

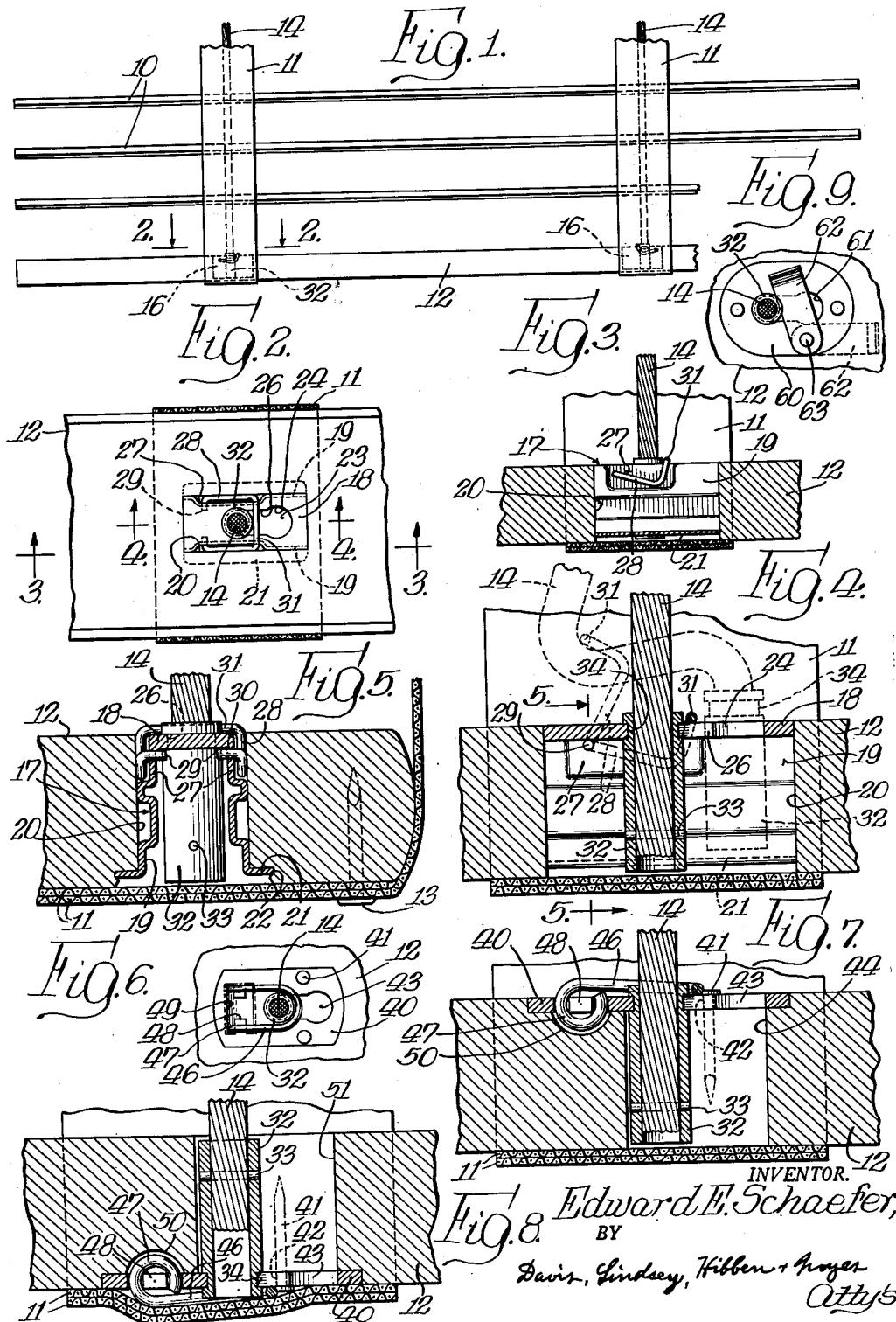
Jan. 6, 1953

E. E. SCHAEFER

2,624,086

CORD ATTACHMENT FOR VENETIAN BLINDS

Filed Jan. 18, 1949



## UNITED STATES PATENT OFFICE

2,624,086

## CORD ATTACHMENT FOR VENETIAN BLINDS

Edward E. Schaefer, Oak Park, Ill.

