Oct. 1, 1940. M. R. KAPP 2,216,414

WINDOW BLIND

Filed Aug. 1, 1939

Fig. 1.

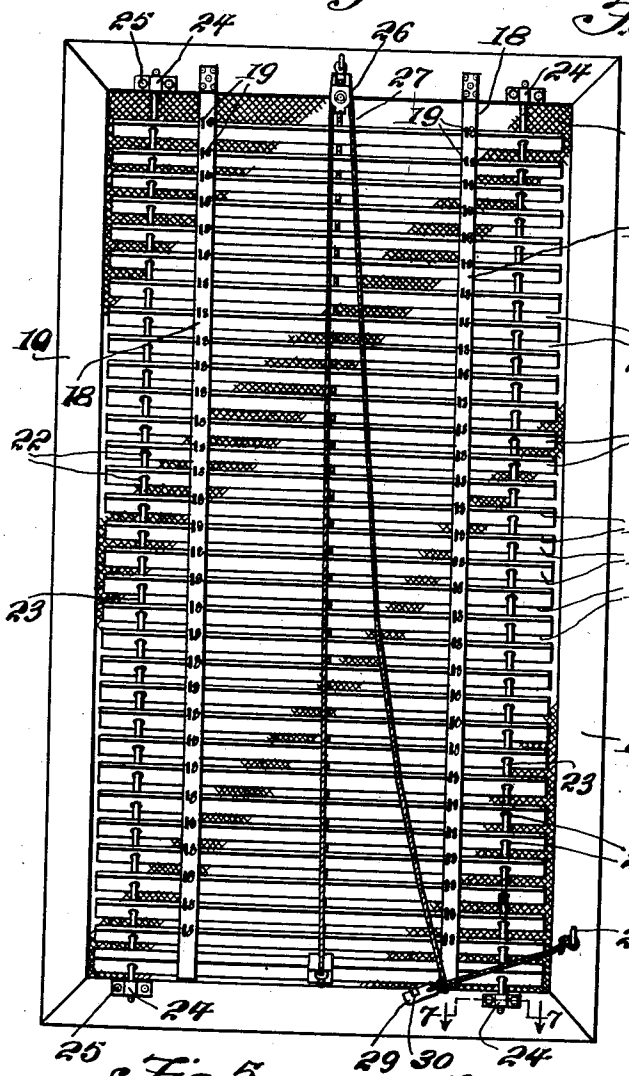


Fig. 2.

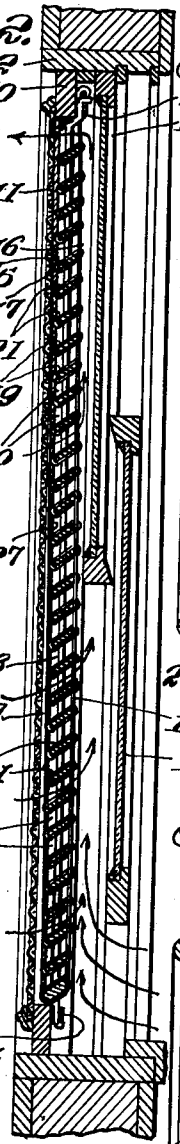


Fig. 3.

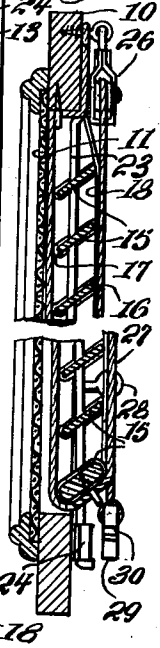


Fig. 4.

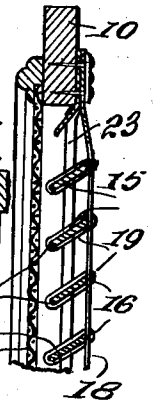


Fig. 5.

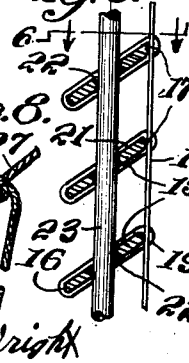


Fig. 6.

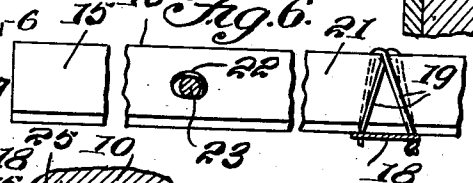


Fig. 8.



Fig. 7.



