Sept. 8, 1942. W. J. STUBER 2,295,434

VENETIAN BLIND

Filed May 23, 1941 2 Sheets-Sheet 1

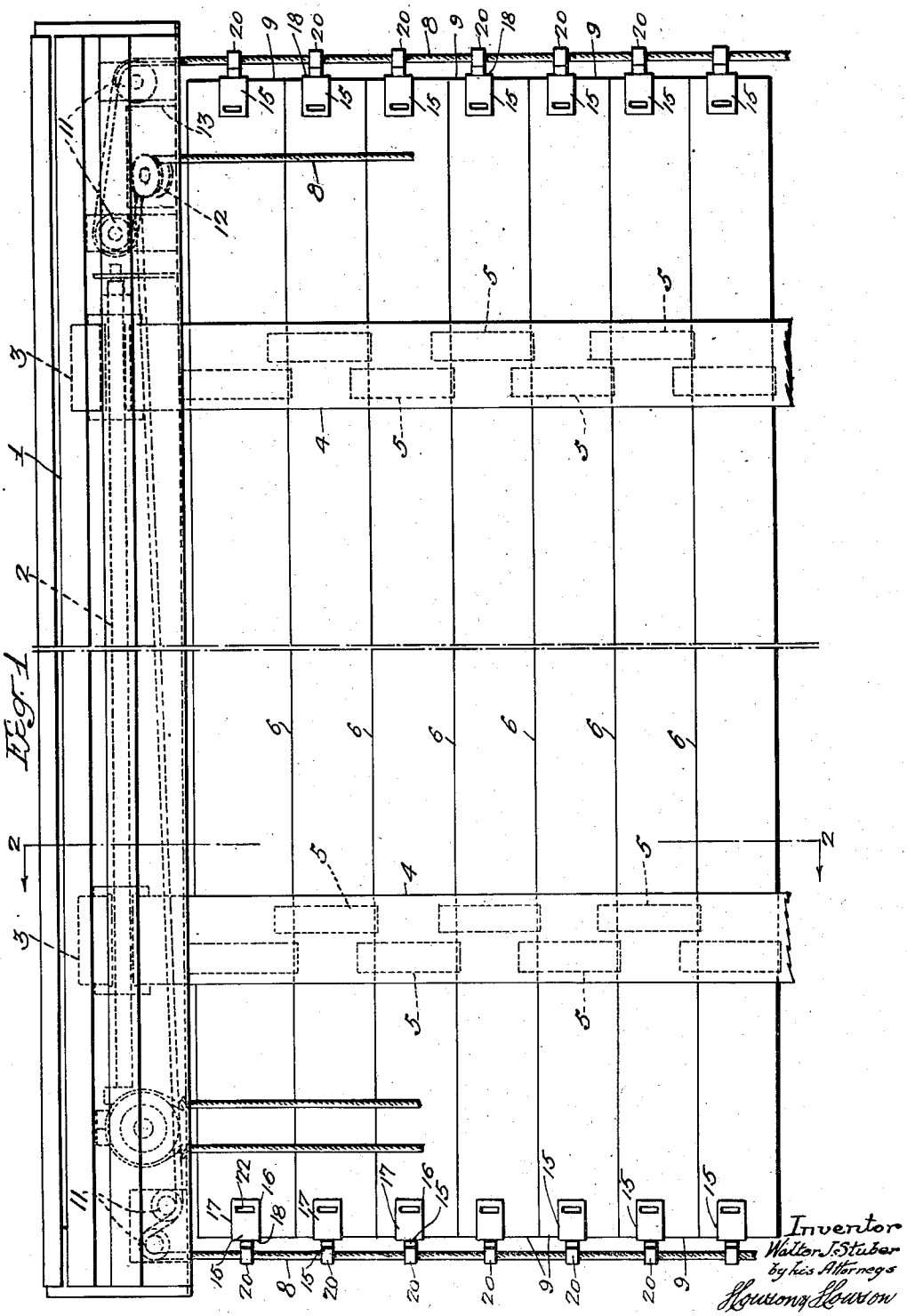


FIG. 1

