

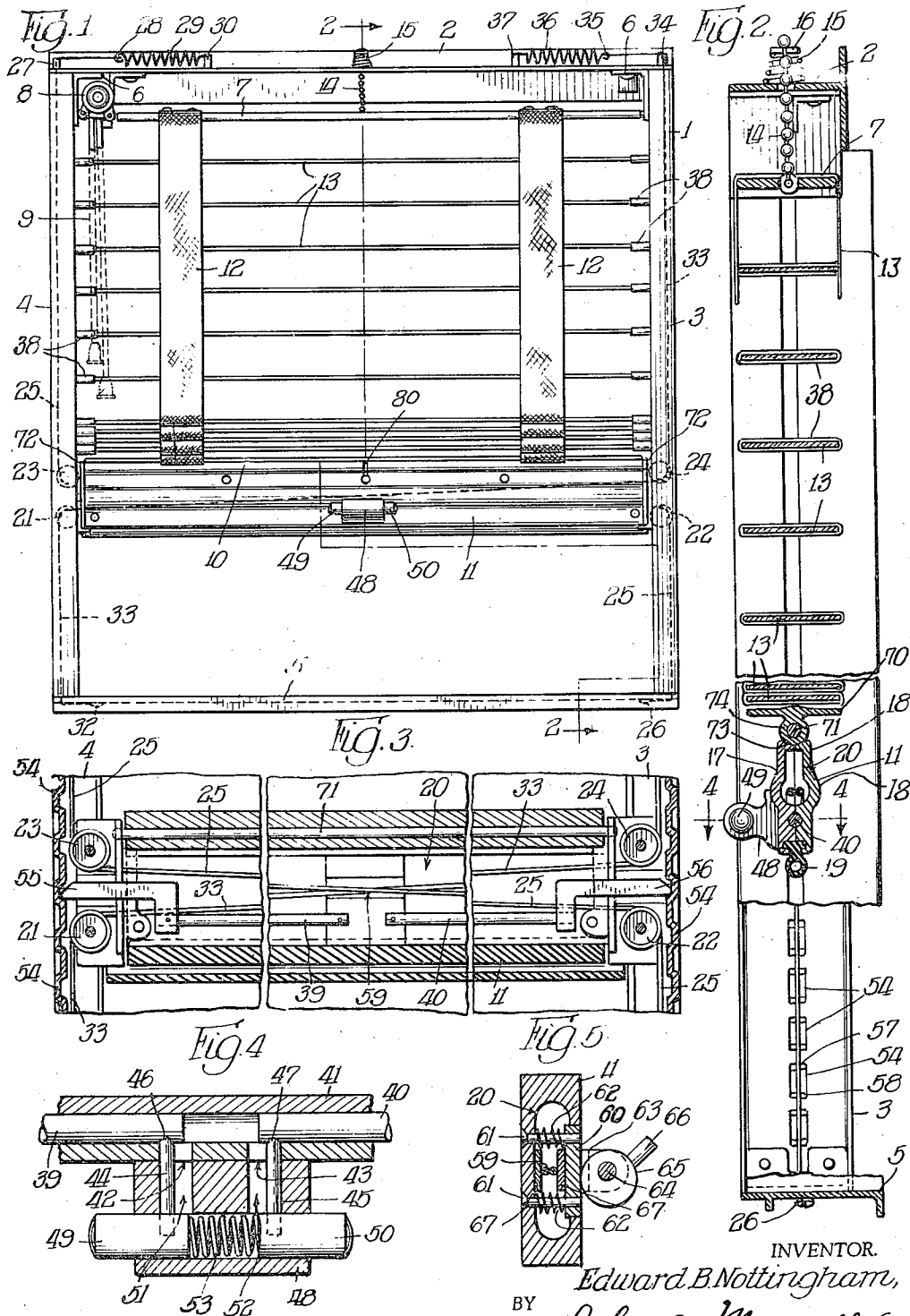
July 8, 1941.

E. B. NOTTINGHAM

2,248,775

VENETIAN BLIND

Filed Dec. 11, 1939



INVENTOR.

Edward B. Nottingham,

BY

John A. Marzall

ATTORNEY.

UNITED STATES PATENT OFFICE

2,248,775

VENETIAN BLIND

Edward B. Nottingham, Villa Park, Ill., assignor
to H. B. Dodge and Company, Chicago, Ill., a
corporation of Illinois

Application December 11, 1939, Serial No. 308,514

4 Claims. (Cl. 156—17)

This invention relates to Venetian blinds and its primary object is the provision of a Venetian blind having means for causing the slats to be maintained at a horizontal position at all times.

Another object of the invention is the provision of new and improved means for preventing the bottom bar which raises the slats from canting or attaining any position other than horizontal by means of a cord or cable suitably positioned at the sides of the blind and having operative engagement with the Venetian blind bottom bar.

