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C. M. GUY

2,176,259

VENETIAN BLIND

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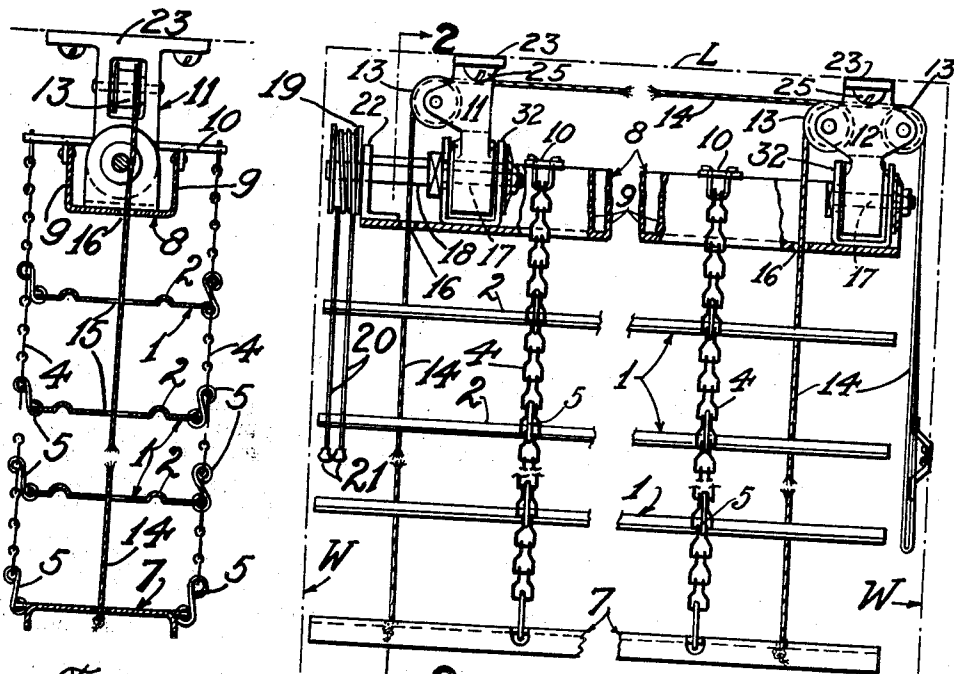


Fig. 2

Fig. 1

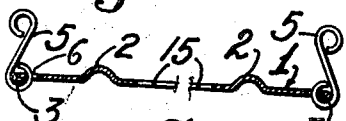


Fig. 3

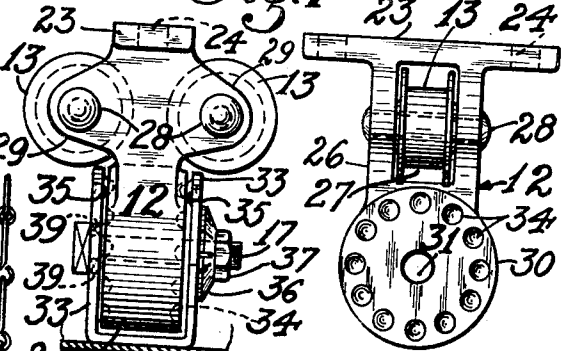


Fig. 4

Fig. 8



Fig. 5

Fig. 6

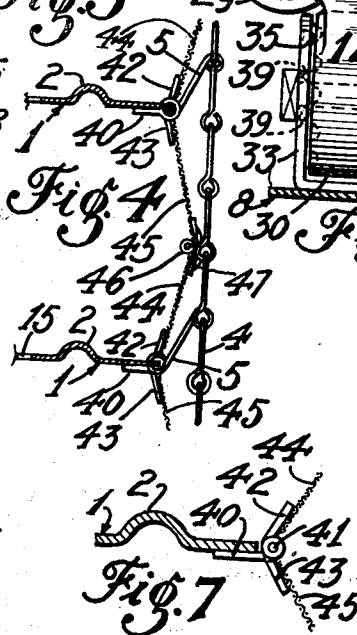


Fig. 7

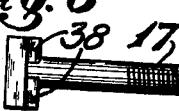


Fig. 10



Fig. 11

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VENETIAN BLIND

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4 Claims. (Cl. 156—17)

This invention relates to window blinds and more in particular to so-called Venetian blinds.

