June 17, 1947. M. GREEN 2,422,407

WINDOW BLIND STRUCTURE

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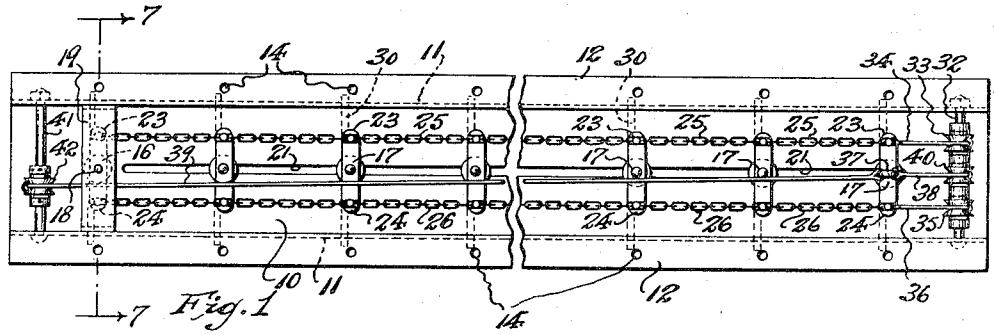


Fig. 1

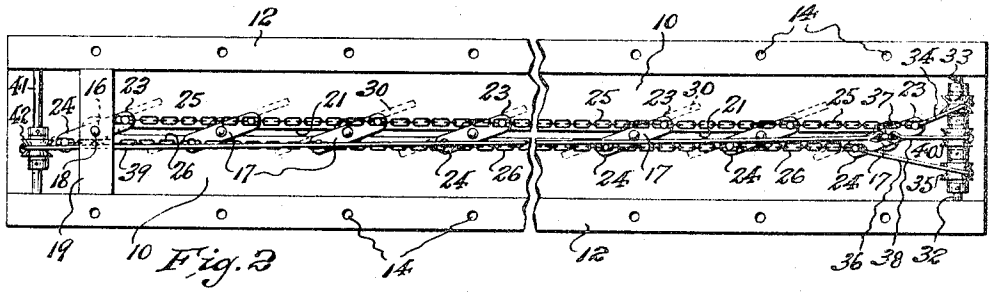


Fig. 2

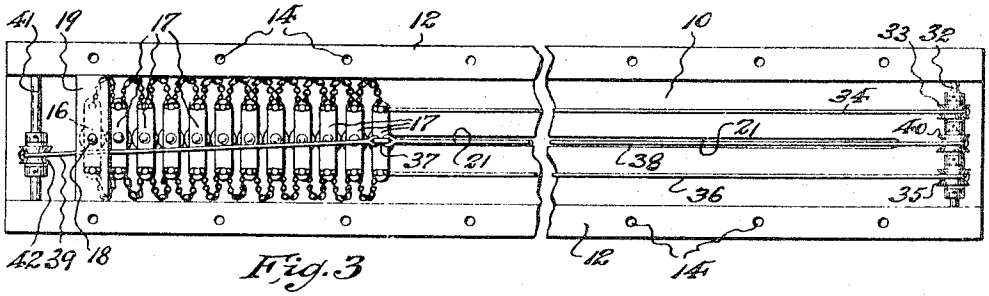


Fig. 3

