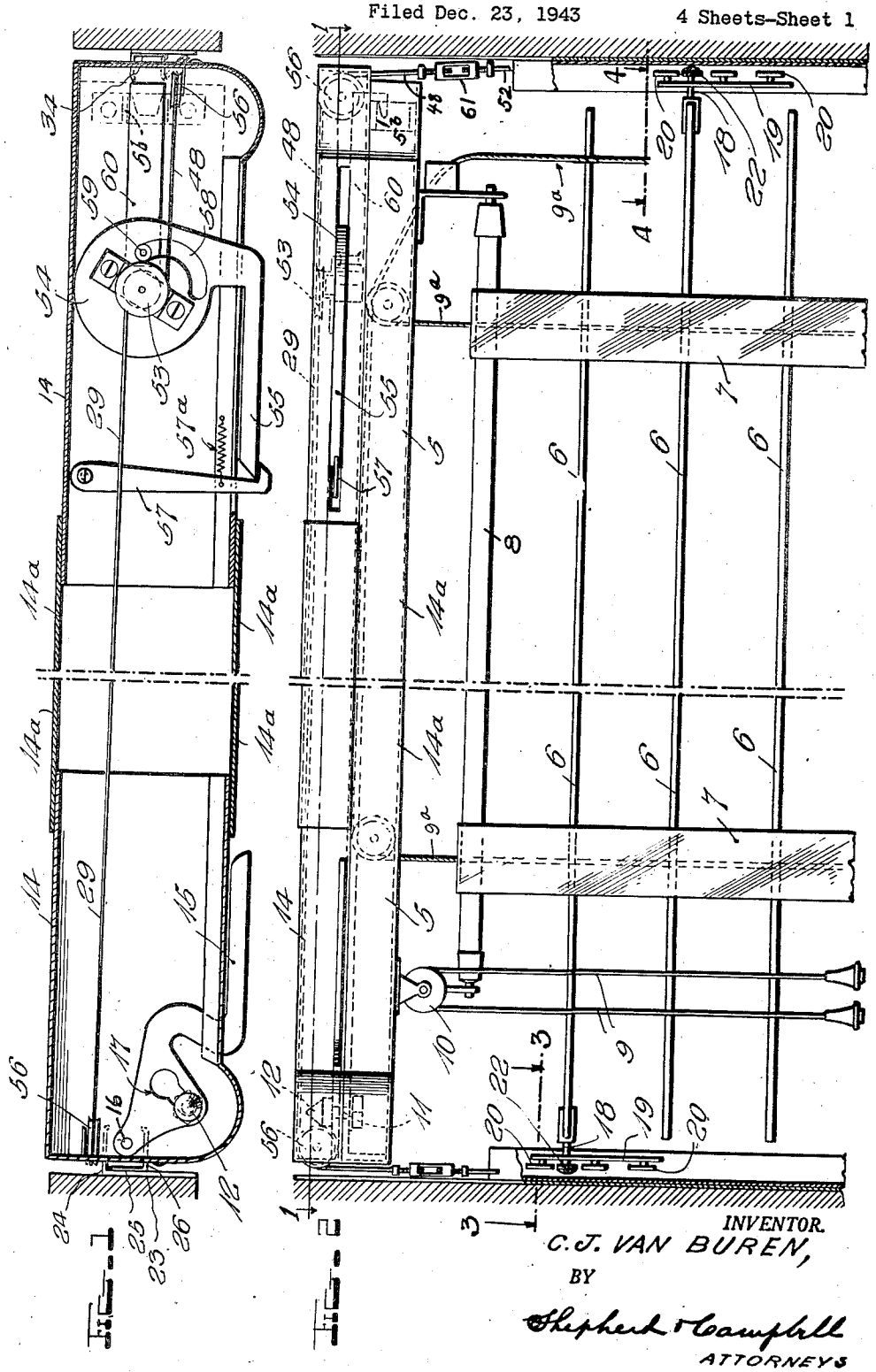
Sept. 25, 1945. C. J. VAN BUREN 2,385,391

