

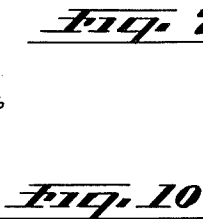
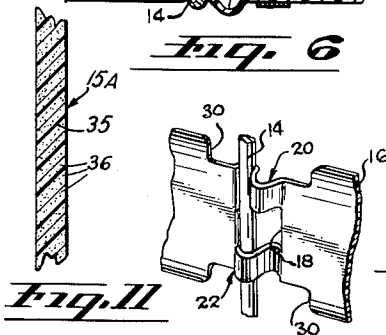
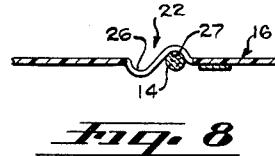
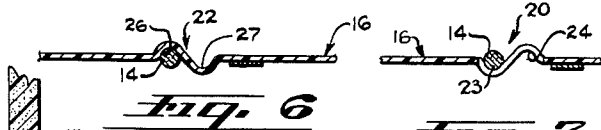
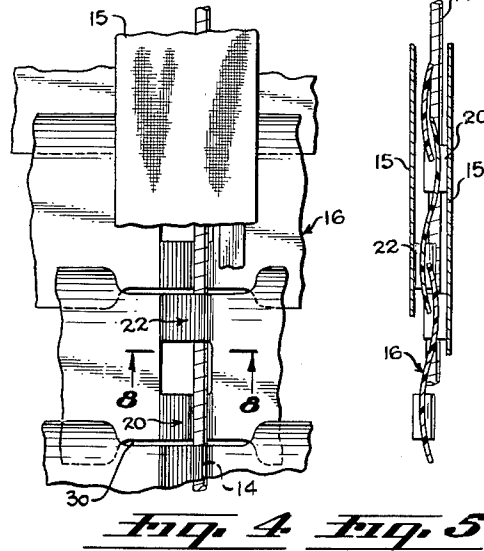
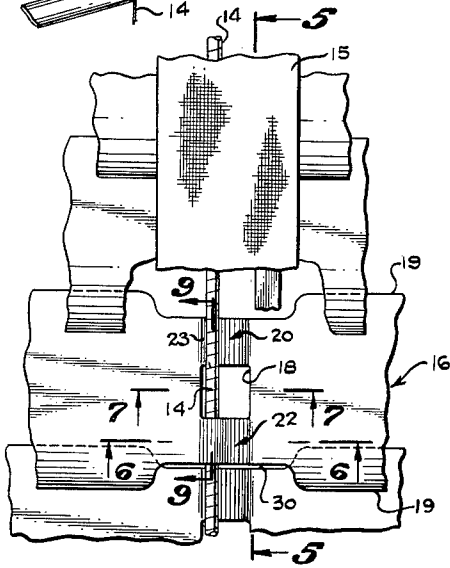
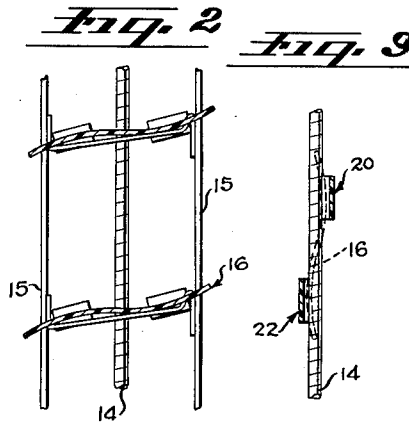
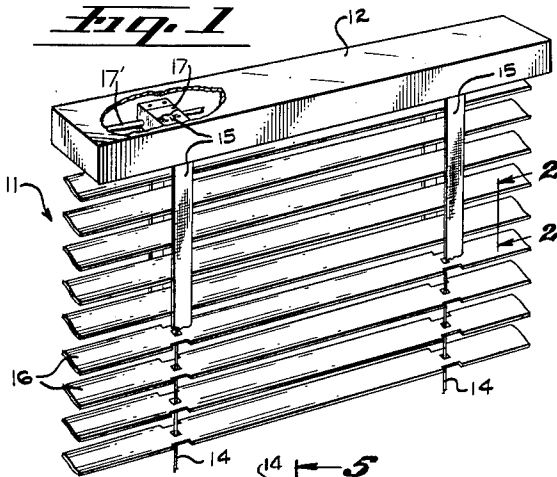
May 1, 1962

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3,032,099

FULL CLOSING VENETIAN BLIND

Filed Aug. 3, 1959



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3,032,099

FULL CLOSING VENETIAN BLIND

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Filed Aug. 3, 1959, Ser. No. 831,293

11 Claims. (Cl. 160—168)

This invention has to do with Venetian blinds, particularly those having slats of S-shape in cross section and with constructions designed to permit and yieldably maintain full closing of the blinds, and yet allow substantially the normal ease in opening of such blinds.

I am aware that attempts have been made to construct Venetian blinds of the type having slats of S-shape in cross section so that the blind can be fully closed when the slats are tilted in one given direction. However, so far as I know such constructions do not enable the blinds to be closed when the slats are rotated or tilted in the opposite direction, hence it is necessary always to rotate the blind slats or tilt them in a given direction in order to fully close them with the slats in overlapping and touching relation.