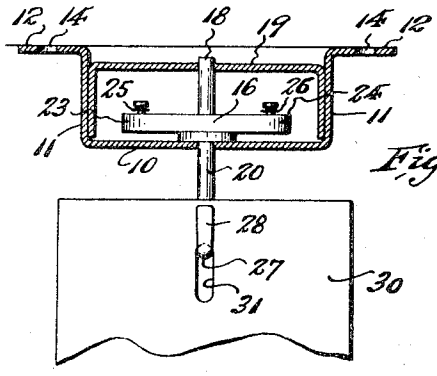


Fig. 7

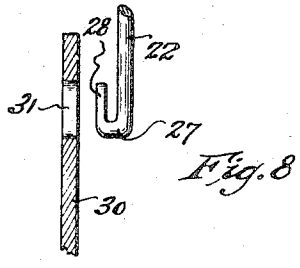


Fig. 8

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WINDOW BLIND STRUCTURE

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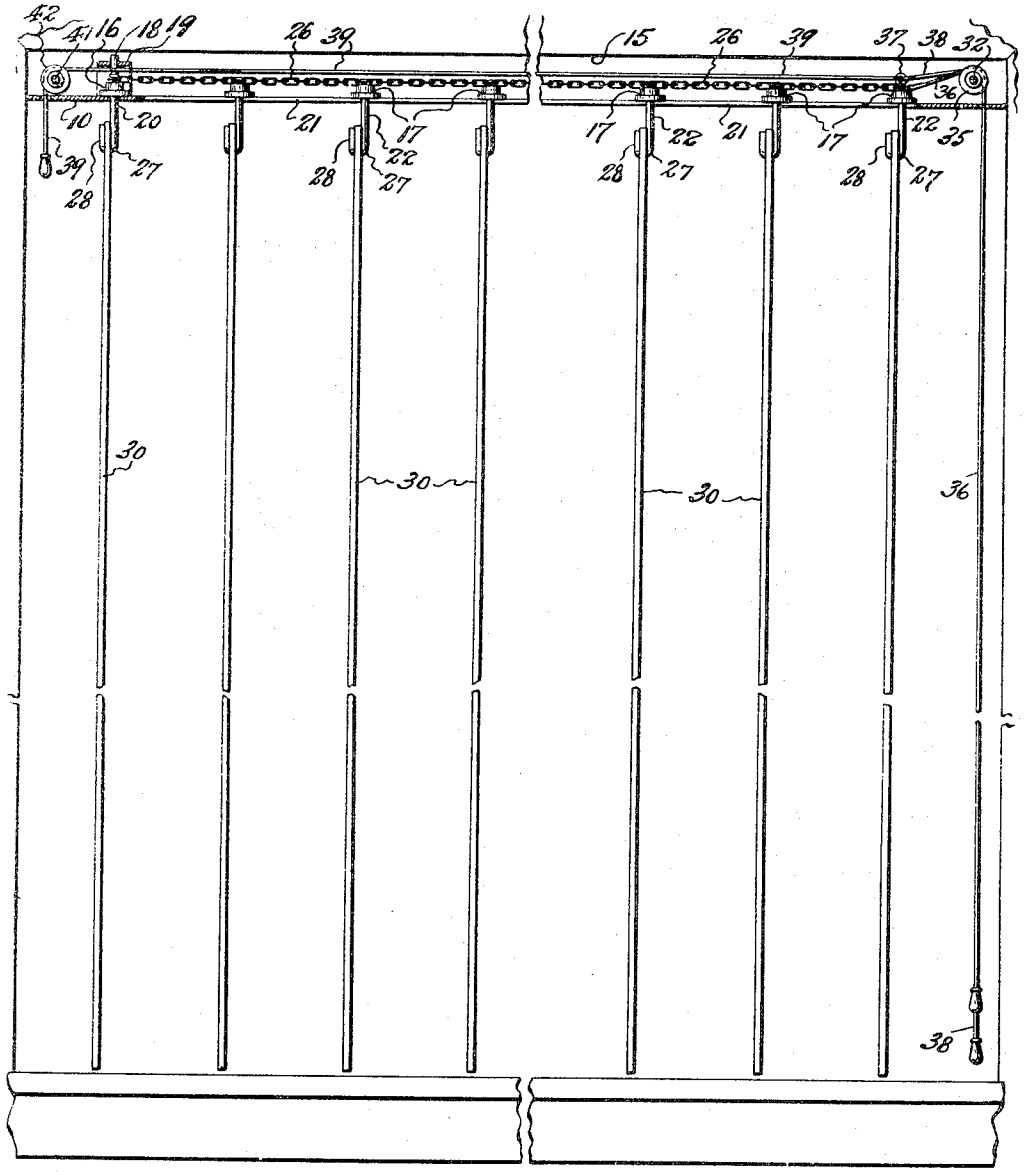


