July 6, 1965 J. A. ANDERLE 3,192,991

VENETIAN BLIND ARRANGEMENT

Filed Dec. 18, 1961 4 Sheets-Sheet 1

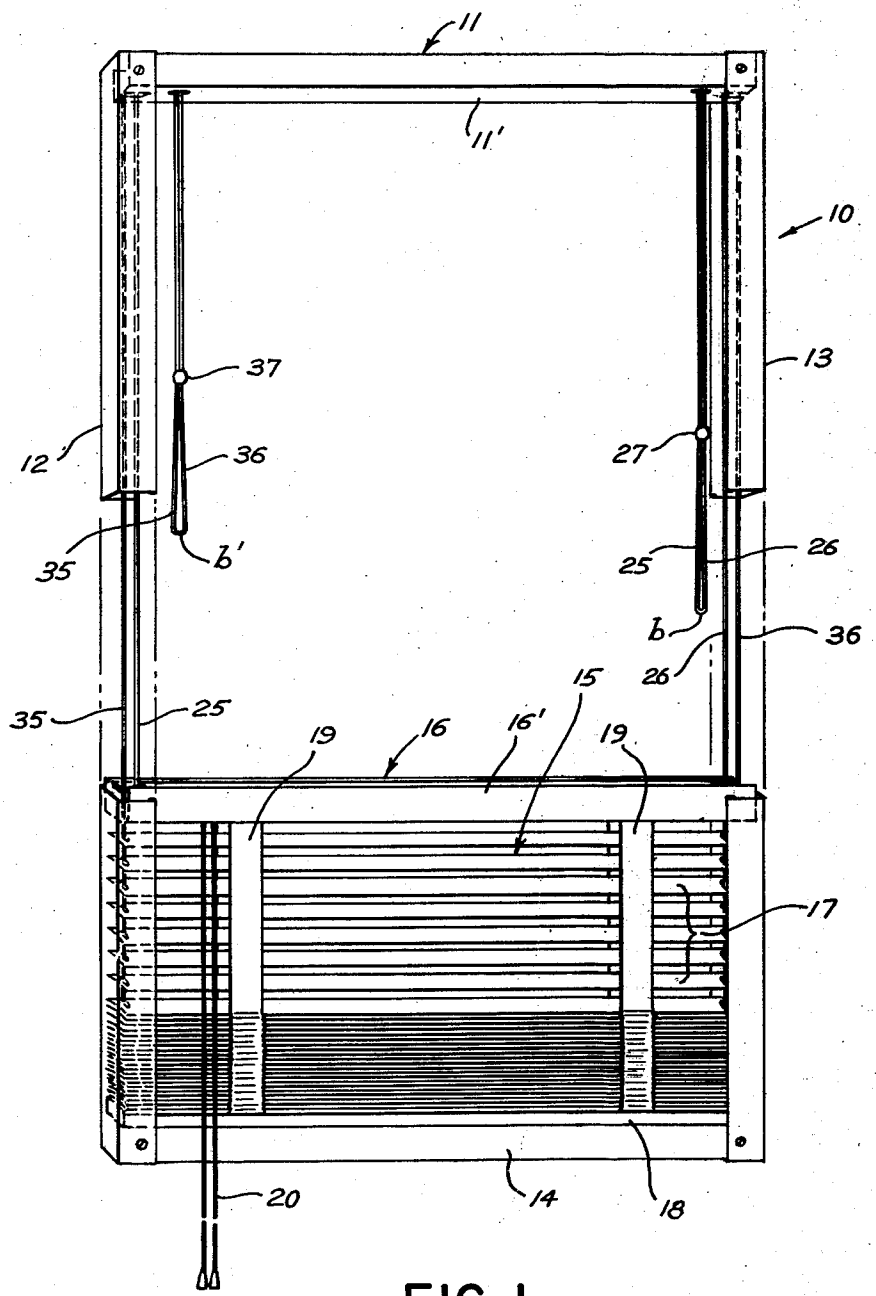


FIG. 1

INVENTOR
JOSEPH A. ANDERLE