Venetian blinds of the conventional types consist of angularly adjustable or tiltable horizontal wooden slats fastened on a textile webbing structure comprising vertical parallel ribbons connected by spaced horizontal ribbons, either sewn to the vertical ribbons or woven integrally therewith; said horizontal ribbons actually securing and supporting the slats in spaced horizontal relation. Because of its appearance, this type of webbing is generally known in the trade as "ladder-tape" and, owing to the special operations involved in its manufacture, is relatively expensive.

One of the primary objects of this invention is to provide means for supporting the slats for adjustable angular movement exclusively through the agency of vertical, parallel, and flexible ribbons or similar structural elements, thus reducing the expense of manufacture, as compared with that using "ladder-tape."

Another object of this invention is to provide Venetian blinds in which the slats and the flexible elements by which the slats are supported and tilted are made exclusively of metal instead of wood and textile webbing respectively, thus making said blinds practically fireproof.

Yet another object of this invention is to provide simple means for varying the angular position of the slats and for automatically holding them in the selected position.

Still another object of this invention is the provision of a Venetian blind having incorporated therewith means, such as screens, to prevent the entrance of insects, etc., in rooms, said screens being capable of adjusting themselves automatically to the various angular and spaced variations of the slats.

Additional features and advantages of this invention will appear in the following description considered in connection with the accompanying drawing forming part of this application.

In the drawing:

Fig. 1 is a front elevation of a Venetian blind built in accordance with this invention, said blind being shown with the slats in full open position.

Fig. 2 is a sectional elevation taken substantially along line 2—2 in Fig. 1.

Fig. 3 is a transverse section through a blind-slat made of sheet metal and suitably formed to increase its rigidity.

Fig. 4 is a fragmentary view showing one type of screening incorporated in the structure of the blind.

Fig. 5 is a similar view showing a modified and cheaper construction.

Fig. 6 is a fragmentary view, on an enlarged scale, showing the preferred method of shaping the longitudinal edges of the blind-slats.

Fig. 7 is a similar view showing, on an enlarged scale, one method of connecting hinged screens to the slats.

Fig. 8 is a front elevation of one of the hangers used for supporting the blind from the lintel of a window, for instance.

Fig. 9 is an end-elevation of the main body of said hanger.

Fig. 10 is a side elevation of a clamping bolt used in the hanger shown in Fig. 8.

Fig. 11 is an end view of said bolt.

Reference being had to the drawing, a Venetian blind built in accordance with this invention comprises the required number of slats 1 made of any desired and suitable material, but preferably of thin gauge sheet metal, such as rolled steel or aluminum, etc.

To stiffen the metal slats, concavo-convex longitudinal ribs or beads 2 are rolled therein and the longitudinal edges of the slats may also be folded under, as especially indicated at 3 in Figs. 3 and 6.

The slats are supported in proper adjustable spaced and parallel relation by means of two or more groups of flexible elements, such as the slat-chains 4, preferably arranged in groups of two oppositely disposed chains, to which the slats are flexibly or rockably connected in any desired manner, such as for instance by the substantially S-shaped links 5, the lower loops of which engage suitable apertures 6 provided near the longitudinal edges of the slats, and the upper loops of the links are freely connected to suitably located links of the slat-chains 4.

The lowermost slat, the so-called bottom-bar, is usually made of heavier material, so that by its weight it may better stretch the extended blind and thus prevents excess swinging thereof when subject to air-currents, etc.

Suitably spaced above the uppermost slat and parallel thereto, is the tilting-bar 8 which, in the present embodiment, is made of sheet metal and of channel-shaped cross-section. To this tilting-bar are transversely secured by welding or riveting the chain-brackets 10 to which the upper ends of the slat-chains are fastened and which also serve to more rigidly connect the vertical sides 9 of the tilting-bar.

The tilting-bar is hingedly mounted in a horizontal position on the bottom side of the lintel

L of the window W, indicated in dotted lines in the drawing, by means of two or more hangers 11 and 12 which also serve as supports for the pulleys 13 upon which the pull-ropes 14 for the blind are guided. These pull-ropes carry the bottom-bar 7 which, by being pulled up by said ropes causes the successive piling-up of the blind-slats from the lowermost upward. The pull-ropes pass through suitable oblong apertures 15 and 16 provided respectively midwidth of the slats and the tilting-bar.

The lefthand hanger 11, Figs. 1 and 2, differs from the righthand one 12 in that it carries only one pulley and in that its clamping-bolt 17 has an extension 18 on which is secured the drum 19 around which is wrapped the medially secured tilting-cord 20, the free ends of which are preferably provided with pull-knobs 21.