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Fig. 2

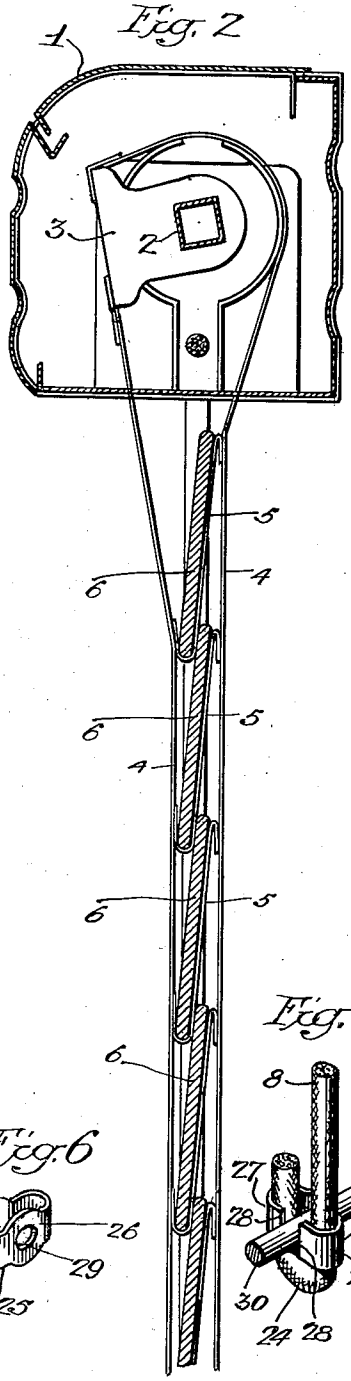



Fig. 4

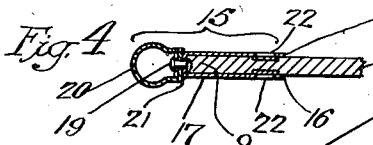



Fig. 3.