Another important object of the present invention is to provide a Venetian blind which is freely adjustable between full open and full closed positions, and which is frictionally retained in any adjusted position both in angular relationship as well as longitudinal position with respect to the area to be shaded.

A further object of the invention is the provision of a Venetian blind construction in which the controlled positioning of the blind is effected through the agency of an elongated flexible cord or cable cooperating with a control bottom bar, the cable or cord comprising either a single or double strand adjacent the blind periphery and occupying a relatively insignificant space.

A further object of the present invention is the provision of a Venetian blind having selectively operable locking means associated with a bottom bar for positively locking the bar in any adjusted position.

A still further object of the invention is the provision of a Venetian blind which is provided with means for preventing vertical shifting or canting of the slats, which causes the slats to remain in a horizontal position at all times, which permits instant and easy removal of the slats to facilitate the cleaning thereof, and which is provided with side guides to maintain the slats in position and prevent the blind from being blown out of vertical position.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates a selected embodiment of the invention and the views therein are as follows:

Fig. 1 is a front elevation of a Venetian blind arranged within a window frame and embodying the invention.

Fig. 2 is a detail vertical sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a detail transverse sectional view through the bottom bar.

Fig. 4 is a detail sectional view on the line 4—4 of Fig. 2.

Fig. 5 is a detail sectional view showing a modified form of locking means.

The particular Venetian blind herein shown for the purpose of illustrating the invention comprises a frame 1 which includes a top supporting member 2, side members 3 and 4 which act as guides and a bottom member 5. Side brackets 6, Fig. 1, are secured to the frame 1 and revolvably support a tilting bar 7. Tilting bar means designated generally by the numeral 8 and operated by cords 9 is adapted to tilt the bar 7 about its longitudinal axis. A bottom tilt bar 10 is operatively and rotationally connected to the Venetian blind bottom bar 11. Spaced ladder tapes 12 are connected to the top tilting bar 7 and the lower tilting bar 10 and operatively support and maintain slats 13 in spaced relationship. Operation of the cords 9 will therefore cause the top tilting bar 7 to turn on its longitudinal axis and when so turning will cause the bottom tilting bar 10 to shift in the same angular position, thereby causing all the slats 13 to be tilted.

The top bar 7 is adapted to be supported intermediate its ends by means of a flexible chain 14 which is attached to the top of the tilting slat or bar 7 and passes through an opening provided in the top frame member 2. A spring 15 is confined between the washer 16, Fig. 2, and the top member 2 of the frame 1 and therefore resiliently supports the top tilt bar 7 intermediate its ends. During the tilting movement of the slats, the distance from the bottom of the top frame member 2 to the top of the tilt bar 7 will become somewhat increased because of the angle of this member. Therefore, the spring will yield sufficiently but at the same time adequately support the slat. The provision of the chain member 14 therefore supports the slat intermediate its ends but at the same time permits free flexible movement of the slat, allowing the said top slat 7 to assume a greater degree of angularity which would be impossible if the connection were rigid and no compensating spring 15 were provided.

The bottom bar 11 comprises front and rear members 17 and 18 respectively, Fig. 2. These members are securely fastened together and carry a longitudinal rubber bumper member 19 at its extreme bottom edge. Sections 17 and 18 are hollowed so that when they are fastened together an internal space or recess 20 is provided. The bottom bar 11, Fig. 3, is provided with lower rollers 21 and 22 positioned on opposite sides of the frame and upper rollers 23 and 24 positioned

immediately above the rollers 21 and 22 respectively.

A flexible cord-like member in the form of a metal cable 25, Fig. 3, is secured to part of the frame 1, as indicated at 26, Fig. 1, and passes upwardly over the pulley or wheel 22 diagonally across the space 20 under the roller 23 and upwardly inside of the groove 4 where it passes through an opening in the cylindrical member 27 and thence at right angles where it is connected at 28 to a spring member 29 which is fixed to a stud 30 on the top of the frame member 2. A second cord-like member 33 is fixed to the member 5 of the frame 1, as indicated at 32. This cable passes over the roller 21, thence diagonally across the space 20 and under the roller 24. It then passes upwardly in the said groove 3 through an opening in the cylindrical member 34, where it makes a relatively right angle bend, being connected at 35 to a spring 36. The spring 36 is adapted to be connected to a rigid post or other support 37. The bottom bar 11 therefore is guided by the cables 25 and 33 and assures that the bottom bar level of the bottom bar 11 is maintained in a proper level position at all times. The arrangement of the cables 25 and 33 in cooperation with the bottom bar 11 is very similar to the arrangement of a parallel bar used in connection with drafting boards. The arrangement is such, therefore, that the bottom bar 11 travels on the cables 25 and 33 and as these cables cross over in the center of the bottom bar any upward pressure applied on any end of the bottom bar will be transmitted equally to the other end of the bottom bar. Therefore, the Venetian blind is adapted to be grasped any place along the bottom bar and raised without danger of dislocating the level position of the bottom bar. As the bottom bar is raised, the superposed slats 13 will pile upon the bottom bar in the usual conventional manner and as shown in Fig. 1. Therefore, the slats are always maintained in proper level position and there is no danger of the slats ever assuming any position outside of the regular horizontal position. The bottom bar 11 is so constructed that it extends a predetermined distance inside of the guides 3 and 4 so that the pulleys or rollers 21 to 24 inclusive, and the cables 25 and 33 are hidden from sight. These cables take up relatively little room and therefore the side guides 3 and 4 may be made relatively narrow. The side guides 3 and 4 are provided with longitudinal slots into which the ends of the bottom bar extend. The slats 12 may be provided with end caps 38 having tips or projections which extend into the longitudinal slots in the guide. Therefore, the blind is prevented from blowing out of its normal plane. The end caps may be detachably fastened to the slats 13 and are preferably of the type disclosed and claimed in United States Patent No. 2,174,249, granted September 26, 1939, and assigned to the present assignee.