Application January 18, 1949, Serial No. 71,516

5 Claims. (Cl. 24—123)

1

This invention relates to an improved Venetian blind construction and more particularly to a novel means for detachably fastening the raising and lowering cords to a rail of the blind.

One of the principal objects of the present invention is to provide a detachable cord fastening device by means of which the lift cords of a Venetian blind may be readily attached and detached from a rail of a blind.

Another object of the invention is to provide a detachable cord fastening device for detachably securing the lift cords of a Venetian blind to a rail and comprising a rail-engaging member adapted to be secured to a rail and having a slot therein in which the end of a lift cord may be received and held in engaged position and locking means for retaining the cord end in engaged position in the slot.

A further object of the invention is to provide a device of the foregoing character in which the slot comprises an enlarged portion to freely admit a grooved ferrule on the cord end and a portion of reduced size into which said ferrule may be moved for secured engagement with the rail-engaging member, and locking means for retaining said ferrule in engaged position in the reduced portion of said slot.

Other and further objects and advantages of the present invention will become apparent as this description progresses, reference being had to the accompanying drawing, in which:

Figure 1 is a fragmentary, front elevational view of the lower portion of a two-tape Venetian blind showing two lift cords and a bottom rail to which the detachable cord fastening devices comprising one embodiment of my invention are applied;

Fig. 2 is a fragmentary, horizontal sectional view taken on the line 2—2 in Fig. 1, looking in the direction of the arrows;

Fig. 3 is a vertical, longitudinal, sectional view taken on the line 3—3 in Fig. 2, looking in the direction of the arrows;

Fig. 4 is an enlarged vertical, longitudinal, sectional view taken on the line 4—4 in Fig. 2 and showing the detachable cord fastening device and the locking means therefor in locked and unlocked positions;

Fig. 5 is a transverse, vertical, sectional view taken on the line 5—5 in Fig. 4;

Fig. 6 is a top plan view of a detachable cord fastening device comprising a second embodiment of the present invention;

Fig. 7 is an enlarged, longitudinal, vertical, sectional view showing the cord fastening device of

2

Fig. 6 secured on the upper surface of a bottom rail;

Fig. 8 is a view similar to Fig. 7 but illustrating the cord fastening device of Fig. 6 secured to the bottom surface of a bottom rail; and

Fig. 9 is a top plan view of a third form of detachable cord fastening device comprising the present invention.

The three embodiments of the detachable cord fastening device comprising the present invention are adapted to detachably secure the lift cords of a Venetian blind to the bottom rail thereof. In Fig. 1 of the drawings only the lower portion of a complete blind is shown but it is to be understood that the ladder tapes and lift cords extend upwardly into operable engagement with a head rail and a tilt rail in the usual manner. The slats 10 are supported in the usual manner by conventional ladder tapes 11 whose lower front and rear ends are overlapped and secured to the under side of the bottom rail 12 by means of tacks 13. Lift cords 14 extend downwardly from the head rail or housing (not shown) through the slats 10 into detachable engagement with the bottom rail 12.

Thus when the cords 14 are locked in secured position to the bottom rail and they are raised in the conventional manner, the bottom rail 12 being secured thereto will also be raised so as to carry upwardly the slats 10 to the desired elevation.