BY
Joseph A. Anderle

July 6, 1965 J. A. ANDERLE 3,192,991

VENETIAN BLIND ARRANGEMENT

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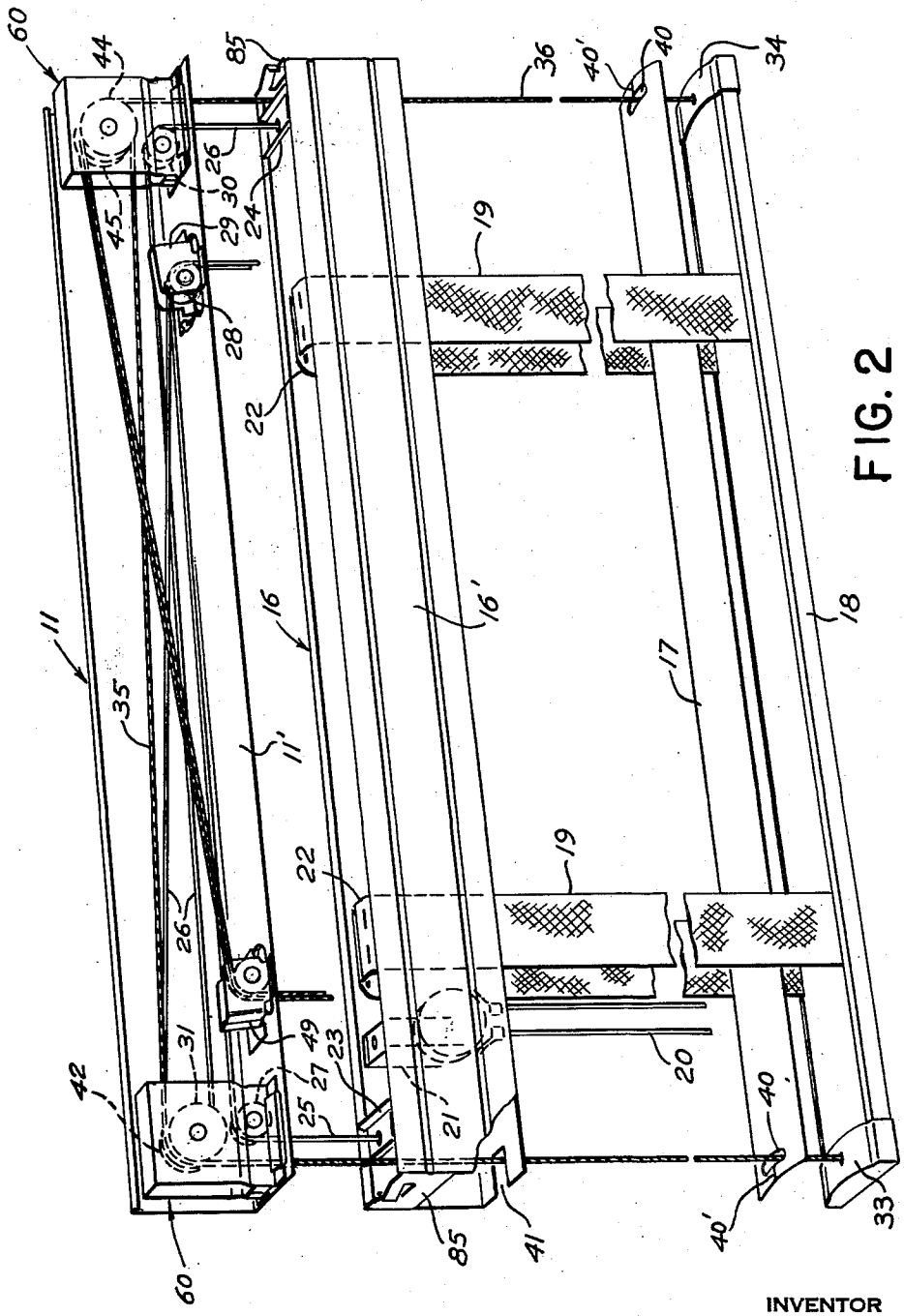