The springs 29 and 36 tend to make the cables 25 and 33 relatively taut and create a friction about the rollers 21 to 24 and, therefore, no locking means need be provided on blinds of smaller sizes as the friction created is sufficient to hold the blind in any raised position. The friction on the cables 25 and 33 may be increased or decreased, depending upon the tension on the springs when the cables are attached.

In many instances it is very desirable to employ the use of locking means for maintaining the blind in raised or lowered position. However,

it is very desirable that when the application of considerable force is applied, that the locking means be free to operate independent of its releasing means. In railroad installations it has been found that very often the blinds are operated by the passengers who are not familiar with the operation of the blind and therefore tend to raise or lower the blind forcibly without regard to the latch release mechanism. The present invention, therefore, contemplates the use of locking means having release mechanism which can be easily operated and manipulated, but at the same time permit the blind to be raised and lowered without the use of the release mechanism when sufficient force is applied. Therefore, the present blind is adapted to be operated in a free and easy manner by the use of the release mechanism and still be prevented from being broken or disarranged should force be applied and the release mechanism be ignored. The present locking means comprises side rods 39 and 40, Fig. 4, slidably arranged in a tubular support 41. The tubular support is provided with slots 42 and 43 through which pins 44 and 45 extend. The pins 44 and 45 are rigidly connected at 46 and 47 to the side rods 39 and 40 respectively. These pins 44 and 45 also extend into a handle grip portion 48 in which oppositely disposed thumb pieces 49 and 50 are slidably positioned. The pins 44 and 45 are also rigidly connected to the thumb pieces 49 and 50, the grip member 48 being provided with slots 51 and 52 to permit limited movement of the thumb pieces 49 and 50. A spring 53 is arranged between the members 49 and 50 and urges them apart. This urging action of the spring 53 is transmitted to the rods 39 and 40 and tends to push the rods 39 and 40 outwardly.

The inner back surfaces of the side guides 3 and 4 are each provided with spaced depressions 54 which are in alignment with each other and are adapted to receive the locking dogs 55 and 56 on the ends of the rods 39 and 40 respectively.

These locking dogs 55 and 56 are rigid with the rods 39 and 40 and therefore when the thumb pieces 49 and 50 are pressed inwardly, the rods 39 and 40 and consequently the dogs 55 and 56 will be moved inwardly out of the depressions 54. The depressions 54 are slightly beveled at their upper and lower ends, as indicated at 57 and 58, Fig. 2, and the engaging ends of the dogs 55 and 56 are relatively blunt or rounded so that when the dogs are in their depressions or recesses 54, they can be retracted when considerable force is applied to the bottom bar either in an upwardly or downwardly direction. Therefore, the Venetian blind is adapted to be raised or lowered very easily when the members 49 and 50 are depressed, but they still may be operated by exerting sufficient pressure on the bottom bar without in any way damaging any part of the blind.

The flexible cables 25 and 33 cross within the internal recess or opening 20 at a point indicated by the numeral 59, Fig. 3, and, therefore, instead of using the locking dogs 55 and 56 cooperative with the depressions 54, means for locking the shade in adjusted position may be effected by employing the locking means disclosed in Fig. 5. In this latter figure, the bottom bar may include a front plate 60 secured to the bottom bar 11 by fastening means 61, such as rivets or screws. Springs 62 surround the fastening members 61 and urge the plate 60 outwardly in flush relationship with the front of the bottom bar 11. Ears 63 may be rigidly fixed to the bottom bar on each side of the plate 60 and support a shaft or pin