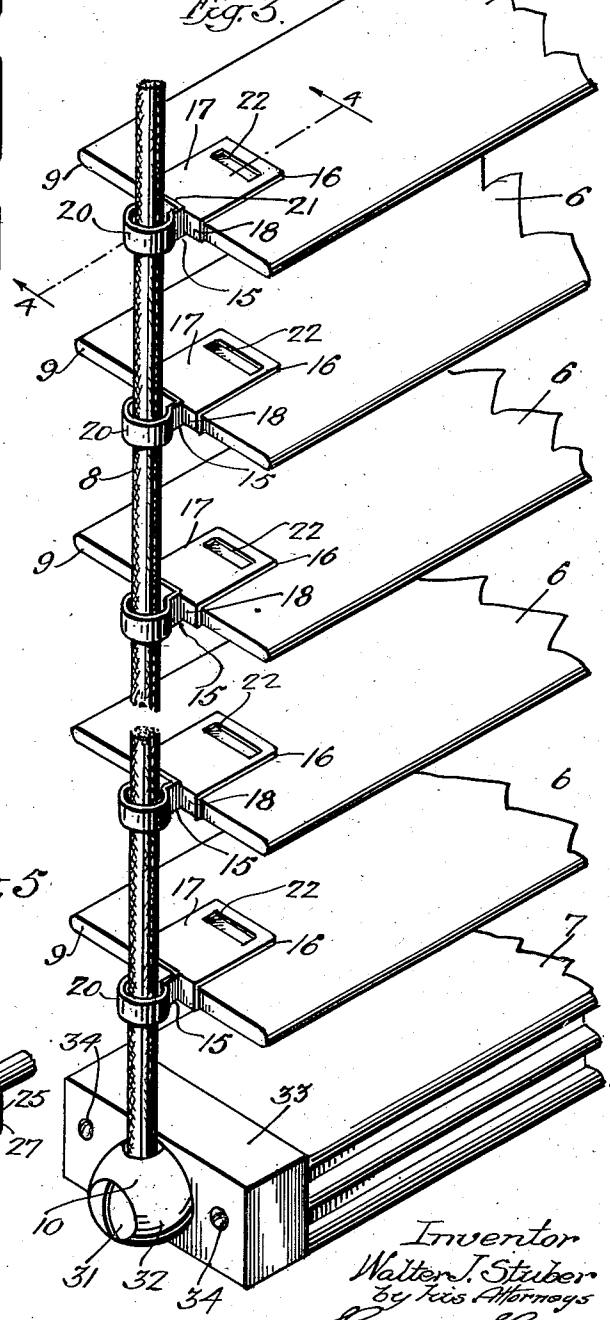



Fig. 5




Fig. 6




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2,295,434

# UNITED STATES PATENT OFFICE

2,295,434

## VENETIAN BLIND

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Application May 23, 1941, Serial No. 394,928

7 Claims. (Cl. 156—17)

This invention relates to Venetian blinds arranged with a pair of cords for elevating the bottom rail and the slats of the blind located beyond but adjacent the opposite ends respectively of the bottom rail and the slats.

The invention relates particularly to novel means for pivotally connecting the ends of the slats and the ends of the bottom rail to the elevating cords, whereby the bottom rail and the slats may be tilted transversely, raised and lowered, without affecting the rectilinear condition of the cords.

The primary object of the invention is to provide a Venetian blind wherein each slat may be independently and completely removed from the ladder tapes for cleaning or replacement without disturbing adjacent slats, or any of the operating mechanism of the blind, with the elevating cords serving to prevent relative lengthwise shifting of the slats in the assembled blind.

Another object of the invention is to provide a novel form of readily detachable connection between the ends of the slats and the elevating cords to prevent accidental displacement of one or the other of the cords from its normal position crossing the ends of the slats by which a slat could move lengthwise with respect to the other slats and be broken when the slats are raised by the cords.

Another object of the invention is to provide a simple and efficient means for anchoring the ends of the elevating cords to the ends of the bottom rail and still provide free tilting action of the bottom rail.

The construction and operation of the blind, according to the principles of the present invention, will be fully disclosed hereinafter, reference being had to the accompanying drawings, of which:

Fig. 1 is a face view of the upper portion of a Venetian blind assembly constructed in accordance with the present invention, and showing the blind in a "closed" condition;

Fig. 2 is an enlarged transverse sectional elevation taken on the line 2—2, Fig. 1;

Fig. 3 is a perspective view of one end of a group of the slats and bottom rail equipped with the cord-connecting devices of the present invention;

Fig. 4 is a longitudinal section of one of the slats and its cord-attaching device, with the ring of the attaching device turned 90° from its normal position relative to the main slat-engaging portion of the device, for purposes of illustration, the section being taken on the line 4—4, Fig. 3; and

Figs. 5 and 6, respectively, illustrate details of the means for attaching the lower ends of the elevating cords to the opposite ends, respectively, of the bottom rail of the blind.

In Fig. 1 of the drawings, the head casing of the blind is illustrated at 1. For detailed description of the head casing, reference is made to the applicant's copending application Serial No. 322,604, filed March 6, 1940, and his issued United States Letters Patent No. 2,220,796, dated November 6, 1940.

As disclosed in the above-noted copending application, the head casing contains a tilt shaft 2 which is provided with ladder tape supports 3, 3, to which the upper ends of the main straps 4, 4 of the ladder tapes are connected. The main straps 4, 4 of each ladder tape, as usual, are connected at spaced intervals by cross-straps 5, 5 on which the slats 6, 6 normally rest. The lower ends of the ladder tape straps 4, 4, as usual, are connected to the bottom rail 7 of the blind.