FIG. 2

INVENTOR

JOSEPH A. ANDERLE

BY

Joseph A. Anderle

July 6, 1965 J. A. ANDERLE 3,192,991

VENETIAN BLIND ARRANGEMENT

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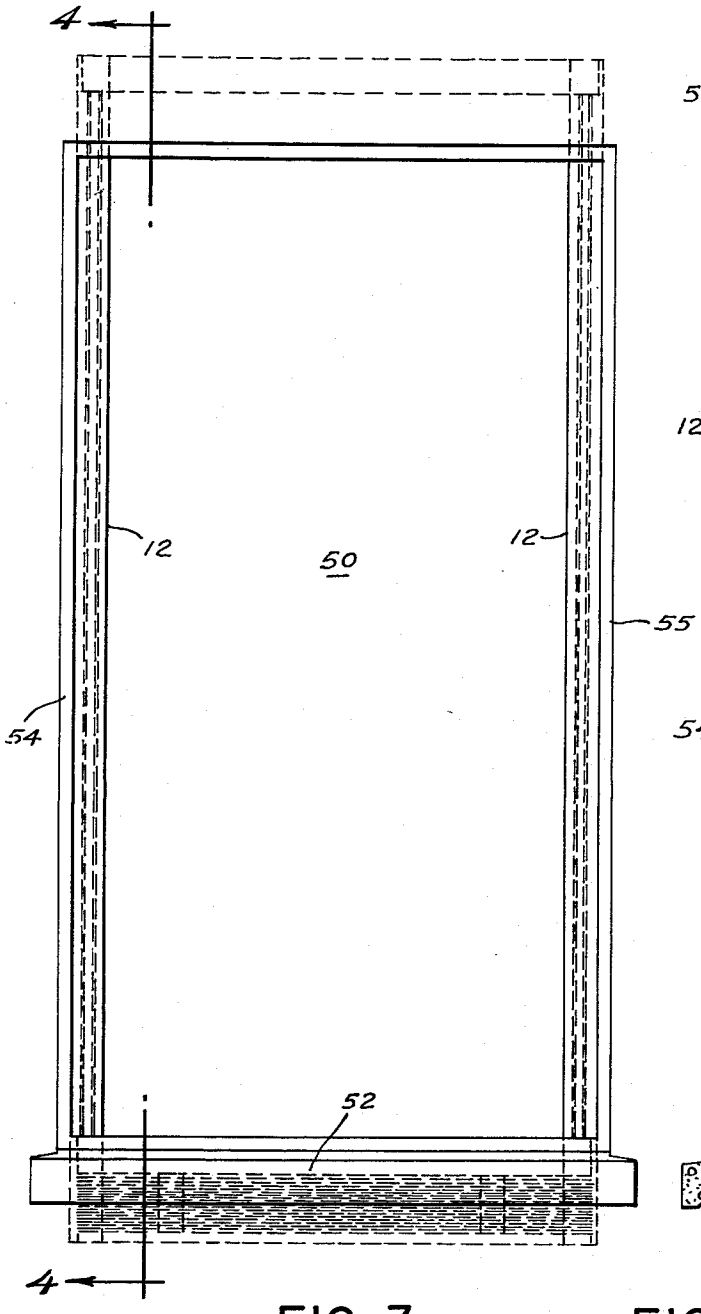


FIG. 3

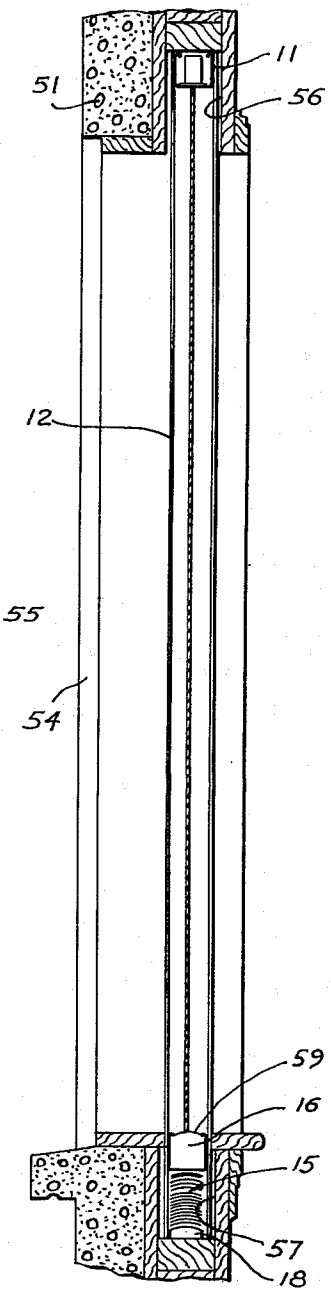


FIG. 4

INVENTOR
JOSEPH A. ANDERLE
BY
Joseph A. Anderle

July 6, 1965 J. A. ANDERLE 3,192,991

VENETIAN BLIND ARRANGEMENT

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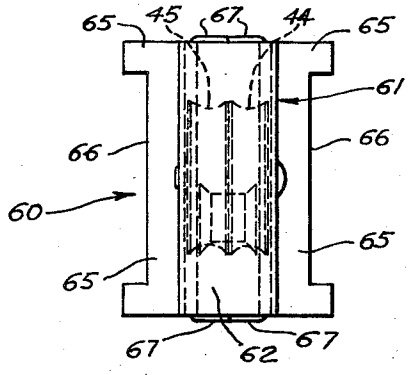