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UNITED STATES PATENT OFFICE

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WINDOW BLIND

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Application August 1, 1939, Serial No. 287,826

4 Claims. (Cl. 156—17)

My invention relates to window blinds of that type wherein a plurality of transverse members or slats are employed and commonly known as Venetian blinds.

One of the principal objects of my invention is to provide a blind of the above described character wherein the slats are so constructed and arranged as to maximize the size of the air passages between the slats and at the same time maximize reflection of sunlight into a room.

Another object of my invention is to provide a blind of the character described wherein the slats are so constructed and arranged as to direct the air flowing therethrough over a predetermined course to effect withdrawal of air from within a room.

A further object of my invention is to provide a blind of the character described wherein the slats are so constructed and arranged as to effect reflection of sunlight into the upper section of a room thereby maintaining the lower section of a room in subdued light.

A still further object of my invention is to provide a blind of the character described equipped with means for maintaining the slats when in open or closed position in fixed condition against movement, thereby eliminating noise and damage which characterizes blinds of ordinary construction due to air impinging against the slats and effecting movement thereof.

An important object of my invention is to provide a blind of the character described which is simple in construction, durable in use, efficient in operation, easy of attachment to a window casing as a unit, and economical in manufacture.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawing.

Referring to the drawing wherein like reference characters designate like parts throughout the several views:

Figure 1 is a rear elevation of my invention looking outwardly from within a room.

Figure 2 is a vertical sectional view of my novel form of blind illustrating the same as applied to the outside of a window casing.

Figure 3 is a central vertical section, on an enlarged scale, of my invention.

Figure 4 is a detail vertical sectional view of an upper portion of my invention.

Figure 5 is a detail sectional view on an enlarged scale of a central portion of my invention illustrating the means for maintaining the slats in their respective superposed positions.

Figure 6 is a detail transverse sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a detail sectional view taken on the line 7—7 of Figure 1.

Figure 8 is a detail perspective view of the means operable for holding the slats in collapsed or raised position.

In practicing my invention, as illustrated in the drawing, I provide a frame 10 having fixed to the outside face thereof a wire mesh screen 11 of ordinary construction to preclude ingress of insects through the window casing 12 to which the frame 10 is fixed. The frame 10 is mounted within the outside section of the casing 12 and on the outside of upper and lower sliding sashes 13 and 14 respectively mounted in said casing, it being understood that the casing and sashes are of an ordinary construction and per se form no part of the present invention.

Mounted within the frame 10 is a plurality of horizontally extending and superposed slats 15 for vertical movement to extending and collapsed positions. The slats are arranged in angular relation to a horizontal plane when in extended positions and are provided with outer and inner ends or side edges 16 and 17 respectively, with the latter ends arranged above the former when in said extended positions.

Fixed to the outer face of the upper section of the frame 10 are the upper ends of a spaced pair of depending flexible tapes or means 18, the lower ends of which are fixed to the lowermost slat. Between the ends thereof, the tapes 18 are flexibly connected to the inner ends 17 of the slats by means of cords 19 or the like as clearly illustrated in Figure 6 of the drawing.

The tapes 18 serve to maintain the slats in the aforementioned angular positions when in extended or open positions and with the outer and inner ends terminating in horizontally spaced planes defining air passages 20 between the slats whereby air flowing through said passages, from without the casing, impinges on the upper faces 21 of the slats and is deflected upwardly about the inner ends 17 and between the latter and the sashes to effect withdrawal of air from a room when at least one of the sashes is in raised position as clearly illustrated by the arrows in Figure 2 of the drawing.

When the slats are thus arranged in extended or open positions, the upper faces 21 are disposed towards the rays of the sun wherein said rays cover at least approximately two-thirds of the areas of said upper faces adjacent said outer ends 16 and are deflected by said upper faces 21

through the passages 20 and upwardly into the room to cause bright lighting of the upper section of the room and maintain the lower section of the room in subdued light.

The slats 15 are provided, adjacent their ends, with apertures 22 through which extend guide rods 23, the apertures 22 being of a contour and diameter to permit both vertical movement and the aforementioned angular disposition of the slats.

The ends of the rods 23 are clamped within brackets 24 secured to the upper and lower sections of the frame 10 by means of screws 25. Said rods coact with the tapes to maintain said slats in angular position as clearly illustrated in Figure 5 of the drawing.

The upper section of the frame 10, on the inside face thereof, has pivoted thereto a pulley 26 over which is trained a flexible element or cord 27, one end being connected to the lowermost slat and the opposite end being connected to an eye 28 fastened to a side section of the frame. Adjacent the eye 28, the cord 27 has secured thereto a cord holding device comprising an elongated body 29 fashioned on one side with a slot 30 whereby a length of the cord 27 is adapted to be wrapped therein and thus hold the slats in raised or collapsed position when desired.