As indicated generally by the numeral 16 in Fig. 1 of the drawing, there is a detachable cord fastening device for each lift cord 14. The fastening device comprising a preferred embodiment of the invention and shown in Figs. 2 to 5, inclusive, of the drawings, comprises a generally channel-shaped member 17 having a flat top wall 18 and depending side walls 19. The bottom rail 12, which may be composed of wood, is provided with a longitudinal slot 20 at each of its cord engaging positions which extends therethrough from top to bottom as shown more particularly in Fig. 5. The lower ends of the member 17 are disposed somewhat above the bottom surface of the bottom rail 12 and they are provided with outwardly directed flanges 21 which engage in notches 22 in the rail 12. In disassembled position, the side walls 19 of the channel-shaped member 17 are somewhat flared so that upon insertion upwardly into the rail slot 20 they are slightly compressed and thereby resiliently and frictionally engage the side walls and the notches 22 of the slot to retain the member 17 in assembled position in the rail 12. The width of the

top wall 18 of the member 17 is of substantially the same width as the slot 20 so as to effect a relatively tight fit between the parts.

The upper horizontal wall 18 of the channel-shaped member 17 is cut away to provide a key hole slot 23 having a portion 24 at one end of larger diameter and a longitudinally extending portion 26 of lesser width. As indicated by the numeral 27 and shown more particularly in Figs. 2 and 3 of the drawing, the side walls 19 of the member 17 are pressed inwardly over a portion of their length and height so as to provide a limited operating space between the side walls 19 and the side walls of the slot 20 for a locking or retaining member 28. The locking member 28 is generally U-shaped and has inturned free ends 29 extending inwardly through openings 30 in the sides 19 of the channel member 17, the locking member 28 being thus mounted for pivotal movement to the positions shown in Fig. 4 as will be more fully explained hereinafter. The locking member 28 is of slightly greater width than the width of the rail slot 20 so that when it is pivoted downwardly into the locking position shown in the drawings, it must be slightly compressed. The locking member 28, therefore, frictionally engages the side walls of rail slot 20 and thereby retains itself in locking position. The locking member 28 also has its side arms in crooked form so that in locking position they will be disposed below the surface of the top wall 18 of the channel member 17 and only the cross bar 31 thereof will extend across and over the surface thereof.

As shown more particularly in Figs. 4 and 5 of the drawing, a tubular shank or ferrule 32 is secured on the end of each lift cord 14 by means of a pin 33 extending therethrough. The ferrule 32 is provided adjacent its upper end with an annular groove 34, the width of which is slightly greater than the thickness of the top wall 18. The length of the ferrule 32 is such that its lower end does not extend below the bottom rail 12 and, in fact, the ferrule could be considerably shorter than shown in the drawing and still perform its function quite satisfactorily. It is only necessary that the ferrule 32 be provided with means for securing it to the end of the cord 14 and with a groove 34 or other top wall engaging and receiving means.

It is to be understood that the term "ferrule" shall be construed broadly so as to include members of any and all shapes and construction secured to the end of a lift cord. The important feature of the present invention is that the end of the cord be provided with an enlargement, either integrally formed or added thereto, which will prevent the lift cord from pulling up out of the slot into which the cord has been moved, and that there be a locking means for preventing the cord from moving horizontally out of the slot. It is to be further understood that the upper plate member or wall 18 of the member 17 could be formed with the reduced portion 26 of the slot extending through to the right edge thereof and that the enlarged portion of the slot be eliminated from the plate but formed by cutting an equivalent slot or opening in the rail itself to permit entry of the cord end.

After the channel member 17 has been secured in position in the slot 20 of the bottom rail 12 and the tapes 11 have been secured to the bottom rail surface to cover the slot 20, the tubular shanks 32 have been secured on the ends of the lift cords 14, the lift cords 14 may be threaded

down through the slats 10 to a joint just above the top wall 18 of the channel member 17. The locking member 28 is then raised to the position shown by the broken lines in Fig. 4 and the cord 14 is bent and together with the ferrule 32 is inserted horizontally through the central portion of the locking member 28. The cord 14, as shown in Fig. 4, is again bent downwardly and the ferrule 32 is inserted downwardly through the enlarged portion 24 of the key hole slot 23. The diameter of the slot portion 24 is slightly greater than the outside diameter of the ferrule 32 so that the ferrule may slide freely therethrough to lowered position.