VENETIAN BLIND

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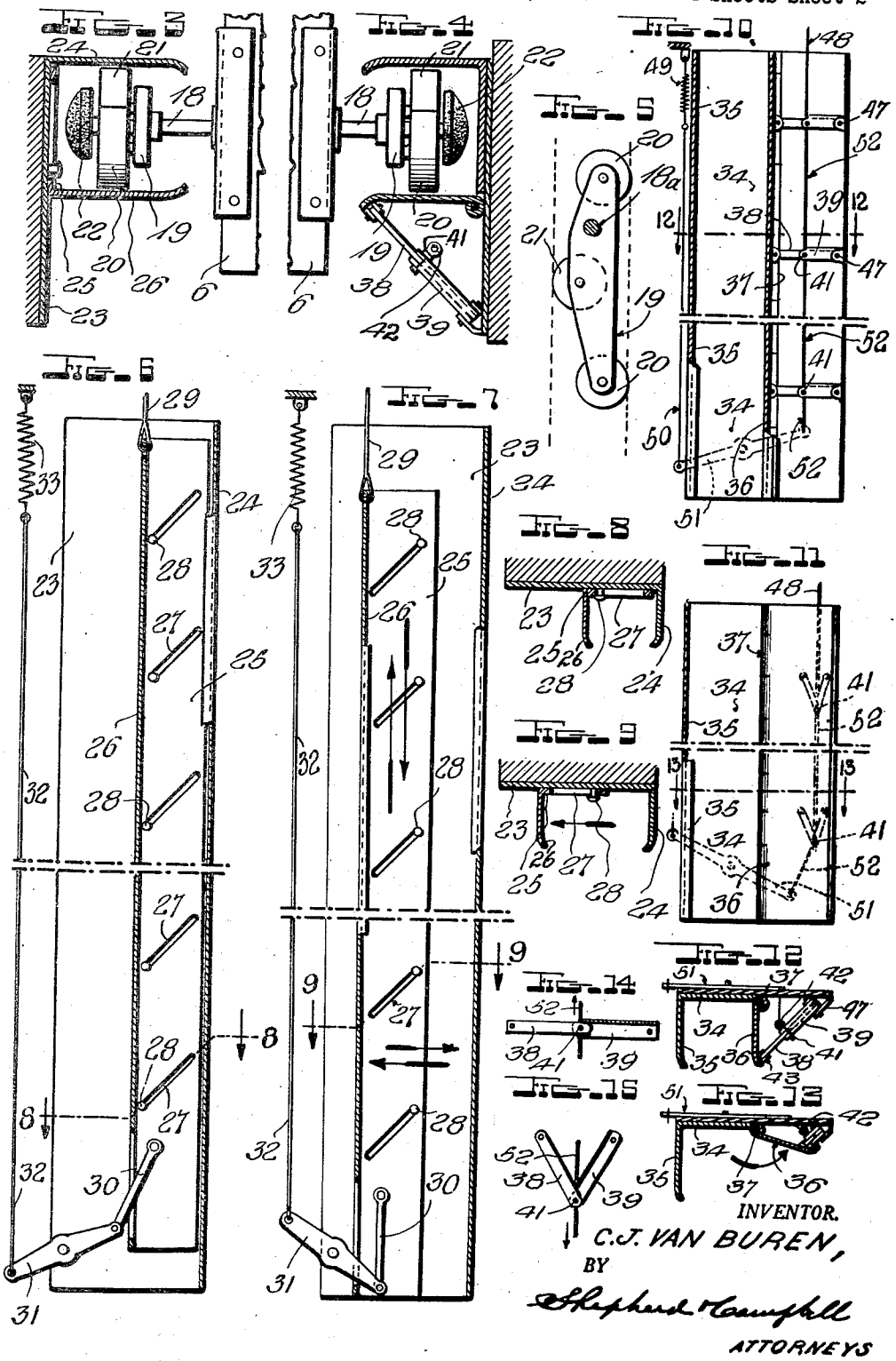


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VENETIAN BLIND

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VENETIAN BLIND

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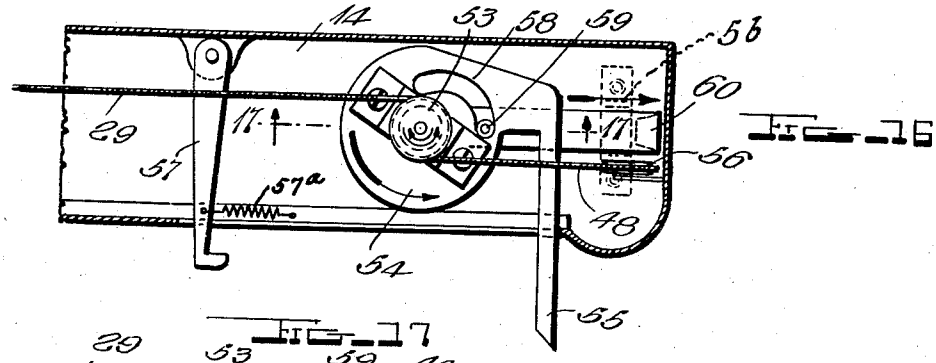