From an actual reduction of my invention to practice, I have found that the desired angularity of the slats can only be obtained by increasing the number of slats within the given opening of a frame in contradiction to the number of slats usually employed in a like opening. When the number of slats are thus increased, a relatively narrow slat is employed, thereby permitting said slats to be arranged at a desired angle relative to the sun and at the same time defining air passages between the slats with the outer and inner edges of adjacent slats terminating in spaced horizontal planes.

A structure built in accordance with my invention comprises the frame 10 provided with an opening therethrough of approximately 3′ 2″ x 1′ 9″ in which are arranged the slats 15. The slats are forty-eight in number and of approximately 7/8″ in width. When the slats are in open or extended positions, the angularity thereof in respect to a horizontal plane approximates 45° and with the lower or outside edges of the slats terminating in a horizontal plane spaced approximately 5/8″ above a similar plane in which the upper or inside edges of the respective adjacent slats terminate and which planes define the air passages between the slats. From the foregoing it will be apparent that by providing an increased number of slats the width thereof can be materially reduced thereby permitting the rays of the sun to be reflected between the inner ends and without being appreciably interrupted by too close spacing of said inner ends. Also, the use of relatively narrow slats permits them to be adjusted not only at an angle to maximize the reflection of the rays of the sun into the room but also permits them to serve as a means for checking the velocity of the wind entering the room. Furthermore, the tapes connected to the slats dispose the slats, when in extended position, in clamped relation with the rods thereby precluding relative movement of the slats and blind and a resultant elimination of noise and damage which is present in blinds of ordinary construction due to the movement imparted thereto by air currents impinging the slats.

It is obvious that the invention is not confined to the herein described use therefor as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles of operation, which are capable of extended application in advance forms, and that the invention comprehends all construction within the scope of the appended claims.

What I claim is:

1. A Venetian blind comprising a member having a fixed position with relation to the window with which the blind is associated, vertical rods secured at their upper ends to said member, slats slidably and tiltably mounted upon the rods, means by which the slats may be raised or lowered, and means connected to said member and slats and cooperating with the rods to support the slats when lowered in spaced parallel relation and at an angle of substantially 45° to verticality, the slats inclining upwardly and inwardly with relation to the window and arranged in comparatively close relation with the outer lower edge of each slat located in a horizontal plane above the inner upper edge of the next lower slat.

2. A Venetian blind, as set forth in claim 1, wherein the slat-supporting means comprises flexible strips secured at their upper ends to the said fixed member and secured to the inner edges of the slats, said strips limiting the downward movement of the inner edges of the slats when the blind is lowered, and the downward movement of the outer edges of the slats being limited by said rods.

3. A Venetian blind comprising a member having a fixed portion with relation to the window with which the blind is associated, vertical rods secured at their upper ends to said member, slats provided with openings receiving said rods and slidably and tiltably mounted on said rods, means by which said slats may be raised or lowered, and means connected to said member and slats and cooperating with the rods to support the slats when lowered in spaced parallel relation and at an angle of substantially 45° to verticality, the slats inclining upwardly and inwardly with relation to the window and arranged in comparatively close relation with the outer lower edge of each slat located in a horizontal plane above the inner upper edge of the next lower slat, said second mentioned means coacting with said rods when said slats are lowered to maintain the latter at said angle against movement other than by said first mentioned means.

4. A Venetian blind comprising a member having a fixed position with relation to the window to which the blind is associated, vertical elements secured to said member, a plurality of elongated slats slidably and tiltably mounted on said elements and movable to raised collapsed and lowered opened positions with respect to said window, means by which said slats may be raised and lowered, means secured to said member and said slats and cooperating with said elements to support said slats when lowered in spaced parallel relation and at a declivate angle with respect to verticality, the slats inclining upwardly and inwardly with relation to the window and arranged in substantial accumbent relation with the outer lower edge of each slat located in a horizontal plane above the inner upper edge of the adjacent lower slat to establish shadowed and apricated zones on the upper faces of the respective slats and with the apricated zones being of a greater

area than the shadowed zones for reflecting sunlight upwardly into a room to cause bright lighting of the upper section of said room by said sunlight, said declivate angle being determined solely by the ratio of the width and distance of and between the respective slats when in correlated positions defining said shadowed and apricated zones, said second mentioned means coacting with said elements when said slats are lowered to maintain the latter at said angle against movement other than by said first mentioned means.

MILTON R. KAPP.