Fig. 4

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WINDOW BLIND STRUCTURE

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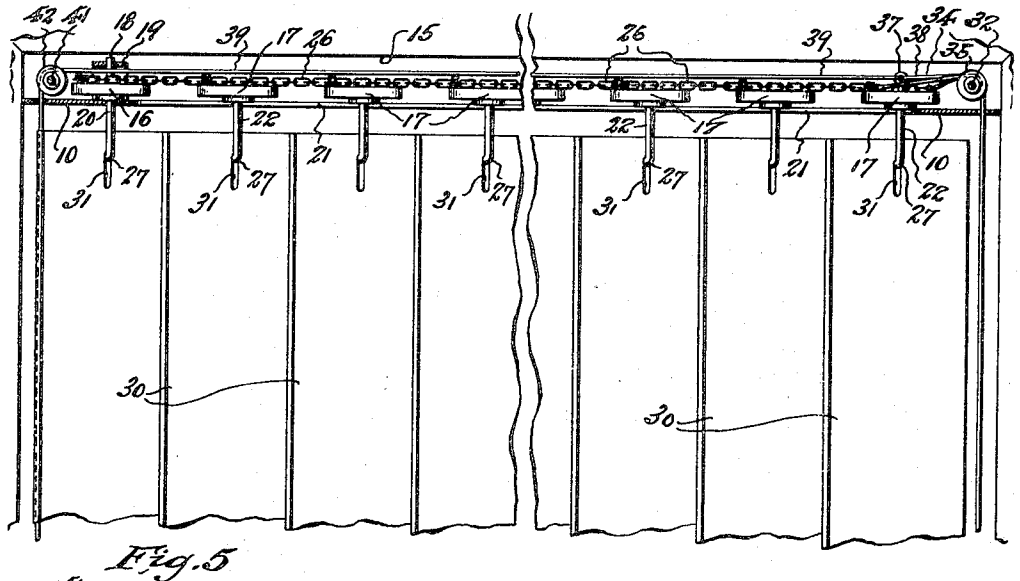