54 upon which there is rigidly mounted an eccentric 65 having an operating handle 66. Therefore, when the operating handle 66 is operated, the eccentric 65 will force the plate 60 inwardly and impinge the cables 25 and 33 at the point 59 where they cross. Flexible means 67 may be arranged in the cavity 20 in the bottom bar, Fig. 5, to depress on opposite sides of the flexible cables 25 and 30 during operation of the eccentric member 65. The tapes 12 are fastened at their upper ends to the top tilt bar 7 and are fastened at their lower ends to a bottom tilt bar 70. This bottom tilt bar 70 is pivotally mounted at 71, Fig. 2, to extension brackets 72, Fig. 1, extending upwardly from the bottom bar. The upper surface of the bottom bar is dished or provided with a rounded surface 73, Fig. 2, to receive the circular portion 74 on the bottom of the bottom tilt bar 70. The elongated tubular portion 74, therefore, has nesting relationship with the bottom bar and makes a smooth tight fit through which no light can escape. Also, the bottom tilt bar is constructed so that it can rotate freely to permit the slats to be moved in an almost straight vertical position. It has been found desirable to construct the top tilting bar in substantially the same manner as the present lower tilt bar 70 is constructed so that the connection at the top of the blind will be such that all space between the top bar and the tilting bar may be closed when the slats are moved in angular position.

When found desirable, and on relatively wide blinds, a member 80, Fig. 1, may be fixed to the bottom bar and looped around the rod 71 to support the rod 70 and prevent it from bulging intermediate its ends.

The invention provides a Venetian blind which is mounted in a frame, and has a single unitary device means, not shown, being provided to lock the frame in the opening. The blind is adapted to be maintained in proper horizontal position at all times because of the unique construction embodying the cables 25 and 33. Moreover, the cables can have sufficient tension applied thereto so as to cause the blind to stay in any vertical position. The blind is also provided with new and improved locking means for permitting the blind to be manually raised and lowered and then maintained in its adjusted position. Means for locking the blind in adjusted position is so constructed that the blind can be moved independently of the release means if excessive force is applied and still prevent the blind or its parts from becoming damaged. The release mechanism is simple to operate and permits the blind to be easily raised and lowered. The construction of the locking dogs and their cooperating recesses or depressions is such that a tight lock may be insured but at the same time is free to give when excessive pressure is applied. The bottom bar acts as a control bar for housing and supporting the operating and locking mechanism. The bottom bar also acts as a supporting bearing for the lower tilting bar and insures a light-proof connection between the bottom bar and the bottom tilting slat. The upper tilting bar is supported intermediate its end by a chain member of the conventional ball type and is resiliently mounted so as to permit the top bar 7 to be tilted to its full

extent without jamming or forcing. The entire blind is durable and efficient in operation and can be manufactured at a relatively low cost.

Changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention or sacrificing any of its attendant advantages, and the right is hereby reserved to make all such changes as fall fairly within the scope of the following claims.

The invention is hereby claimed as follows:

1. A Venetian blind construction comprising a blind control bar, upper and lower rollers carried by said bar, on opposite ends thereof and a pair of elongated flexible supporting means arranged adjacent either side of said Venetian blind and extending along the side edges of the blind, each of said flexible supporting means extending longitudinally of said bar and passing over a lower roller on one side and an upper roller on the other side for retaining the bar in horizontal position.

2. A Venetian blind comprising spaced metal guides having opposing faces, the opposing faces of each guide having spaced depressions punched therein below the normal surface of the guides and in alignment with each other, a bottom bar for said blind, a pair of slidably mounted locking dogs mounted in the bottom bar at the ends of the bottom bar and adapted to be received in the depressions, spring means for normally urging the dogs outwardly and holding the dogs in the depressions, and slidably mounted release means operably connected to said dogs and extending from the bottom bar, said release means being operable against the urging action of the springs for unlocking the dogs from the depressions.

3. A Venetian blind comprising spaced guides having opposing faces, the opposing faces of each guide having countersunk depressions therein in alignment with each other, a bottom bar for said blind, a pair of longitudinally slidable means, locking dogs inside of said bottom bar at the ends of the bottom bar and adapted to be received in the depressions, spring means for normally holding the dogs in the depressions, and release means extending from the bottom bar and operatively connected to the dogs, said release means being operable against the urging action of the springs for unlocking the dogs from the depressions, said depressions having sloping upper and lower ends, said dogs having rounded engaging ends whereby excess force applied to the bottom bar will permit the dogs to be slid out of their depressions without operation of the release means to permit the blind to be raised or lowered by the exertion of force and without damaging the blind.

4. A Venetian blind comprising a bottom bar adapted to move vertically between side members, and locking means carried by said bar and comprising a pair of spaced slidably mounted rods arranged inside of the bar, a slidable release means for each rod, said slidable release means each being movable inwardly and mounted outside of the bar, spring means urging the release means apart, and rigid means connecting each rod to its respective release means.

EDWARD B. NOTTINGHAM.