FIG. 5

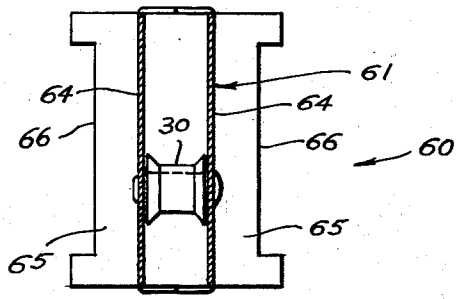


FIG. 6

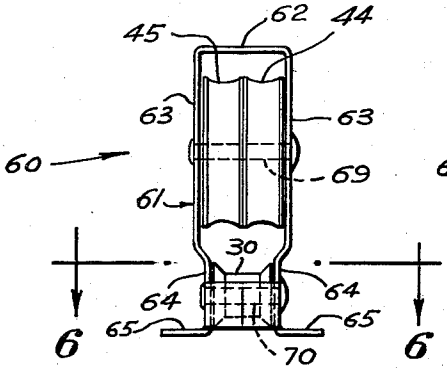


FIG. 7

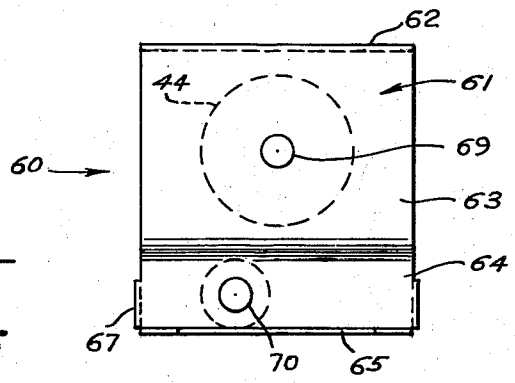


FIG. 8

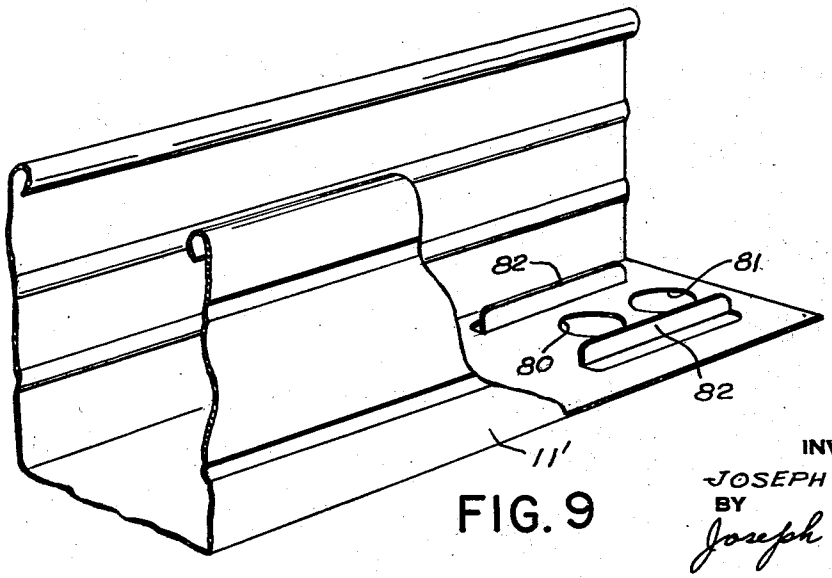


FIG. 9

INVENTOR
JOSEPH A. ANDERLE
BY
Joseph A. Anderle

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3,192,991

VENETIAN BLIND ARRANGEMENT

Joseph A. Anderle, Clifton, N.J., assignor to Levolor Lorentzen, Inc., Hoboken, N.J., a corporation of New Jersey

Filed Dec. 18, 1961, Ser. No. 159,850
1 Claim. (Cl. 160—167)

This invention relates to Venetian blinds of the type which provide for uncovering the window downwardly from the top, with or without provision for also uncovering the window upwardly from the bottom. The prior-art Venetian blinds of this type have been rather primitive, have required various parts of special design and, in some instances, have been complicated and costly.

Among the objects of the present invention are the provision of a Venetian blind organization by means of which the window may be uncovered downwardly from the top—also by which the window may additionally be uncovered upwardly from the bottom—which is of simple construction, can be made largely of standard Venetian blind parts and supplies that are used in conventional blinds, in which the hoisting cords are out of the way and largely unnoticeable, in which the lift cords if used for the bottom bar of the blind are out of the way and largely unnoticeable, which is rugged and dependable, and which can be constructed suitably for mounting either in front of the window opening or within the window opening.

