening, said first opening being at generally a right angle to said second opening.

20. A window covering comprising:

a carrier grid having vertical spacing cords;

a plurality of horizontal strips of fabric secured to an exterior portion of said carrier grid, said strips being in overlapping and vertically spaced relation to cover an area of a window, said plurality horizontal strips having a stiffener proximate at least one of an upper edge and a lower edge;

said spacing cords having engagement clips adapted to secure said plurality of horizontal strips to said spacing cords; and

said carrier grid maintaining a spacing relation between said plurality of horizontal strips.

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