FIG. 16

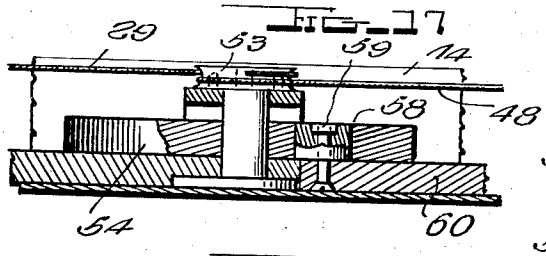


FIG. 17

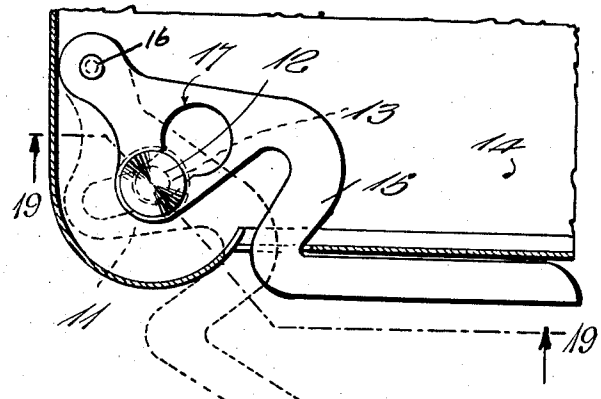


FIG. 18

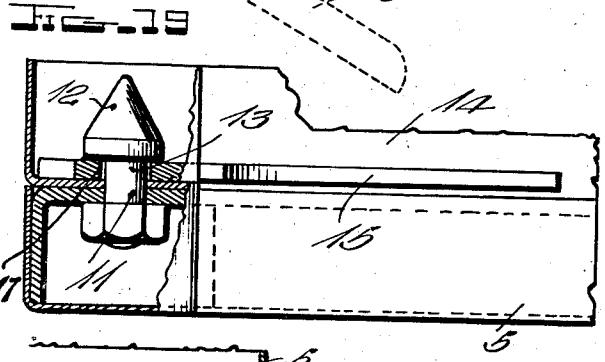


FIG. 19

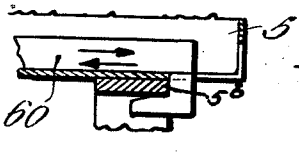


FIG. 20

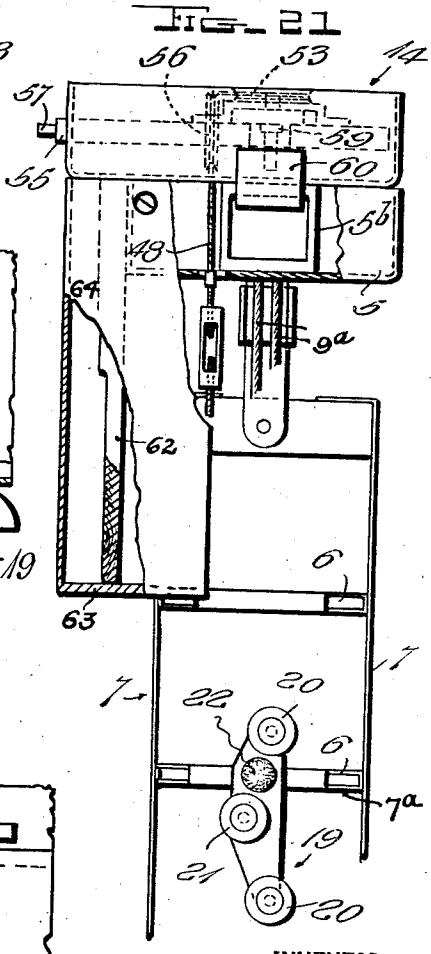


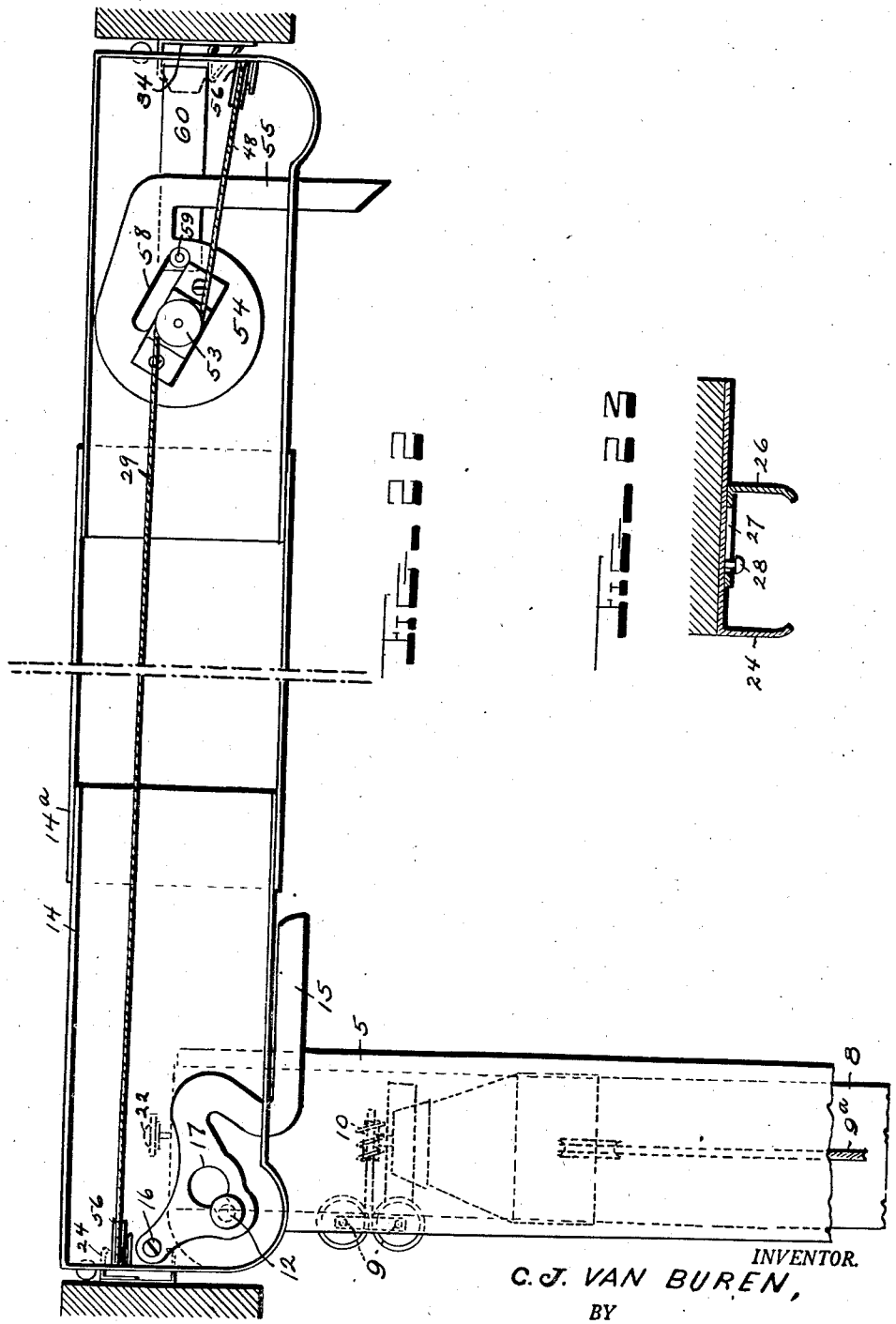
FIG. 21

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UNITED STATES PATENT OFFICE

2,385,391

VENETIAN BLIND

Charles J. Van Buren, Fort Lauderdale, Fla., assignor of one-half to James E. Cameron, Fort Lauderdale, Fla.

Application December 23, 1943, Serial No. 515,412

19 Claims. (Cl. 160—167)

The object of the present invention is to provide a Venetian blind so constructed and arranged as to facilitate not only ordinary cleaning of the same while still in association with the window to which it relates, but to permit of its easy and complete removal to a distant point for purposes of sterilization, painting or the like.

I am aware of the fact that some types of Venetian blinds may be completely removed from the windows with which they are associated. However, known blinds rattle and are noisy under the action of the wind or vibration of the building. The present invention contemplates the provision of a blind which may be swung out from the window after the manner of a door so that either side may be easily and efficiently cleaned, together with the guides, hereinafter referred to, or the blind proper comprising the conventional cap plates, slats, tapes, cords and tilting mechanism for the slats, may be bodily removed from its support and collapsed to be taken to a distant point. As this description proceeds it will be seen that these several objects are accomplished through the medium of mechanism of great simplicity, economy and reliability. Also, it will be seen that means are provided to prevent rattling while insuring smooth and easy operation.

Further objects and advantages of the invention will be set forth in the detailed description which follows. While the guides could be reversed, I prefer to arrange them as shown and, for convenience, will refer to them as the left hand and right hand guides, respectively.

In the drawings:

Fig. 1 is a view partly in plan and partly in horizontal section upon line 1—1 of Fig. 2, of the device of the invention.

Fig. 2 is a front elevation, with the guides in vertical section.

Fig. 3 is a fragmentary horizontal section upon line 3—3 of Fig. 2.

Fig. 4 is a like view upon line 4—4 of Fig. 2.

Fig. 5 is a detail view of one of the trucks hereinafter described.

Fig. 6 is an inner face view of the left hand guide in vertical elevation with the guide in closed position.