Fig. 5

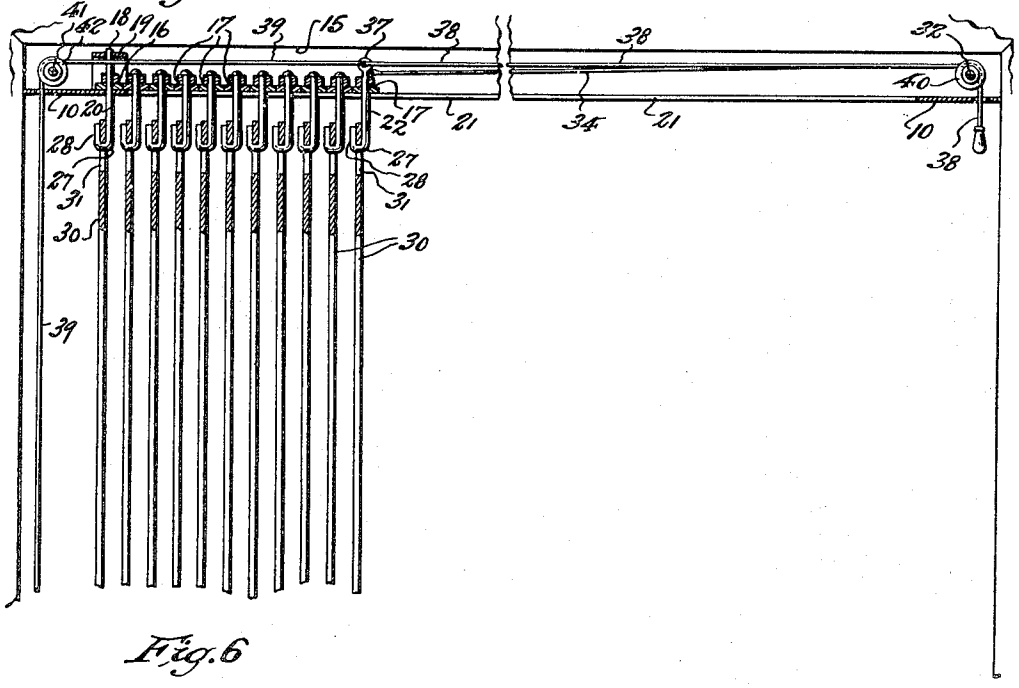


Fig. 6

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WINDOW BLIND STRUCTURE

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3 Claims. (Cl. 160—172)

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This invention relates to improvements in window shades or blinds of the kind generally known as Venetian blinds.

The invention has for an object to provide a Venetian blind structure, the louvres of which are suspended in vertical position and which are supported and interconnected in such manner that said louvres may be turned about their vertical axes to effect open or closed relations thereof, while at the same time being bodily movable to collapse the blind as a whole, whereby to leave the window opening served thereby substantially fully open and unobstructed thereby.

The invention has for an object to provide a Venetian blind structure comprising a simple overhead guideway means adapted to be fixed in connection with a window frame at the top thereof, said guideway having louvre supporting and actuating means movable therethrough, from which the louvres are suspended to vertically extend across the window frame opening; means bring provided for detachably coupling the louvres to the supporting and actuating means, whereby the louvres are individually removable from normal assembled relation to said supporting and actuating means so as to facilitate handling thereof for thorough cleansing when required, and to permit individual exchange or replacement thereof should injury thereto necessitate replacement.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which:

Fig. 1 is a top end plan view of the Venetian blind structure according to the invention, with the louvres and an actuating means disposed to turn said louvres to open position; Fig. 2 is a similar view with the louvres and supporting and actuating means disposed to turn said louvres to closed position; and Fig. 3 is a similar view, with the louvres collapsed to leave the window opening substantially unobstructed thereby.

Fig. 4 is a longitudinal sectional view, with the louvres open as shown in Fig. 1; Fig. 5 is a fragmentary longitudinal sectional view, with the louvres closed as shown in Fig. 2; and Fig. 6 is a longitudinal sectional view, with the louvres collapsed as shown in Fig. 3.

Fig. 7 is a fragmentary transverse sectional view, taken on line 7—7 in Fig. 1, but drawn on an enlarged scale; and Fig. 8 is a fragmentary sectional view showing a louvre as detached from

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the means whereby it is normally coupled to a supporting and actuating means.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring to the drawings, the novel Venetian blind structure according to this invention comprises a channeled guideway means formed by a bottom section 10, side sections 11 rising therefrom, and attachment flanges 12 extending respectively outward from the respective side sections. Said attachment flanges 12 are provided with suitably spaced openings 14 through which suitable fastening means (not shown) may be passed for affixing the guideway means to and across the top end 15 of a window frame.

Mounted within the interior of the guideway means, so as to be supported by and upon the bottom section thereof, is a series of transverse oscillatable carrier elements comprising a non-shiftable or anchoring carrier element 16, which is positioned adjacent to one end of said guideway means, and a plurality of shiftable carrier elements 17, which extend toward the opposite end of said guideway means in normally spaced apart relation. Said anchoring carrier element 16 is provided with a perpendicular pivoting shaft comprising an upper part 18 journaled in a transverse bearing bridge 19 which is affixed to and between the side sections 11 of the guideway means, and a lower part 20 journaled in the body of said bottom section 10 of the guideway means so as to project downwardly and exteriorly therefrom. The bottom section 10 of the guideway means is provided with a longitudinally extending slotway 21 which extends from a point adjacent to said anchoring carrier element 16 toward a point adjacent to the opposite end of the guideway means. Each shiftable carrier element 17 is provided with a pivoting shaft 22 for rotation, while being nevertheless movable therealong; said shafts being also adapted to project downwardly and exteriorly from the bottom section 10 of said guideway means.

