March 29, 1932. T. SUGIURA 1,851,782

VENETIAN BLIND

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Fig. 1

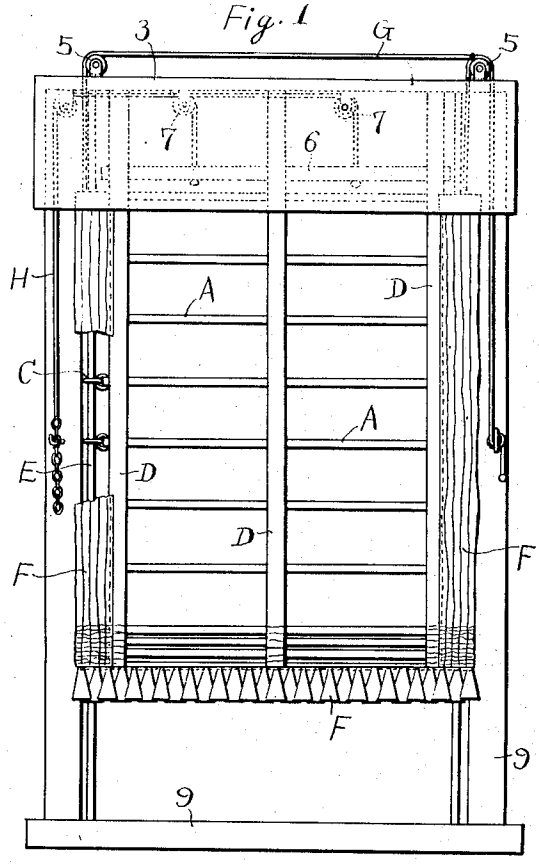


Fig. 2

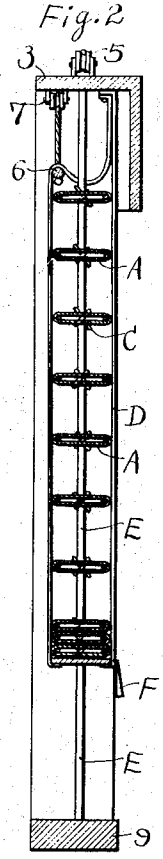
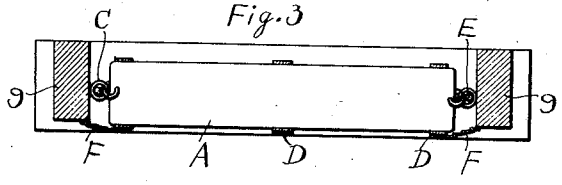


Fig. 3



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VENETIAN BLIND

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Fig. 4

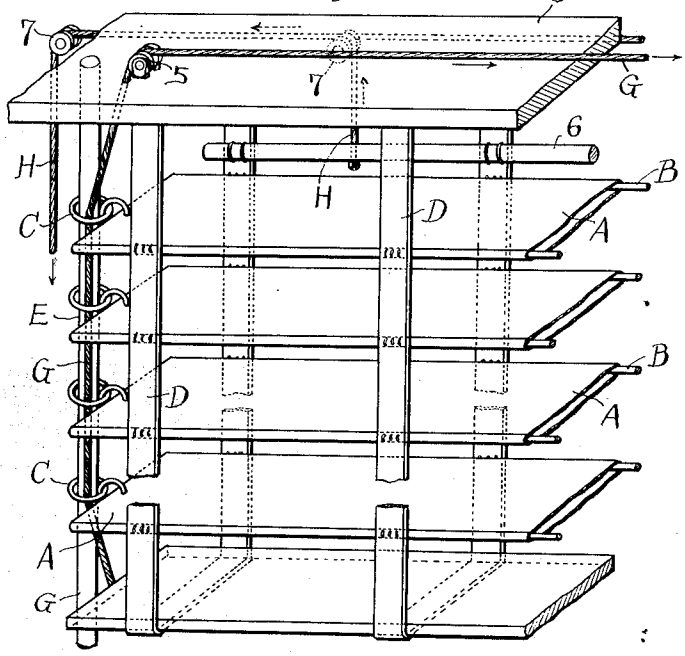


Fig. 7

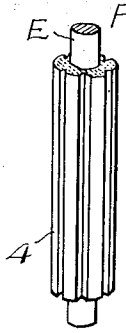


Fig. 8

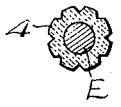


Fig. 5

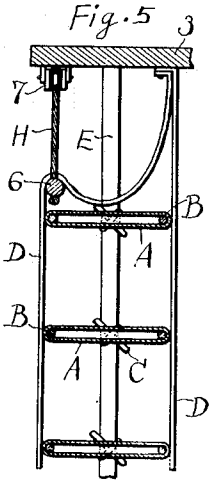
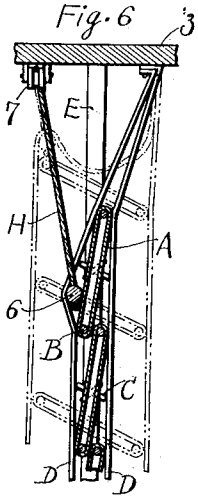