Various other objects and advantages will be apparent from the detailed disclosure hereinafter. The Venetian blind arrangements disclosed hereinafter are the best modes thus far contemplated by me of carrying out my invention but, nevertheless, are by way of illustration and example only. Unless otherwise indicated, the specification (including the drawings) refers only to the particular modes disclosed of carrying out my invention. It will be understood that the invention may be carried out in other modes.

In the claim parts may at times be identified by specific names for ready understanding but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the scope of my invention as distinguished from the pertinent prior art.

FIG. 1 is an isometric front view showing somewhat diagrammatically a Venetian blind organization embodying the present invention. The view is from the room side of the blind, and sections of the tilt cord and side channels are broken out.

FIG. 2 is a diagrammatic isometric view, with parts broken out, showing certain structure of the hoisting head and the Venetian blind head.

FIG. 3 is a somewhat diagrammatic front elevation from the outside of a building showing a Venetian blind structure, similar to that shown in FIGS. 1 and 2, installed in connection with a window opening.

FIG. 4 is a somewhat diagrammatic vertical section on the line 4—4 of FIG. 3.

FIG. 5 is a top plan view of the pulley fitting shown at the right-hand end of the hoisting head in FIG. 2, the pulley fitting at the left-hand end being the same but turned around.

FIG. 6 is a horizontal section of the pulley fitting shown in FIG. 5, taken on the line 6—6 of FIG. 7.

FIG. 7 is an elevation of the pulley fitting of FIGS. 5 and 6, looking from the bottom of FIG. 5.

FIG. 8 is an elevation of the pulley fitting of FIGS. 5–7, looking from the right of FIG. 5.

FIG. 9 is an isometric view, with portions broken out, of the right-hand end portion of the channel for the hoisting head before the pulley fitting of FIGS. 5–8 has been installed.

Reference will first be had to FIG. 1, in which a vertically-disposed rectangular frame is designated as a whole by **10**. The top horizontal member of the frame is a hoisting head designated as a whole by **11**. The vertical side members of the frame are U-shaped sheet-metal channels **12** and **13** with their open sides facing one another. The bottom horizontal member of the frame is a U-shaped sheet-metal channel **14** having its open side facing downwardly.

As will be seen from FIG. 1 the bottom bar **18** normally rests on the channel **14**. In lieu of the channel **14** I sometimes secure end caps to the lower ends of vertical channels **12** and **13**, in which case the end portions of the bottom bar normally rest on the end caps.

The hoisting head **11** is composed essentially of an upwardly-opening U-shaped sheet-metal channel **11'** having operating mechanism mounted therein. The end portions of the channel **11'** are fully nested within the vertical channels **12** and **13** and are fixedly secured thereto. The end portions of the bottom channel **14** are also fully nested within the vertical channels **12** and **13** and are fixedly secured thereto.

Within the frame **10** there is a Venetian blind designated as a whole by **15**. The blind has a head **16**, composed essentially of an upwardly-opening U-shaped sheet-metal channel **16'**. In addition to the head **16** the blind has slats **17** and bottom bar **18**, all of which will be further described. Ladders **19**, **19** and tilt cord **20** are conventional, being arranged and operated in conventional manner. The end portions of the head **16**, slats **17** and bottom bar **18** are nested within the vertical channels **12** and **13** with their ends in close proximity to the bottoms of the U formations of the channels **12** and **13**. Thus the channels **12** and **13** hold the head **16**, slats **17** and bottom bar **18** against substantial sidewise or endwise movement but not against movement from one level to another.

The particular organization shown in FIG. 1 is intended primarily for an "outside mount," the word "outside" referring to outside of the window opening rather than outside of the building. Ordinarily the blind is within the building, whether the mounting of the blind be an "inside" one or an "outside" one. In the case of an "outside mount," the blind is mounted adjacent to the face of the wall or window frame that surrounds the window opening, and the slats extend somewhat beyond the vertical sides of the window opening. In the case of an "inside mount" the blind is mounted within the window opening.

Proportioning the organization shown in FIG. 1 for an "outside mount" in connection with the particular window, and using suitable mounting brackets that are known in the art, I mount the upper frame member **11** somewhat above the level of the top of the window opening if there is sufficient space to do so and mount the bottom frame member **14** somewhat below the bottom of the window opening or, in some instances, flush with the bottom of the window opening. I secure the side frame members **12** and **13** to the wall or to the window frame by suitable brackets or screws. In some instances I may support the side frame members **12** and **13** from the top and bottom frame members **11** and **14**.