Fig. 7 is a view like Fig. 6 with the guide in open position.

Fig. 8 is a horizontal section on line 8—8 of Fig. 6.

Fig. 9 is a horizontal section upon line 9—9 of Fig. 7.

Fig. 10 is a fragmentary inner face view of the right hand guide with the guide in closed position, and

Fig. 11 is a like view with the guide in open position.

Fig. 12 is a horizontal section upon line 12—12 of Fig. 10.

Fig. 13 is a horizontal section upon line 13—13 of Fig. 11, with the actuating lever omitted.

Figs. 14 and 15 are extended and collapsed views, respectively, of the toggle links hereinafter described.

Fig. 16 is a fragmentary plan view of the mechanism for actuating the right and left guides.

Fig. 17 is a section upon line 17—17 of Fig. 16.

Fig. 18 is an enlarged plan view of the mechanism which controls the suspending hinge, hereinafter described.

Fig. 19 is a vertical sectional view through the pivot or hinge of Fig. 18.

Fig. 20 is a vertical sectional view, showing the hook end of the locking bolt of Fig. 16.

Fig. 21 is a view in right hand end elevation of the structure with parts omitted.

Fig. 22 is a plan view with the blind swung out as described.

Fig. 23 is a sectional view like Fig. 9, showing the parts reversed so that the front wall of the guide is the fixed wall.

The Venetian blind proper comprises conventional cap plate 5, pivotally supporting tilting bar 8, slats 6, tapes 7 with their slat tilting loops 7^a attached to bar 8, operating cords 9 for tilting the slats through the mechanism 10 and cords 9^a for bodily lifting the slats in the usual way. The cap plate 5 is provided at its left hand end with an up-standing pivot pin 11 that is pointed at 12 and has a shank 13. A fixed part of the structure includes a top frame plate 14 to which a horizontally swinging lever 15 is pivoted at 16. This lever is provided with a key-hole slot 17 and when the lever is pushed inwardly to the full line position of Fig. 18, the small part of the key-hole slot engages the shank 13 of the pivot pin, leaving the blind proper (comprising the parts 5, 6, 7, 7^a, 8, 9, and 10) pivotally suspended so that when is is freed of its guides, as hereinafter described, it may be swung outwardly upon the pivot 11 after the manner of a door (see Fig. 22), so that access may be had to both sides of the blind while the blind is still in a non-collapsed condition and while the slats may be tilted to any position desirable for effecting thorough cleaning of the same. The guide-ways may also be cleaned at this time. If the lever be pulled out to the dotted line position of Fig. 18 the larger part of the key-hole slot 17 moves into alignment with the pivot pin 11 and the cap plate 5, with all of the parts that are carried thereby, may be dropped free of the fixed top frame plate 14, 14^a and the slats may be collapsed upon each other to permit easy removal of the whole to some other point for sterilization, spraying, painting or otherwise

As hereinbefore stated, one of the important objects of the present invention is to provide a Venetian blind which, while being easily remov-

able, is free of rattling. As clearly illustrated in Figs. 4 and 5, some of the slats 6 are provided at their ends with pins 18 upon which trucks 19 are pivotally mounted. These trucks carry rollers 20 which engage with one side wall of the guide and with rollers 21 which engage with the other side wall of the guide. Since the movable side walls of the guides close snugly against their rollers, it follows that there is no loose play and hence there can be no rattle. The vertical movement of the slats is free and easy with no tendency to stick. Not every slat carries a truck. This is not necessary, and the slats which have a truck at one end, preferably, do not carry a truck at their other ends. Thus slight inequalities in the guides do not result in binding and sticking. The point of engagement of the pins 18 with the trucks is indicated at 18a in Fig. 5. In other words, the trucks are pivoted above the center of gravity and consequently will always hang straight down. Thus, they will never have a tendency to get cross-wise and hinder their entering into the guide-ways or the closing of the guides after such entry. A rubber or other resilient button 22 is mounted upon each pivot pin 18 to act as a fender when the blind is being opened, closed, removed or replaced. These buttons also prevent the pins 18 from contacting with the back walls of the guide. Thus, another possible source of rattle is eliminated.

By referring to Figs. 6 and 7, it will be seen that the left hand guide consists of two members that are substantially L-shape in cross section. One of these members is fixed and comprises the back 23 and guide flange 24. The other member is movable and comprises the back 25 and guide flange 26. The back of the movable member is provided with a series of inclined slots 27 in which pins 28 carried by the back 23 engage. Thus, if the movable member be drawn upwardly these slots and pins will move the guide flange 26 toward the guide flange 24, or, in other words, will close the guide. This upward movement of the movable member will be effected by the pull of a wire or cable 29 while, upon the release of said wire, downward movement of the movable member takes place under the influence of link 30, crank 31, wire or cable 32 and spring 33. Either the front or the rear wall of the left hand guide may be made the movable wall by mere reversal of the parts and I wish it to be understood that this may be done without departure from the invention.