When the annular groove 34 of the ferrule 32 becomes aligned or in registry with the top wall 18 of the channel member 17, further downward movement is arrested and the ferrule 32 is then moved horizontally to the left, as viewed in Fig. 4, until it reaches the end of the narrow slot portion 26. In this final position the side and end edge portions of the slot portion 26 are received within the annular ferrule groove 34 and consequently the ferrule 32 is restrained against vertical movement in either direction, the only possible direction of movement being horizontally to the right toward the larger portion 24 of the slot 23.

When the ferrule 32 reaches the far end of the slot portion 26 as above described, the locking member 28 is then pivoted to its lowered position in which the cross bar 31 thereof extends over the top of the slot 23 immediately behind the ferrule 32 so as to block return movement of the ferrule to the large slot portion 24. The frictional engagement of the locking member 28 with the side walls of the rail slot 20 holds the member 28 in its downward locking position and at all times during operation of the blind the ferrule 32 is retained in secured position to the bottom rail 12.

The function and operation of the detachable cord fastening device above described is apparent. When the lift cords 14 are raised in the conventional manner, the bottom rail 12 will also be raised by means of the interengagement of the tubular ferrule 32 with the channel member 17. In its various positions of elevation, the bottom rail 12 is thus supported by the ferrules 32 on the ends of the cords 14.

When it is desired to remove the slats 10 and the bottom rail 12 for the purpose of cleaning or repairing the blind, the cord fastening devices 16 may be quickly and readily detached. This is accomplished by first raising the locking device 28 to its raised position shown in Fig. 4 to thereby permit the ferrule 32 to be moved to the right until it becomes fully within the enlarged slot portion 24. Then the ferrule 32 is withdrawn upwardly out of the channel member 17 following which the cord 14 and ferrule 32 are pulled backwardly through the locking member 28 and upwardly through the slats 10, thus permitting the slats 10 to be withdrawn horizontally from the ladder tapes 11.

It is thus apparent that in accordance with the teachings of the present invention, a vastly improved means has been provided for quickly and easily securing lift cords to the bottom rail of a Venetian blind, which means, with similar speed and ease, may also be readily detached therefrom when desired. Although ready detachment is afforded, the parts nevertheless are maintained in completely engaged position at all times and under all conditions of operation by the locking

member 28. No jarring or vibration of the blind or the bottom rail 12 during operation or use of the blind can possibly cause disengagement of the parts and disengagement may be accomplished only by positive acts on the part of the operator. Inadvertent disassembly is prevented. At the same time, the lift cords 14 which are usually composed of woven strands of cotton do not engage the side edges of the slots 23 but are protected and held therefrom by the ferrule 32, and consequently there is no frictional wearing contact of any part of the securing means with the cords.

A second embodiment of the present invention is illustrated in Figs. 6 and 7 of the drawing. This embodiment comprises a flat plate member 40 which may be secured by nails 41 to the upper side of the bottom rail 12 which is slightly recessed to receive the plate 40. The plate 40 is provided with spaced openings 42 through which the nails 41 extend and also with a key hole slot 43 similar in shape and purpose to the slot 23 of the first embodiment. The bottom rail 12 is cut away to provide a vertical slot 44 in alignment with and below the key hole slot 43 to permit the insertion of the tubular shank 32 which is of a construction identical to that of the first embodiment and adapted to become engaged and locked within the narrow portion of the slot 43.

The locking means of the second embodiment for preventing horizontal movement of the ferrule 32 into the enlarged portion of the slot 43, comprises a generally U-shaped member 46 whose free ends 47 are bent backwardly upon themselves in substantially annular form to frictionally and resiliently engage inwardly directed horizontal lugs 48 formed in an opening 49 in the plate 40. To accommodate the curved ends 47 of the locking member 46, the top surface of the bottom rail 12 is cut away to provide a curved transverse groove 50. By this arrangement the locking member 46 is pivotally secured to the plate 40 and is movable from locking position to removed position similar to the locking member 28 of the first embodiment. The manner of attaching and detaching the ferrule 32 with respect to the plate 40 is substantially the same as in the first embodiment and the locking member 46 is held in locking position against inadvertent movement by means of the resilient frictional engagement of its curved ends 47 with plate lugs 48.