Reference will now be had to FIG. 2. The Venetian blind head **16** is provided with a conventional tilter **21**, operated by the tilt cord **20**. Through a conventional tilt rod (not shown), the tilter oscillates conventional tape rolls or rockers **22**, **22** to shift the relative position of the front and rear vertical tapes of ladders **19**, **19** and thereby tilt the slats **17** and the bottom bar **18** in conventional manner. Contrary to conventional Venetian blind arrangement the Venetian blind head **16** has no pulleys or cord lock for use in connection with raising

the bottom bar 18 and accumulating the slats 17 on top of it.

At the ends of the Venetian blind head 16 are end braces 85, 85. Close to the ends of head 16 are top braces 23 and 24 which are interlocked with the inturned longitudinal beads of the head channel 16'. Extending downwardly through center holes in the top braces 23 and 24 are the branches 25 and 26 of a hoisting cord, the ends of the cord-branches being knotted beneath the braces 23 and 24, respectively, or being otherwise suitably prevented from being withdrawn from the top braces.

Hoisting-cord branches 25 and 26 extend into the hoisting head 11, thence along the head and downwardly in front of the blind at the right-hand side, being united at a bight *b* as shown in FIG. 1. Within the head 11 the cord branches 25 and 26 are guided by cord-guiding means, e.g., sheaves. By grasping the hoisting cord above the bight *b*, and pulling the cord downwardly or paying it out, the Venetian blind head 16 is raised or lowered as desired to uncover the window by varying amounts extending downwardly from the top of the window. To facilitate equal pull-down and pay-out of the two branches 25 and 26 of the hoisting cord, it is provided with a conventional equalizer 27. A releasable cord lock 29 (FIG. 2) serves in conventional manner to hold the Venetian blind head 16 at the desired adjusted level.

The stringing and pulley arrangement whereby the hoisting cord raises and lowers the Venetian blind head 16 is as follows: From top brace 23 in FIG. 2 the hoisting-cord branch 25 passes over sheave 27, thence horizontally within the hoisting head 11, over the sheave 28 of the conventional cord lock 29, and downwardly through the cord lock to the bight *b* (FIG. 1). From top brace 24 the hoisting-cord branch 26 passes over sheave 30, thence horizontally within the hoisting head 11, around sheave 31, thence substantially horizontally in the reverse direction to the sheave 28 of the cord lock 29, and downwardly through the cord lock to the bight *b* (FIG. 1). In passing between the Venetian blind head 16 and the hoisting head 11 the hoisting-cord branches 25 and 26 are within the side channels 12 and 13, respectively, where the cord branches are out of the way and are largely unnoticeable.

As thus far described, the Venetian blind organization provides for tilting the slats of the blind and raising and lowering the Venetian blind head to variably uncover the window from the top down. In some instances that is all that is desired, in which case no provision for raising the bottom bar is needed. In such cases I provide no lift cords for the bottom bar. With no lift cords passing through the slats 17 they might flip over unless there were provision against it. To prevent the slats 17 from flipping over I may lock them to the cross tapes (not shown) of the ladders 19 in known manner. In the alternative I may use so-called twin ladders, which have two cross tapes at each slat level. With the slats so threaded that one cross tape at each level is below the slat and the other above the slat, flipping over of the slats is prevented.

Where it is desired to raise and lower the bottom bar 18, in addition to raising and lowering the head 16 of the blind, I use a lift cord having the branches 35 and 36. The bottom bar 18 is provided with end caps 33 and 34 and the lift-cord branches extend downwardly through center holes in these end caps, the ends of the cord branches being knotted within the end caps 33 and 34, respectively, or being otherwise suitably prevented from withdrawal from the end caps.

The lift-cord branches 35 and 36 extend to within the hoisting head 11, thence along the head and downwardly in front of the blind at the left-hand side, being united at bight *b'* as shown in FIG. 1. Within the head 11 the cord branches 35 and 36 are guided by cord-guiding means, e.g., sheaves. By grasping the lift cord above the bight *b'* and pulling the cord downwardly or paying it out the Venetian blind bottom bar 18 is raised and lowered as desired to accumulate slats on it and thereby uncover the window by varying amounts extending upwardly from the bottom of the window. To facilitate equal down-pull and pay-out of the two cord branches 35 and 36 the lift cord is provided with a conventional equalizer 37. A releasable cord lock 49 serves in conventional manner to hold the Venetian blind bottom bar 18 at the desired adjusted level.