If found necessary, this shaft extension may be additionally supported by a standard 22 secured preferably by spot-welding on the bottom of the tilting-bar 8.

In Figs. 8 and 9 is illustrated on an enlarged scale the righthand hanger 12 which is used on the pulling side of the rope 14. This hanger comprises a base 23 provided with holes 24 for screws 25 by means of which the hanger is suspended from the lintel L of a window. Formed integrally with the base is the hanger-body 26 centrally apertured, as at 27, to accommodate the oppositely disposed pulleys 13, rotatably mounted on pins 28 secured in the wings 29 of said body. The lower end of the latter forms a cylindrical hub 30 having two parallel faces and centrally bored at right angles to the base, as at 31, to receive a clamping-bolt 17 by which the U-shaped tilting-yoke 32, secured to the bottom of the bar 8 and having resilient sides 33, is hingedly held in clamping relation on said hub.

On both faces of the hub are concentrically and equidistantly disposed the substantially semi-spherical depressions 34 adapted to be engaged by suitably shaped protuberances or teats 35 formed inwardly on the sides 33 of the tilting-yoke.

To further assist in resiliently holding the tilting-bar and depending blind-slats in the selected tilted position, a spring-washer 36 may be used and its pressure on the flexible side of the yoke 32 adjusted by means of the bolt-nut 37.

As shown especially in Figs. 10 and 11, the bolt has formed on its head one or more radial lugs 38 which fit into correspondingly shaped slots 39 provided in the co-acting side of the yoke. Therefore, when the clamping-bolt on the hanger 11 is rotated, by a pull on one of the ends of the tilting-rope 20, it will cause the yoke and the thereto connected tilting-bar, as well as the slats 1, to rotate simultaneously. The resilient engagement of the teats 35 with the depressions 34 is ample to hold the slats in the selected tilted position.

To greatly reduce the open area in the blind and window through which insects may fly into a room, especially at night when the room is illuminated, flexible or foldable screens may be incorporated in the structure of the blind.

In the embodiment shown in Fig. 4, a longitudinal hinge-plate 40 is secured along the outward edge, preferably, of each slat; said plate

having a longitudinal pintle 41 upon which are alternately and rockably mounted the hinge-wings 42 and 43. To the wings 42 is fastened the upper screen-panel 44 and to the wings 43 the lower screen-panel 45. These panels are hingedly connected together by means of the intermediate hinges 46 which are preferably acted upon by suitable springs 47, the tendency of which is to cause the screen-panels to fold outwardly of the slats when the latter are pulled up.

Fig. 5 shows a modification by which protection against insects is afforded by means of very flexible metallic or textile screens 48 secured along the outer edges of the slats by longitudinal strips 49 and rivets 50. In order to force the screens to fold outwardly, very flexible and suitably bent flat springs 51 may be used. Said springs may be either separate from or interlaced directly into the screen material.

From the above description and in view of the popularity of the conventional types of Venetian blinds, the operation of this invention will be readily understood without further comments thereon.

As will be understood, as suggested herein, there may be changes made in the construction and arrangement of the details of this invention without departing from the field and scope of the same, and it is intended to include all such variations, as fall within the scope of the appended claims, in this application in which the preferred forms only of this invention have been illustrated and described.

I claim:

1. In a Venetian blind, a plurality of slats; flexible means to support the slats in spaced parallel relation; means to raise the slats into close spaced parallel relation; flexible screens secured along the edges of said slats to close the open spaces therebetween, and means to automatically fold said screens outwardly of said slats when raised into closer parallel relation.

2. In a Venetian blind, a plurality of slats; flexible means to support the slats in spaced parallel relation; means to raise the slats into close spaced relation; flexible screens secured along the edges of said slats to close the open spaces therebetween, and spring means to automatically fold said screens outwardly of said slats when raised into closer parallel relation.

3. In a Venetian blind, a plurality of slats; flexible means to support same in spaced parallel relation; means to raise the slats into close spaced relation; screens comprising each two panels hingedly connected together and to two adjacent slats, and means to fold said screen-panels outwardly of said slats when raised into closer parallel relation.

4. In a Venetian blind, a plurality of slats; flexible means to support same in spaced parallel relation; means to raise the slats into close spaced relation; screens comprising each two panels hingedly connected together and to two adjacent slats, and spring actuated hinges connecting each set of screen-panels to fold same outwardly of said slats when raised into closed parallel relation.

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