Said anchoring carrier element 16 and each of said shiftable carrier elements 17 are provided with oppositely extending lever arms 23 and 24. Said lever arms 23 at the one side of said carrier elements are successively linked one to another by flexible connections, such e. g. as the connecting chains 25. In like manner, said lever arms 24 at the opposite side of said carrier elements are successively linked one to another by flexible connections, such as the connecting chains 26.

The dependent shaft part 20 of the anchoring

carrier elements 16 and the dependent shafts 22 of each of the shiftable carrier terminate in coupling hook members 27 having upturned bill portions 28; said bill portions being preferably somewhat flattened at their interior sides or faces, and being spaced from the shanks of the hook members 27 a distance equivalent to the thickness of a louvre to be coupled by a hook member to a carrier element therefor.

The louvres of the blind structure are designated by the reference character 30. Each louvre 30 is provided, adjacent to its upper end with a perpendicular slot 31 of a length of a bill portion 28 of a coupling hook member 27. To couple a louvre 30 with a coupling hook member 27, the louvre face is opposed to the bill portion 28 so that the slot 31 thereof is disposed in aligned opposition to the latter, whereupon the louvre is moved toward the hook member to pass the bill portion of the latter through the slot 31, and then the louvre is pushed downward to enter the adjacent upper end portion thereof into the bight of said hook member. Since the thickness of the louvre is substantially equivalent, and preferably a few thousandths of an inch greater than the width of the space between shank and bill protion of the hook member, it will be obvious that the louvre will be strongly frictionally gripped by said hook member, so as to be firmly held against relative swiveling play, and so as to turn bodily with the hook member when the latter is rotated about its perpendicular axis. It will be understood, that a louvre may be readily released and removed from a hook member, for cleaning or replacement, by the reverse of the above described attaching operations.

Means is provided for turning the carrier elements about the perpendicular axes of their shafts, whereby to turn the louvres at will from relative open to relative closed position and vice versa. This means includes a transverse shaft 32 which is mounted in and between the side sections 11 of the guideway means adjacent to an end of the latter, and mounted on said shaft is one rotatable pulley wheel 33. A pull cord 34 is affixed to the free end portion of the lever arm 23 of the outermost carrier element 17, to extend therefrom to and over said pulley wheel 33, and thence downwardly through an opening in the bottom section 10 of the guideway means, to hang freely therefrom at a side of the window frame opening. In like manner, another pulley wheel 35 is mounted on the shaft 32, and a pull cord 36 is affixed to the free end portion of the lever arm 24 of said outermost carrier element 17, to extend therefrom to and over said pulley wheel 35, and thence downwardly through an opening in the bottom section 10 of the guideway means, to likewise hang freely therefrom at said side of the window frame opening.

By pulling on the pull cord 34, the outermost carrier element 17 is turned clockwise, the motion thereof being simultaneously transmitted through the connecting chains 25 to all the other carrier elements 17 and the carrier element 16, whereby to produce corresponding movements thereof, and thereby to turn the louvres, as e. g. from open positions shown in Figs. 1 and 4 to closed positions shown in Figs. 2 and 5. Thereafter, by pulling on the pull cord 36, the outermost carrier element 17 is turned counter-clockwise the motion thereof being simultaneously transmitted through the connecting chains 26 to all the other carrier elements 17 and the carrier element 16, whereby to produce corresponding movements thereof, and thereby to turn the louvres, as e. g. from closed position shown in Figs. 2 and 5 back to open positions shown in Figs. 1 and 4.