The stringing and pulley arrangement whereby the lift cord raises and lowers the Venetian blind bottom bar 18 is as follows: From end cap 33 in FIG. 2 the lift-cord branch 35 passes through a rout hole 40 in each of the slats 17, through a notch 41 in the bottom of the head 16 of the blind, upwardly through the Venetian blind head 16, into the hoisting head 11, over sheave 42 which is coaxial with sheave 31, thence substantially horizontally through the hoisting head, around sheave 44, thence substantially horizontally in the reverse direction to the sheave 48 of conventional cord lock 49, and downwardly through the cord lock to the bight *b'* (FIG. 1). From end cap 34 in FIG. 2 the lift-cord branch 36 extends to the hoisting head 11 similarly to lift-cord branch 35, passing upwardly through the slats 17 and the Venetian blind head 16. In the hoisting head 11 the lift-cord branch 36 passes over sheave 45 which is coaxial with sheave 44, thence substantially horizontally within the hoisting head 11, over the sheave 48 of the conventional cord lock 49, and downwardly in front of the blind to the bight *b'*. In passing between the bottom bar 18 and the hoisting head 11 the lift-cord branches 35 and 36 are within the side channels 12 and 13, respectively, where they are out of the way and largely unnoticeable.

FIGS. 3 and 4 show an "inside mount," with window pockets top and bottom to receive the raised or lowered blind as the case may be. The Venetian blind structure is generally similar to that of FIGS. 1 and 2; it operates in the same manner.

The window opening is designated by 50 and is bounded by lintel portion 51, sill portion 52, and jambs 54 and 55. The lintel portion 51 is made with a pocket 56 which extends completely across the top of the window opening and which I make deep enough to receive the blind, including the hoisting head, when the blind is fully raised with the slats bunched. The sill portion 52 is made with a pocket 57 which also extends completely across the window opening and which I make deep enough to receive the blind, exclusive of the hoisting head, when the blind is fully lowered.

The side channels 12 and 13 are secured by screws or otherwise to the jambs 54 and 55, respectively, and they extend from the top of pocket 56 to the bottom of pocket 57. No bottom channel 14 (FIG. 1) is needed but I may provide the bottom ends of the channels 12 and 13 with end caps.

The hoisting head 11 is mounted in any suitable manner at the top of the pocket 56. The construction of the hoisting head 11, the Venetian blind 15 and the head 16 thereof are the same as in FIGS. 1 and 2.

In FIG. 4 I have shown the channel of the Venetian blind head provided with a cover 59, which I may also use in the structure shown in FIGS. 1 and 2. As shown in FIG. 4 I make the pocket 57 of such depth that when the head 16 of the blind is fully lowered the cover 59 lies substantially flush with the portions of the sill in front of and in back of the pocket 57, thereby providing substantial continuity of the window sill when the Venetian blind head 16 is fully lowered. As may be seen from each of FIGS. 3 and 4 the window opening 50 is entirely uncovered, except for the side channels 12 and 13, when the Venetion blind head 16 is fully lowered. The window will also be entirely uncovered except for the side channels, when the Venetian blind head 16 and the bottom bar 18 are each fully raised if the upper pocket

56 is deep enough to receive the entire blind when fully raised.

FIGS. 5–8 show the fittings, designated as a whole by 60, which I use to provide the sheaves at the two ends of hoisting head 11 (FIG. 1). The fitting shown in these figures will be considered to be the one at the right-hand end of the hoisting head 11 in FIG. 1. The fittings at the two ends of the hoisting head are the same, though one in turned around with respect to the other.

A one-piece sheet-steel housing is designated as a whole by 61. This housing has a rectangular top 62 and primary sides 63, 63. The primary sides merge with secondary sides 64, 64 which in turn merge with outwardly-extending bottom flanges 65, 65 that are notched at 66, 66. Extending from the ends of the secondary sides 64, 64 are tabs 67, 67 (two pairs, one pair at each end of the housing 61). The end of each tab 67 abuts the end of the other tab of the pair, whereby proper spacing between the opposite sides of the housing is insured.

Rotatably mounted between the primary sides 63, 63 of the housing 61 are the two sheaves 44 and 45 that were referred to in connection with FIG. 2. These two sheaves are mounted on a common axle 69. Rotatably mounted between the secondary sides 64, 64 is the sheave 30 that was referred to in connection with FIG. 2. This sheave is mounted on an axle 70.

Referring to FIG. 9 there is shown the end of the hoisting-head channel 11' before the fitting 60 has been applied thereto. In the bottom of the channel there is a hole 80 for the passage of the hoisting-cord branch 26, and a hole 81 for the passage of the lift-cord branch 36. Elongated fingers 82, 82 are struck up from the bottom of channel 11'. These fingers span the notches 66, 66 at the roots thereof and are clenched over the bottom flanges 65, 65 to secure the fitting 60 in place in the hoisting head as shown in FIG. 2.