In Fig. 8, the embodiment of Figs. 6 and 7 is shown assembled on the bottom side of the bottom rail 12. The plate 40 is of identical construction with the rail slot 51 extending upwardly therefrom and in alignment with the key hole slot 43. However, with this reversal of position of the plate 40, the position of the ferrule 32 on the lift cord 14 is also reversed so that the annular groove 34 thereof is adjacent the bottom. The shank 32 is projected downwardly through the rail slot 51 and only the very bottom tip of the shank extends below the plate 40. To engage and disengage the ferrule 32 from the plate 30, the rail 12 may be lifted slightly and the tape 11 pulled aside to a limited degree to permit pivotal movement of the locking member 46.

In Fig. 9 of the drawing, there is shown a third embodiment of the invention which comprises a flat plate member 60 having a key hole slot 61 and adapted to be secured to either the upper or lower sides of the bottom rail 12 in a manner similar to that shown in Figs. 7 and 8. The ferrule 32 is

adapted to be held in secured position by a locking member 62 pivoted on a vertical axis at 63 to one side of the plate 60. The locking member 62 is movable to and from the respective positions shown by the full and broken lines in Fig. 9 and comprises a thin, flat resilient strip or pawl, frictionally engaging the top surface of the plate 60 as it slides thereover. In the position shown by the full lines in Fig. 9, the side edge of the locking member 62 abuts against the ferrule 32 and holds it in the narrow portion of the slot 61. In the broken line position, the locking member 62 is in removed position to permit the ferrule 32 to be moved to the large portion of the slot 61 and withdrawn therefrom.

Although there have been described above and illustrated in the drawings three embodiments of a detachable lift cord securing means comprising the present invention, it is to be understood that changes and modifications may be made in the details of construction and mode of operation without departing from the spirit and scope of the appended claims.

I claim:

1. In a Venetian blind, a rail having a slot therein and a detachable fastening device for securing the end of a lift cord to said rail comprising a ferrule adapted to be secured to an end of a raising and lowering cord and having a groove in its outer periphery, a channel-shaped member secured in the rail opening and having a slot in the horizontal wall thereof, said slot having an enlarged portion to freely admit said ferrule and a portion of reduced size into which said ferrule may be moved for secured engagement with the channel member, and locking means for retaining said ferrule in said secured engagement comprising a U-shaped member having its free ends pivotally secured to the vertical walls of the channel and movable to and from locking position, the cross portion of the U-shaped member extending over and across said reduced slot portion when in locking position to prevent movement of the ferrule into the enlarged slot portion.

2. In a Venetian blind, a rail having a slot therein and a detachable fastening device for securing the end of a lift cord to said rail comprising a ferrule adapted to be secured to an end of a raising and lowering cord and having a groove in its outer periphery, a channel-shaped member secured in the rail opening and having a slot in the horizontal wall thereof, said slot having an enlarged portion to freely admit said ferrule and a portion of reduced size into which said ferrule may be moved for secured engagement with the channel member, and locking means for retaining said ferrule in said secured engagement comprising a U-shaped member having its free ends pivotally secured to the vertical walls of the channel and movable to and from locking position, the cross portion of the U-shaped member extending over and across said reduced slot portion when in locking position to prevent movement of the ferrule into the enlarged slot portion, and the arms of the U-shaped member frictionally engaging the side walls of the rail slot to retain the U-shaped member in locking position.