The right hand guide, see Figs. 10 to 15, comprises a fixed member 34 that is L-shape in cross section and comprises the guide flange 35 which constitutes one of its legs. The other side of the guideway is formed by a plate 36 hinged at 37 to swing after the manner of a door. Toggle links, each comprising the two members 38 and 39, are pivotally connected to each other by pins 41 having their heads in the form of eyes 42. These toggle links are pivotally connected at 43 to the free edge of the swinging guide plate 36 and at 47 to a fixed point on fixed member 34 of the guide. Thus, when the parts 38 and 39 are in longitudinal alignment with each other the guide plate 36 is held in its closed position and in firm engagement with the rollers of the trucks which are engaged in the guideway. If, however, the pivots 41 are drawn downwardly to collapse these toggle links, after the manner of a knife blade, the guide plate 36 will be swung upon its hinge 37 to open position. There are enough of the toggle links disposed at spaced intervals along the height of the right hand guide to provide the necessary firm support for the guide plate throughout its height. The upward movement of the toggle links to expand them and close the guide is effected through the medium of a wire or cable 48, while movement of the toggle links in the reverse direction is under the influence of a spring 49, acting through wire or cable 50, crank or rock lever 51 and wire 52, said wire engaging the eyes 42 of the pivots of all of the toggles. It is common practice in supports for trunk lids and the like to use toggle levers provided with stops which prevent them from moving to past center position in one direction and I utilize toggle links of this character to prevent them from moving to past center position in an upward direction. Both of the springs 33 and 49, while acting as tension springs, are made of compression spring structures. I find these reliable and long lived.

Thus, it will be seen that closing of the guides is effected in each case by an upward pull upon a wire or cable, to wit, the wires 29 and 48. To insure that this closing of the guides will take place in unison and under the influence of a single operating handle, the ends of these wires or cables (see Figs. 1 and 16) are attached to a sheave 53. This sheave is mounted concentrically with a disc 54 that is given a partial rotation by the swinging movement of a handle 55. When this handle is swung to the position of Fig. 1, the sheave 53 is rotated to draw simultaneously upon each of the cables to close the guides, these cables passing over sheaves 56 at the opposite ends of the top frame plate. Since wire cables are in common use, it is to be understood that the generic term cable as used herein includes wires or any other suitable material. The hand lever 55 is held in guide closing position by a latch 57 that is actuated by spring 57a. The disc 54 is provided with an arcuate slot 58 which acts upon a pin and roller 59 carried by a latching bolt 60. This bolt engages the keeper 5b (Figs. 1, 16 and 21) at the right hand end of the cap plate 5 to support and hold the same, the left hand end of said cap plate being supported by pivot pin 11.

The wires which actuate the guides have adjusting turnbuckles 61 in their length by means of which the movements of the several parts are accurately synchronized and adjusted with respect to each other.

In Fig. 21 I have indicated an apron 62 which may be employed to hide the mechanism. When used the apron rests at its opposite ends upon ledges 63 carried by short flash plates 64 which also hide the ends of the mechanism. However, these flash plates and aprons are in common use in connection with Venetian blinds and form no essential part of the invention.

I contemplate making the fixed top frame plate in three pieces, that is to say, the structure of Fig. 16 may be carried by a right hand member of said plate, and the structure of Fig. 18 may be carried by a left hand end member of said top frame plate and the connecting intermediate section 14a may be made of any length and thus fit windows of varying widths. In hospitals or in other places where contagious diseases have been present it sometimes becomes necessary to sterilize everything about the place and the only way that that can be done with a Venetian blind is to take it completely out of its setting, because there are so many places about them where germs can find lodging, such as the webs, the cordage and other places impossible to get at with the blind in place.