Normally, the elevating cords of a Venetian blind pass around pulleys in the head casing and downwardly through aligned openings in the slats, between the main straps 4, 4 of the ladder tapes the inner edges of the relatively staggered cross-straps 5, 5, whereby the elevating cords are at least partially hidden from view. However, such an arrangement makes it impossible to remove the slats without dismantling a considerable portion of the mechanism of the blind. Furthermore, such arrangement makes it impossible to tilt the slats transversely to a sufficient extent to bring the edges of adjacent slats into overlapping contact with each other. Thus, the blind can never be actually closed, because of the elevating cords lying between the slats when the slats are tilted transversely.

In accordance with the present invention, the elevating cords 8, 8 are disposed beyond the opposite ends 9, 9 of the slats 6, 6. The lower ends of the cords 8, 8 are pivotally attached to the opposite ends respectively of the bottom rail 7, as illustrated at 10 in Fig. 3.

The cords 8, 8 pass upwardly along the side edges of the blind, as a whole, slightly beyond the ends 9, 9 of the slats 6, 6 and over pulley 11, 11 in the head casing 1, then around a pulley 12 located in and forming part of the cord-locking device 13, from whence the cords depend, side by side, to a position within reach of a person desiring to raise or lower the blind.

The cord-locking device for maintaining the

blind in a partly extended or fully collapsed condition forms no part of the present invention and may be of any desired construction, such for example, as disclosed in the applicant's above-noted copending application.

As shown in Figs. 1, 3 and 4, each end 9 of each slat 6, is detachably connected to an adjacently disposed elevating cord 8 by a small and rather inconspicuous device 15, each of which comprises a U-shaped spring clip 16, having the legs 17, 17 substantially parallel to and in firm gripping relation to the opposite faces respectively of one of the slats 6, with the cross piece 18 of the clip, which connects the legs 17, 17, abutting against the end 9 of the slat.

The cord 8 passes through a ring 20 which forms part of the connecting device 15 and which is pivotally connected to the clip 16 by a rivet 19 or its equivalent, by which the ring may turn to any necessary position without kinking or otherwise disturbing the rectilinear condition of the cord 8 when the slat is tilted about the axis of the ring pivot 19 from the fully open position shown in Fig. 3 to the fully closed position of Figs. 1 and 2, or to any intermediate position.

Each ring 20 is upset and offset at one side to provide a flat surface 21 thereon for flat bearing contact with the cross piece 18 of the spring clip 16.

One or both of the legs 17 of the spring clip 16, may, if desired, be provided on its inner face with a protuberance 22 which is adapted to fit into a recess formed in the face of the slat 6 against which the leg 17 bears more firmly to resist relative movement between the clip 16 and the slat when the blind is fully assembled.

When it is desired to remove a slat 6 from the blind, for any purpose whatsoever, it is only necessary to spring the legs 17, 17 of the clip 16 upwardly to a slight extent to remove the protuberance 22 from the recesses 23 in the slat 6, whereupon the devices 15, 15 at the opposite ends respectively of the slat may be readily slipped off the ends of the slat, whereupon, the slat may be moved lengthwise out of the ladder tapes 4, 4 of the blind, merely by turning the slat vertically on edge or by pressing the elevating cord to one side or the other to permit such lengthwise movement of the slat. The connecting device 15 remains attached to the cord 8 for reconnecting the slat to the elevating cord when the slat is replaced in the blind.

The lower ends of the cords 8, 8 are attached or anchored to the bottom rail 7 in the manner shown in Figs. 3, 5 and 6, so as to permit the ends of the cords to be detached therefrom for threading of the eyes 20, 20 of the connecting devices 15, 15 onto the cords 8, or for removal of the eyes or rings 20 from the cords when desired, while still permitting the bottom rail 7 to tilt freely during opening or closing of the blind by lateral tilting of the slats 6.