Additional means is provided for bodily moving the louvres together into collapsed relation at one side of the window frame opening, whereby to leave the window opening served thereby substantially fully open and unobstructed thereby. To this end the outermost shiftable carrier element 17 is provided with means, such e. g. as the anchor ring 37, for attaching thereto oppositely extending pull cords 38 and 39. One said pull cord, viz. the pull cord 38, extends over a third pulley 40, which is mounted on the shaft 32 at one end of the guideway means, and thence downwardly through an opening in the bottom section 10 of the guideway means, to hang freely therefrom at one side of the window frame opening. Another transverse shaft 41 is mounted in and between the side sections 11 of the guideway means adjacent to the opposite end thereof and beyond the non-shiftable or anchoring carrier element 16. Upon said shaft 41 is mounted a pulley 42. Said pull cord 39 extends from said anchoring ring 37 of the outermost carrier element 17 to and over said pulley 42, thence downwardly through an opening in the bottom section 10 of the guideway means, to hang freely therefrom at the opposite side of the window frame opening.

To collapse the louvres from operative spread relation to and across the window frame opening, the pull cord 39 is pulled, thus causing the outermost shiftable carrier element 17, and the louvre coupled thereto, to move toward the non-shiftable or anchoring carrier element 16. As said outermost carrier element is thus moved through the guideway means, the remaining shiftable carrier elements 17 are overtaken one by one so as to move on therewith, the connecting chains 25 and 26 readily collapsing and yielding to such movements, until all the shiftable carrier elements 17, and the louvres supported thereby, are mutually closed together and relative to the non-shiftable or anchoring carrier element 16 (see Figs. 3 and 6). To return the louvres to operative spread relation to and across the window frame opening, the opposite pull cord 38 is pulled, thus causing the outermost shiftable carrier element 17 to advance through the guideway means, and, as the slack of the connecting chains 25 and 26 are taken up between successive shiftable carrier elements, thereby drawing on the latter until returned to normal operative positions; until finally the movement thereof is arrested by tautening of the chains 25 and 26 intermediate the last of said shiftable carrier elements and said non-shiftable or anchoring carrier element 16 (see Figs. 1 and 4).

From the above it will be observed that a very simple and easily manipulated Venetian blind structure is provided by the instant invention, wherein the means for controlling desired movements of the louvres comprises a minimum number of parts, and wherein the louvres themselves are easily, individually and selectively detachable from the control means for cleansing or required replacement.

Having now described my invention, I claim:

1. A Venetian blind structure comprising a channeled guideway means adapted to be mounted across a building opening to be served by the blind structure, louvre carriers turnable about vertical axes, one of said carriers being non-

shiftably mounted adjacent one end of said guideway means and the others being shiftable along said guideway means, said carriers each having pivoting shafts dependently projecting exteriorly from said guideway means, said guideway means having a slotway through which the pivoting shafts of the shiftable carriers may move, louvres severally attached to said carrier shafts to depend perpendicularly therefrom, flexible means interconnecting said carriers to effect simultaneous turning movements thereof and of the louvres supported thereby when the same are actuated, manipulatable means to produce turning movements of said carriers and louvres, and additional manipulatable means for moving the shiftable carriers along said guideway means to carry the louvres to and from operative mutually spread disposition across the opening served thereby.

2. A Venetian blind structure as defined in claim 1 including means for detachably coupling the louvres respectively to the carrier shafts.

3. A Venetian blind structure as defined in

claim 1 including means for detachably coupling the louvres respectively to the carrier shafts, said coupling means comprising a hook member at the lower extremity of each carrier shaft, each hook member having an upturned bill portion spaced from the carrier shaft from which it extends a distance equivalent to the thickness of a louvre, and each louvre having a perpendicular slot exceeding in length the length of said bill portion, whereby a louvre may be passed over a bill portion and slid downwardly into the bight of a hook member so as to be strongly and frictionally gripped and held against swiveling play and displacement.

MARTIN GREEN.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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