My proposed arrangement lends itself to the ready and complete removal of the blinds for sterilization, for painting and for other purposes, it being borne in mind that some of these things cannot be done in the usual setting of the blind without danger of damage to draperies, floors, rugs and the like. In my proposed arrangement there are two distinct steps, to wit, that step represented by the manipulation of lever **55** to the full line position in Fig. 16. This opens the guides, but still leaves the blind suspended upon pivot **11**. Under this condition the blind may be swung out to the position shown in Fig. 22 so that not only may the blind itself be cleaned but the guide ways, the window screens and all associated parts. This may be done so easily that cleaning which would otherwise be neglected may be done. The second step resides in the manipulation of the left hand lever **15** to the dotted line position of Fig. 13 to not only completely release the blind, but to permit of its being collapsed for easy transportation to a point of sterilization or painting. Thus it will be clear that normally the cap plate **5** of the blind proper lies close against the underside of and in parallelism with the fixed frame plate **14**, **14a** being held by pivot **11** at its left hand end and by bolt **60** at its right hand end, and that when handle **55** has been swung outwardly, as in Fig. 16, to open the guides at the sides of the window and release the cap plate **5** from bolt **60**, said cap plate and the blind parts suspended therefrom, to wit the slats, tapes, cords, etc., may be swung outwardly on pivot **11** to lie at right angles to the frame plate **14** as in Fig. 22. Many ways will readily suggest themselves to the skilled engineer for accomplishing this same general result through the medium of other mechanical devices. Therefore, it should be understood that the invention is not limited to the particular arrangement shown. As far as I am aware, I am the first to provide a Venetian blind having the dual capabilities set forth, to wit, the capability of swinging bodily outward after the manner of a door, maintaining such swung out but supported position indefinitely, while work is being done around or upon the blind and of being dropped free of its support at any time for complete removal from the vicinity of the window.

Therefore, it should be understood that the invention includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. In combination, a support, a Venetian blind comprising the usual tilting slats, guide engaging elements upon the ends of some of said slats, guides in which said elements releasably engage, means for opening and closing said guides, the blind being pivoted to the support to facilitate its swinging bodily outward after the disengagement of said elements from said guides.

2. A structure as recited in claim 1, in combination with means for releasing said blind from its pivoted relation to the support to facilitate the complete disengagement of the blind from the support.

3. In combination with a Venetian blind comprising the usual cap plate, tilting slats, tapes and actuating member, of an overhead fixed frame structure, carrying a pair of manually operable members, adjustable guides for some of the slats at the opposite sides of the window, anti-friction devices at the ends of some of said slats engageable in said guides, means controlled by one of the manually operable members for opening and closing said guides and means for pivotally connecting the cap plate to the other manually operable member the cap plate and blind being held in pivoted relation to the overhead fixed frame structure when said member is in one position, while, when said member is in another position the pivoted engagement of the cap plate with the fixed frame member is released.

4. The combination with a Venetian blind including a cap plate, of an overhead fixed frame structure, anti-friction devices severally upon an end of some of the slats of the blinds, guides at the opposite sides of the window in which said anti-friction devices travel, said guides comprising movable side walls, a manually operable handle and connections between the handle and the movable side walls of the guides for simultaneously moving said movable guide walls to guide closing and opening positions by movement of said handle.

5. The combination with a Venetian blind including a cap plate and a fixed supporting frame, of a pair of guideways each having a movable side wall and a fixed side wall, anti-friction devices upon some of the slats of the blind travelling in said guideways, an upstanding pivot at one end of the cap plate, a manually operable handle carried by the fixed frame, said handle and pivot having interengaging parts pivotally supporting the blind when the handle is in one position, while when in another position, it releases the pivot and permits the bodily removal of the blind.

6. A guide for a Venetian blind comprising a fixed part L-shaped in cross section, a guide wall hinged thereto, toggle links for moving said guide wall upon its hinges to and from closed position and a member engaging all of said toggle links for operating them in unison.

7. In a Venetian blind structure, a pair of guides, one at each side of the blind, each comprising a movable wall adapted to be moved to open and closed position, a pair of cables connected to said guides, means for moving the movable wall of each of said guides to closed position by an upward pull upon its cable, a supporting frame, an operating handle device mounted upon said frame and connected to said cables, movement of said handle device in one direction drawing simultaneously upon both of said cables to close the guides.

8. A Venetian blind comprising the usual tilting slats, anti-friction devices mounted upon the ends of some of said slats, said anti-friction devices being in the form of trucks and said trucks comprising body portions pivoted above their center of gravity to the ends of certain of said slats, rollers carried by and at the front and back sides of said body portions, whereby when the trucks are disposed in guideways any roller will engage only one side of the guideway.

9. A mounting for the slats of Venetian blinds comprising pivots extending from the ends of some of the slats of the blind, trucks pivoted upon said pivots, above the center of gravity of said trucks, each of said trucks comprising a body portion and at least three rollers mounted therein and a guideway comprising opposed walls, two of said rollers engaging one of said walls and the other of said rollers engaging the other of said walls.

10. The combination with a Venetian blind comprising the usual tilting slats and cap plate, of a pair of guideways, anti-friction devices car-

ried by some of the slats and travelling in said guideways, each of said guideways comprising a movable wall, the movement of which in one direction opens the guideway and the movement of which in the other direction closes the guideway, a pair of cables connected to the movable members of the guideways, means for mounting said movable members to cause them to move to closed position when said cables are drawn upon, and a turnable sheave to which said cables are attached.