It therefore is an object of my invention to provide a new and improved construction which enables a Venetian blind made up of slats of S-shape in cross section to be fully closed by rotation or tilting of the slats in either direction to afford a substantially light-tight barrier.

More particularly, it is an object to provide a novel and improved construction wherein the individual slats of the blind are so constructed as to accommodate the lift cords and suspension tapes, irrespective of which way the slats are tilted, in a manner so as not to interfere with full closing of the slats.

In Venetian blinds of the improved slat construction herein disclosed and also in such type blinds having slats of other constructions, improved closing action and subsequent holding of the slats in closed position between and by the supporting main tapes, is an important object of my invention.

These and other objects will be apparent from the drawing and the following description. Referring to the drawing, which is for illustrative purposes only:

FIG. 1 is a fragmentary perspective view showing a Venetian blind embodying the invention;

FIG. 2 is an enlarged fragmentary sectional view as along the plane of line 2—2 of FIG. 1;

FIG. 3 is a fragmentary elevational view showing a portion of four slats rotated to a fully closed position;

FIG. 4 is a view similar to FIG. 3 but showing the slats rotated to the other closed position wherein the slats are turned substantially 180 degrees with relation to those of FIG. 3;

FIGS. 5, 6 and 7 are fragmentary sectional views upon lines 5—5, 6—6 and 7—7 respectively, of FIG. 3;

FIG. 8 is a fragmentary sectional view on line 8—8 of FIG. 4;

FIG. 9 is a fragmentary sectional view on line 9—9 of FIG. 3;

FIG. 10 is a fragmentary perspective view showing the relation between a slat and lift cord, and

FIG. 11 is a fragmentary sectional view of one of my improved main slat suspension tapes showing magnetic particles more or less uniformly distributed an/or embedded in the material of the tape.

More particularly describing the invention, the Venetian blind 11 shown in FIG. 1 includes an upper box-like support 12 which is customarily mounted at the upper portion of a window or the like. The support may be assumed to house conventional means for suspending conventional lift cords 14 and conventional suspension tapes 15, as well as means for raising the lift cords and

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for adjustably positioning the suspension tapes to tilt the slats 16. The tapes are shown secured at their upper ends to members 17 fixed to an adjustably rotatable shaft 17' which is journaled in the support 12.

Each slat is provided with a lift cord opening 18 for each lift cord 14. These openings have been shown as substantially rectangular in shape and as being centrally positioned with respect to the side edges 19 of the individual slat. Also the openings 18 are at least twice as wide as the width or diameter of the lift cord 14, for a purpose to be described.

Immediately adjacent each of the openings 18 the slat is formed to provide a corrugated or grooved section, one such section being indicated by numeral 20, and the other by numeral 22. Referring first to the section 20, this is formed to provide a groove 23 in one side of the slat extending from opening 18 to the edge of the slat, the groove being transverse or normal to the longitudinal axis of the slat. Adjacent and parallel to groove 23 but on the opposite side of the slat, is a groove 24. The grooves are each of a width sufficient to accommodate the lift cord.

The section 22 of each slat is also provided with a pair of parallel grooves; however, these are disposed oppositely to the pair in the section 20, namely, the section 22 includes a groove 26 which is in alignment with the groove 23 but on the opposite side of the slat therefrom, and with a groove 27 which is upon the opposite side of the slat from groove 26, and also oppositely disposed but in alignment with groove 24 of section 20.

With the construction described it will be apparent that when the slats are fully tilted to the upright position shown in FIGS. 3 and 5, each lift cord is received in a groove 23 upon one side of the slat and in a groove 26 upon the other side. When the slats are rotated through 180 degrees to the position shown in FIG. 4, then the lift cord will fall into and be accommodated by groove 27 of the section 22, and groove 24 of the section 20. Thus the individual slats can be tilted to completely closed, overlapping and touching position without interference from the lift cords which can, nevertheless, hang straight, as appears from FIGS. 5 and 9. The lift cords readily migrate longitudinally of the slats to be received in the appropriate pair of grooves of each section, the width of the cord-receiving openings being sufficient to permit this.

For the purpose of accommodating the sections 20 and 22, and also accommodating the suspension tapes and cross tapes when the slats are tilted to closed position, I provide an elongated recess 30 in each lateral or side edge of each slat opposite the openings 18. These recesses 30 are sufficiently long so that they slightly exceed the width of the tape 15, and also sufficiently deep that when the slats are tilted to completely closed position there is no overlapping in the region of the recesses 30.

It will be apparent that with the construction provided the Venetian blind may be completely closed by fully tilting the blinds in either direction.

Another object of the invention is to provide novel means tending to hold a Venetian blind in closed position once it has been manipulated to such position. While the means contemplated is eminently suitable for blinds constructed as hereinbefore described, it is also suitable for incorporation in other types of blinds. In general I contemplate the use of magnetic means incorporated in or attached to the main or upright supporting tapes and arranged throughout the length thereof in a manner such that the tapes will be attracted to each other with progressively increasing force as the intermediate slats are tilted to contacting closed position. Thus when the blind is closed, as in FIG. 5, the magnetic attraction

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of each tape 15 for the other tape 15 with which it is paired, firmly but yieldably holds the intermediate tiltable slats of the blind closed.