3. In a Venetian blind, a bottom rail having an opening therethrough, a lift cord, and a detachable cord fastening device comprising a ferrule secured to an end of the lift cord, a plate member secured to said rail and having a slot therein in registry with said rail opening, said slot having

an enlarged portion into which said ferrule may be inserted and a portion of reduced size into which said ferrule may be moved into secured engagement with said plate member and said ferrule including a portion of larger size than the reduced portion of said slot, a pair of spaced lugs formed integrally with said plate member adjacent the reduced portion of said slot, and locking means for retaining the ferrule in engaged position in said slot comprising a U-shaped member having its free ends pivotally supported on said lugs for swinging movement thereon to and from locking position in a plane substantially perpendicular to the plane of the plate member, the cross portion of said U-shaped member extending transversely across said slot when in locking position whereby to prevent movement of said ferrule out of engaged position in the reduced portion of said slot, and said cord extending upwardly from said ferrule through said U-shaped member between the cross portion thereof and said lugs for limiting the extent of swinging movement of the U-shaped member by engagement of the cross portion thereof with the cord whereby said cord tends to retain said U-shaped member in locking position and to prevent complete movement thereof to non-locking position, said U-shaped member being swingable to complete non-locking position only by deliberate slackening of said cord and subsequent lateral displacement thereof to accommodate the extreme swinging movement of said U-shaped member to non-locking position.

4. In a Venetian blind, the combination of a rail, a lift cord having retainer means at the end thereof, and a fastening device for detachably securing the cord to the rail, said device comprising a rail-engaging member secured to the rail and being formed with a slot having an enlarged portion permitting insertion of said retainer means therethrough and a reduced portion into which said cord may be moved for secured engagement of said retainer means with said rail-engaging member, said retainer means including a portion of larger size than the reduced portion of said slot, and locking means for releasably holding said retainer means in said secured engagement comprising a pivotal member mounted on said rail-engaging member for swinging movement between locking and non-locking positions in a plane substantially perpendicular to said rail surface, said pivotal member having a restraining cross portion adapted to extend transversely across said slot for preventing movement of said retainer means and said cord from the reduced to the enlarged portion of said slot, and said cord extending upwardly from said retainer means between the pivot point of said pivotal member and the cross portion thereof for limiting the extent of swinging movement of the pivotal member by engagement of the cross portion thereof with the cord whereby said cord tends to retain said pivotal member in locking position and to prevent complete movement thereof to non-locking position, said pivotal member being swingable to complete non-locking position only by deliberate slackening of said cord and subsequent lateral displacement thereof to accommodate the extreme swinging movement of said pivotal member to non-locking position.

5. In a Venetian blind, the combination of a rail having an opening therein, a lift cord having a retainer means at the end thereof, and a fastening device for detachably securing the cord to the rail, said device comprising a rail-engaging member secured to the rail and being formed with a slot positioned in registry with said opening, said slot having an enlarged portion permitting insertion of said retainer means therethrough into the rail opening and a reduced portion into which said cord may be moved for secured engagement of said retainer means with said rail-engaging member, said retainer means including a portion of larger size than the reduced portion of said slot, and locking means for releasably holding said retainer means in said secured engagement comprising a U-shaped locking member having its free ends pivotally secured to said rail-engaging member adjacent the reduced portion of said slot at opposite sides thereof and swingable between locking and non-locking positions in a plane substantially perpendicular to said rail surface, the cross portion of said U-shaped member being disposed transversely across said slot when the locking member is in locking position whereby to hold said retainer means and said cord in the reduced portion of the slot, and said cord extending upwardly from said retainer means through said U-shaped member between the pivot point and the cross portion thereof for limiting the extent of swinging movement of the U-shaped member by engagement of the cross portion thereof with the cord whereby said cord tends to normally retain said U-shaped member in locking position and to prevent inadvertent movement thereof to non-locking position, said U-shaped member being swingable to complete non-locking position only by deliberate slackening of said cord and subsequent lateral displacement thereof whereby to accommodate the extreme swinging movement of said U-shaped member to non-locking position and whereby to permit free movement of said cord and retainer means between the reduced and enlarged slot portions and lateral threading movement thereof through the U-shaped member during attachment and detachment of the cord.

EDWARD E. SCHAEFER.

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