As shown in Fig. 5, the lower end of the cord 8 is turned to form a loop 24. The loop 24 is passed through an anchorage clamp 25 between the body 26 and oppositely extending tongues 27, 27 thereof.

The ends 28, 28 of the tongues 27 are spaced apart in alignment with an opening 29 formed in the body 26, for reception of a screw or equivalent spindle 30, by which each one of the clamps 25 is pivotally mounted on each end of the bottom rail 7.

The head 31 of the pivot screw 30 also serves to pivotally secure a cap 32 in place to cover the looped end of the cord 8 and the clamp 25.

The anchorage clamps 25 may be formed of spring metal to grip the cord 8 resiliently or the clamps may be made of a less resilient material, by which the tongues 27 will retain any position to which they may be bent to squeeze or grip the cord 8 tightly to prevent slippage thereof around the pivot 30.

If desired, each end of the bottom rail 7 may be provided with an ornate ferrule 33 secured to the rail by screws 34, 34.

I claim:

1. A Venetian blind comprising a series of vertically spaced horizontal slats, a pair of cords extending vertically adjacent the opposite ends respectively of the slats, a series of rings through which said cords pass, a series of spring clips detachably mounted on the ends of the slats, means pivotally connecting said rings to said clips respectively, each clip comprising a pair of substantially parallel legs frictionally engaging the opposite faces respectively of the slat on which the clip is mounted, and a cross piece connecting said legs and engaging the end surface of the slat, each ring comprising an offset flat portion in parallel abutting relation to the cross piece of the clip, and said pivotal connecting means comprising a rivet passing through said flat portion of the ring and said cross piece of the clip.

2. A device for use in a Venetian blind, comprising a spring clip, a ring, and a rivet pivotally connecting the ring to the clip for the purpose described.

3. A device for use in a Venetian blind, comprising a spring clip including a pair of relatively spaced legs and a cross piece connecting said legs at one end thereof, a ring including a flat offset surface engaging said cross piece, and a rivet passing through said cross piece and the flat portion of the ring for pivotally connecting the two together.

4. A device for use in a Venetian blind, comprising a spring clip including a pair of relatively spaced legs and a cross piece connecting said legs at one end thereof, a protuberance on at least one of said legs between said legs and projecting from the one leg toward the other of said legs, a ring including a flat offset surface engaging said cross piece, and a rivet passing through said cross piece and the flat portion of the ring for pivotally connecting the two together.

5. A Venetian blind comprising a horizontal bottom rail, a series of vertically spaced horizontal slats above said bottom rail, a pair of vertically extending elevating cords adjacent the opposite ends respectively of said bottom rail and said slats, an anchorage clamp including a cord pinching tongue securing said clamp on the end of each cord adjacent the bottom rail, and means pivotally connecting said anchorage clamp to said bottom rail.

6. A Venetian blind comprising a horizontal bottom rail, a series of vertically spaced horizontal slats above said bottom rail, a pair of vertically extending elevating cords adjacent the opposite ends respectively of said bottom rail and said slats, an anchorage clamp on the end of each cord adjacent the bottom rail, a cap covering the end of the cord and the anchorage clamp, and common means pivotally connecting said anchorage clamp and said cap to said bottom rail.

7. A Venetian blind comprising a horizontal bottom rail, a series of vertically spaced horizontal slats above said bottom rail, a pair of vertically extending elevating cords adjacent the opposite ends respectively of said bottom rail and said slats, an anchorage clamp on the end of each cord adjacent the bottom rail, and means pivotally connecting said anchorage clamp to said bottom rail, said clamp comprising a body portion and a pair of tongues extending in opposite directions from and bent backwardly over said body portion in spaced relation thereto, with the opposite ends of the tongues spaced apart in alignment with an opening in said body portion for the passage of said pivotal connecting means, the end of the cord passing around said pivotal connecting means and between the body portion and the bent portions of the tongues for anchoring the end of the cord in the clamp.

WALTER J. STUBER.