One means which may be used is to incorporate magnetic material in the tapes themselves as by making the tapes 15A (FIG. 11) of a so-called plastics 35 embodying magnetic particles 36. At least one of the tapes of each pair should be magnetized and the other tape of the pair may have either unmagnetized or magnetized magnetic material. An alternate means is to apply a magnetic strip to each of the tapes. Such a strip should be flexible either by being inherently so or by being made up of a plurality of units or segments.

Although I have illustrated and described preferred forms of my invention, I contemplate that various changes and modifications can be made therein without departing from the invention, the scope of which is indicated by the following claims.

I claim:

1. In a Venetian blind assembly, a supporting structure, laterally spaced lift cords depending from said structure, a flexible ladder-like, slat-supporting member adjacent each lift cord including a pair of laterally spaced main tapes and plurality of vertically spaced cross tapes attached to said main tapes and extending therebetween, means carried by said supporting structure for vertically adjusting said slat-supporting members in a manner to vary the angle of disposition of said cross tapes, and a plurality of vertically spaced slats of S-shape cross section disposed on said cross tapes, each said slat having a cord opening for each lift cord of a width at least double the thickness of the cord, said slats being characterized by being formed to provide a pair of parallel, adjacent grooves extending from each cord opening transversely of the slat to each side edge thereof, the grooves of each pair being on opposite sides of the slat and the grooves of one pair being disposed oppositely to those of the other pair whereby the axis of a groove of one pair on one side of the slat is laterally offset from the axis of the groove of the other pair on the same side of the slat.

2. The construction set forth in claim 1 wherein the cord openings of the slats are centrally disposed between the side edges of the slats.

3. The construction set forth in claim 1 wherein the slats are provided with a recess in each side edge opposite said cord openings of a length sufficient to accommodate said main tapes.

4. The construction set forth in claim 1 wherein the slats are provided with a recess in each side edge opposite said cord openings of a length sufficient to accommodate said main tapes, said recesses being sufficiently deep that the edges of one slat in the region of said recesses do not overlap the adjacent edges of adjacent slats when the slats are tilted to fully closed position.

5. A Venetian blind slat comprising a thin, elongated body having openings centrally disposed between its side edges, said slat being characterized by being formed to provide a pair of parallel, adjacent grooves extending from each opening transversely of the slat to each side edge thereof, the grooves of each pair being on opposite sides of the slat and the grooves of one pair being disposed oppositely to those of the other pair whereby the axis of a groove of one pair on one side of the slat is laterally offset from the axis of the groove of the other pair on the same side of the slat.

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6. The construction set forth in claim 5 wherein the slat is provided with a recess in each side edge opposite said openings of a length sufficient to accommodate a Venetian blind tape.

7. In a Venetian blind assembly, a supporting structure, laterally spaced lift cords depending from said structure, a flexible ladder-like, slat-supporting member adjacent each lift cord including a pair of laterally spaced main tapes and a plurality of vertically spaced cross tapes attached to said main tapes and extending therebetween, means carried by said supporting structure for vertically adjusting said slat-supporting members in a manner to vary the angle of disposition of said cross tapes, and a plurality of vertically spaced slats disposed on said cross tapes, each said slat having a cord opening for each lift cord of a size lengthwise of the slat at least double the thickness of the cord, said slats being characterized by being formed to provide a pair of parallel, adjacent grooves extending from each cord opening transversely of the slat to each side edge thereof, the grooves of each pair being on opposite sides of the slat and the grooves of one pair being disposed oppositely to those of the other pair whereby the axis of a groove of one pair on one side of the slat is laterally offset from the axis of the groove of the other pair on the same side of the slat, and magnetic means carried by and operative throughout the length of said main tapes to yieldably embrace and hold said slats between them in closed adjusted position.

8. In a Venetian blind construction, a supporting structure, flexible ladder-like, slat-supporting members depending from said supporting structure, said slat-supporting members each including a pair of laterally spaced, depending main tapes and a plurality of vertically spaced cross tapes attached to the main tapes and extending therebetween, a plurality of slats supported on said cross tapes, and magnetic means carried by and operative throughout the slat supporting length of said main tapes for yieldably holding the slats of the blind therebetween in closed position when the slat-supporting members are adjusted to tilt the slats to closed position.

9. A Venetian blind construction as set forth in claim 8 in which the magnetic means carried by the main tapes is in the form of particles embodied in the body of each tape.

10. For use in a Venetian blind construction having a plurality of slats and means supporting and tilting said slats in parallel relation, a flexible, ladder-like tape structure including main tapes normal to said slats connected by cross tapes for supporting said slats therebetween, and each of said main tapes having magnetic material incorporated therein and operative throughout the slat supporting length thereof to magnetically attract each other through the slats supported therebetween and yieldably embrace and hold said slats in closed adjusted position.

11. The structure as set forth in claim 5, in which the slat body is of S-shape cross section.

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