11. The combination with a Venetian blind comprising the usual tilting slats and cap plate, of a pair of guideways, anti-friction devices carried by some of the slats and travelling in said guideways, each of said guideways comprising a movable wall, the movement of which in one direction opens the guideway and the movement of which in the other direction closes the guideway, a pair of cables connected to the movable members of the guideways, means for mounting said movable members to cause them to move to closed position when said cables are drawn upon, a turnable sheave to which said cables are attached and an operating handle device for imparting partial turning movement to said sheave, a fixed frame by which said sheave and the handle therefor are carried, a second handle device at the opposite end of the fixed frame and pivoted to said frame for horizontal swinging movement, the last named handle device having a key-hole slot formed therein and an upstanding pivot member carried by the cap plate and projecting into said key-hole slot, said pivot member having a head and a shank, whereby, when said shank lies in the small part of the key-hole slot its downward movement will be prevented, while when the large part of the key-hole slot is moved into alignment with the head said pivot member may drop.

12. The combination with a Venetian blind comprising the usual tilting slats and cap plate, of a pair of guideways, antifriction devices carried by some of the slats and travelling in said guideways, each of said guideways comprising a movable wall, the movement of which in one direction opens the guideway and the movement of which in the other direction closes the guideway, a pair of cables connected to the movable members of the guideways, means for mounting said movable members to cause them to move to closed position when said cables are drawn upon, a turnable sheave to the opposite sides of the center of which said cables are respectively attached a handle device for imparting partial turning movement to said sheave, a fixed frame member by which the operating handle device and sheave are carried, a movable bolt, interengaging means between the operating handle device and the bolt for moving the bolt, said bolt being movable into supporting position with respect to the cap plate of the blind when the handle device is moved in a direction to move the guides to closed position.

13. A guideway for a Venetian blind adapted to be opened to permit the removal of the blind, said guideway comprising two parts, one of which is movable with respect to the other and each of which comprises a guide wall, inclined slots formed in one of said parts and pins carried by the other of said parts engageable in said slots, the inclination of the slots causing relative lateral movement of the guide walls when one of said parts is moved endwise relatively to the other, a cable for drawing one of said parts endwise with respect to the other and spring means for imparting return movement to said part.

14. A structure as recited in claim 13 wherein said spring means comprises a spring, a pivoted crank, a wire connecting the spring to one end of said crank and means for connecting the crank to the movable part of the guide.

15. A guide for Venetian blinds comprising an elongated fixed part of substantial L-shape in cross section, a movable guide wall hinged to the free edge of the fixed part to swing after the manner of a door from closed to open position, a plurality of toggle links, each comprising a pair of pivoted members, one member of each toggle link being pivotally connected to the free edge of the movable guide wall and the end of the other member of each toggle link being pivoted to a fixed point, the members of the toggle links being pivotally connected to each other, a common actuating member engaged with all of the pivots of the toggle links for moving the members of the links into alignment with each other when said common actuating member is drawn upon and means for moving the toggle links in the reverse direction, comprising a pivoted crank, a spring and a connecting member between the spring and crank.

16. In a Venetian blind structure, the combination with a pair of guideways each having a movable wall, an overhead fixed frame, a manually operable handle device pivoted for swinging movement upon said frame, a pair of cables, movement of said handle device in one direction exerting a drawing action upon said cables, means actuated by the drawing action of said cables for moving the guides to closed position, a blind proper comprising a cap plate, tilting slats, anti-friction devices carried by some of the slats and engageable in said guides, a vertical pivot bolt carried by the cap plate of the blind, a second handle device mounted for horizontal swinging movement upon the fixed frame member and releasable interengaging means between the last named handle device and said bolt the blind being held hingedly suspended upon said bolt when said handle device is in one position while when the handle device is in another position said bolt is released and the blind is permitted to drop.

17. In a Venetian blind construction the combination with a fixed frame member, a blind proper, a pair of guides capable of moving to open and closed positions, members carried by some of the slats of the blind and traveling in said guides and releasable pivot means at one end of the top of the blind for holding the blind hingedly suspended for outward swinging movement after the guides have been moved to open position, and means upon the fixed frame member for moving the guides to closed position.

18. A structure as recited in claim 17 in combination with means for moving the guides to open position.

19. The combination with a Venetian blind comprising the usual cap plate, tilting bar, pivotally supported from the cap plate, slats and tapes, said tapes being attached to the tilting bar, of pivotal supporting means carried by the cap plate upon its upper portion and adjacent one of its ends, by which the blind as a whole is supported to swing outwardly like a door to render its rear side accessible.

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