The fitting 60 is the only special fitting that I use, the remainder of the structure being composed of fittings and materials that are used in regular Venetian blinds. The hoisting head channel 11' and the Veneitan blind head channel 16' are made from standard Venetian blind head channel. In the hoisting head 11 the cord locks are standard ones used to lock Venetian blind lift cord. In the Venetian blind head 16 the end braces, top braces, tilter, tilt rod, cradles and tape rolls are standard ones. The ladders 19, 19 are standard Venetian blind ladders. The slats 17 are punched from standard Venetian blind slat stock. In punching the rout holes 40 I provide a slit 41' extending to the end of the slat, whereby the slat can be snapped around the lift cord. The bottom bar 18 is standard, and the end caps 34 are standard except for placing a hole in the top.

Cord locks of types suitable for use as the cord locks 28 and 48 in the hoisting head 11 are shown in U.S. Patents 2,731,111, 2,744,572 and 2,840,157. An end brace of type suitable for use as the end braces 85, 85 is shown in U.S. Patent 2,673,608. A top brace of type suitable for use as the top braces 23 and 24 is shown in U.S. Patent 2,629,434. Tilters of types suitable for use as the tilter 21 are shown in U.S. Patents 2,269,213, 2,593,048 and 2,630,861. Tape rolls or rockers of types suitable for use as rolls or rockers 22, 22 are shown in U.S. Patents 2,589,846, 2,629,434 and 2,831,536. Cradles of types suitable for use in conjunction with the tape rolls or rockers 22, 22 are shown in U.S. Patents 2,593,048 and 2,622,673. The cover 59 is a length of Venetian blind slat. Top braces of the type shown in U.S. Patent 2,745,486 are suitable for mounting it. A type of bar suitable for the bottom bar 18 is shown in U.S. Patents 2,618,329 and 2,600,062. An end cap of a type which, upon making the hole in the top thereof, is suitable for use as end caps 33 and 34 is shown in U.S. Patent 2,663,367.

I claim:

In a combination Venetian blind and hoisting head in which (a) the Venetian blind includes a head bar, a ladder-and-slat assembly, a tilter incorporated in the head bar for tilting the slats, and a bottom bar, (b) the hoisting head is horizontally disposed and above the head bar of the Venetian blind when the hoisting head and Venetian blind are mounted, (c) the hoisting head has pulley wheels and two cord locks, some of the pulley wheels being at the cord locks and other of the pulley wheels being separated from the cord locks, (d) the head bar of the Venetian blind is horizontally disposed when the blind is mounted and is suspended by hoisting cords which extend upwardly from the head bar, over pulley wheels of the hoisting head, and downwardly through the first of the two cord locks of the hoisting head, whereby the head bar of the Venetian blind may be raised and lowered and be held in adjusted position, and (e) lift cords extend upwardly from the bottom bar, upwardly through the Venetian blind, over pulley wheels of the hoisting head and downwardly through the second of the two cord locks of the hoisting head, whereby the bottom bar may be raised and lowered, and be held in adjusted position; the improvement which comprises: (1) the head bar and hoisting head each being upwardly-opening U-shaped sheet-metal channels with the operating elements mounted therein, (2) the head bar, slats and bottom bar of the Venetian blind being of substantially equal length and each having end portions adapted to be nested within vertical guide-channels at the two sides of a window opening, (3) the hoisting head having end portions in vertical alignment with such end portions of the head bar, (4) the hoisting head having pulley fittings at such end portions of the hoisting head, these pulley fittings having the pulley wheels of the hoisting head that are separated from the cord locks, (5) the two cord locks being located inwardly of said pulley fittings, (6) the hoisting cords being attached to the end portions of the head bar that are adapted to be nested within vertical guide channels, extending upwardly, over pulley wheels of said pulley fittings, over a pulley wheel at the first cord lock and through the first cord lock, (7) that hoisting cord which enters the hoisting head at the end thereof nearest the first cord lock being reeved over a pulley wheel of the pulley fitting at the opposite end of the hoisting head before proceeding to the first cord lock, (8) the lift cords being attached to the end portions of the bottom bar that are adapted to be nested within vertical guide channels, extending upwardly through the Venetian blind, over pulley wheels of said pulley fittings, over a pulley wheel at the second cord lock and through the second cord lock, and (9) that lift cord which enters the hoisting head at the end thereof nearest the second cord lock being reeved over a pulley wheel of the pulley fittings at the opposite end of the hoisting head before proceeding to the second cord lock.

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HARRISON R. MOSELEY, *Primary Examiner.*

LAWRENCE CHARLES, *Examiner.*