Fig. 6



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VENETIAN BLIND

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Fig. 9

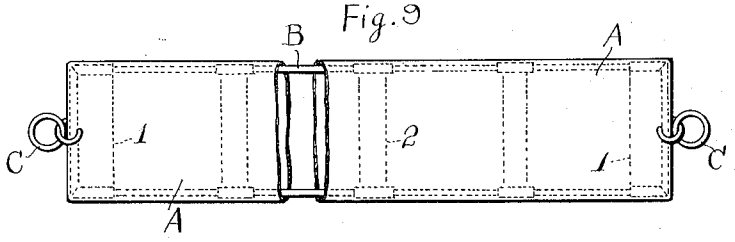


Fig. 10

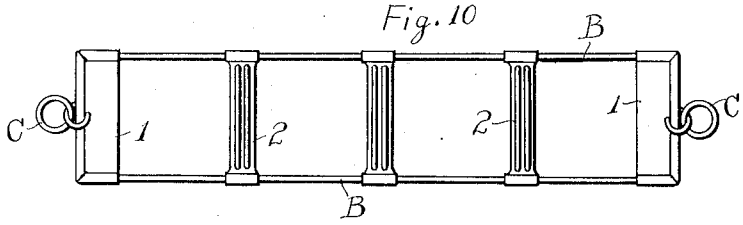


Fig. 14

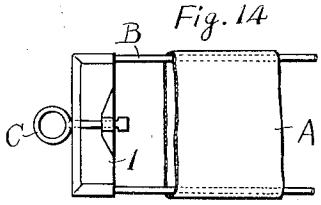


Fig. 13

Fig. 12

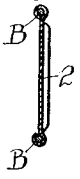


Fig. 11

Fig. 15

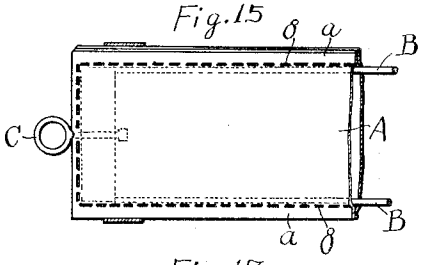


Fig. 16

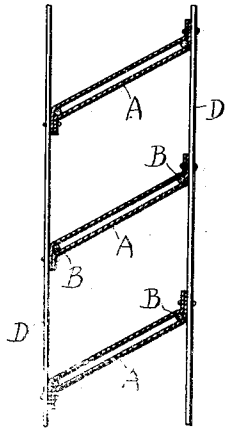
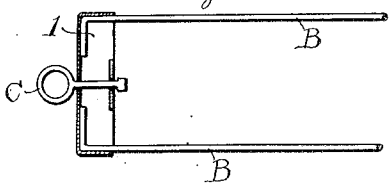


Fig. 17



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Patented Mar. 29, 1932 1,851,782

UNITED STATES PATENT OFFICE

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VENETIAN BLIND

Application filed June 24, 1931, Serial No. 546,632, and in Japan July 7, 1930.

This invention relates to a Venetian blind, and more particularly a collapsible blind made of woven fabric.

This invention has for its objects to provide a collapsible blind which has an increased effect of shielding light and in which the elevation and turning of the blind elements can be readily effected. These objects in view, the blind according to this invention comprising a plurality of blind elements each of which consisting of a piece or pieces of woven fabric formed into a flat tubular shape and stretched on a skeleton frame, having loops at both ends, means or suspending said blind elements arranged at suitable intervals, guide rods along which said loops on each element are slidably guided, and means for varying the angle of inclination of the blind elements.

In the accompanying drawings in which several embodiments of the invention are shown by way of example:

Fig. 1 is a front view of the collapsible blind constructed according to this invention,

Fig. 2 is a sectional side view,

Fig. 3 is a sectional plan thereof,

Fig. 4 is a fragmental perspective view,

Fig. 5 is a sectional side view of Fig. 4,

Fig. 6 is a similar view in a closed position,

Fig. 7 is a perspective view showing a portion of the guide rod,

Fig. 8 shows a cross section thereof,

Fig. 9 shows a plan of one of the blind elements,

Fig. 10 shows a plan of a skeleton frame,

Fig. 11 shows a cross section of the blind element,

Fig. 12 is a detail showing one of the reinforcing members,

Fig. 13 shows a cross section thereof,

Fig. 14 shows a portion of a blind element having a modified form of the loop,

Fig. 15 shows a modified form of the blind element,

Fig. 16 is a sectional side view of the blind using the elements shown in Fig. 15, and

Fig. 17 shows in detail an end portion of the skeleton.

Referring to the drawings, A designates a plurality of blind elements, each of which is made of a piece or pieces of woven fabric formed into a flat tube and stretched on a skeleton B, and is provided at both ends with loops C. The skeleton B consists of an oblong frame, of which the longitudinal members are made of steel wire, the ends thereof being secured to cross pieces 1.

Reinforcing members 2 are provided at intermediate points of the skeleton in order to keep the parallel arrangement of the side members of the skeleton B. Said reinforcing member 2 is made of a corrugated metal strip, and is secured at its ends to the steel wires forming the side members. The loop C consists of two interconnected rings, one of which is loosely mounted on the cross piece 1 of the element A, and the other ring adapted to be engaged by the guide rod or rail E. In the modification shown in Figure 14, the loop C may consist of a single ring pivotally connected to the cross piece 1 by means of a pin fixed to the ring.

D designates suspension strips or tapes each secured at the upper end to the fixed part 3, and to which suspension strip D are secured the longitudinal edges of the said blind elements A, the latter being thereby suspended and arranged at suitable intervals in parallel positions.

The guide rods E engage with the loops C at the ends of the blind elements A, and serve to guide the movement of the elements A. In order to minimize the friction between the loops C and the guide rods E and to prevent undue noise during the movement of the blind elements, said guide rods E are provided with a covering 4 of ebonite or hard rubber. Said covering 4 is preferably provided on the outer surface with longitudinal grooves as shown in Figures 7 and 8.

G is a pulling cord connected at its lower end to the lowermost one of the blind elements and led upwardly and passed around pulleys 5. This cord G when pulled in the direction of the arrow serves to lift the blind elements. Another pulling cord H is connected to a horizontal bar 6 which is attached to the suspension strips D, and is passed around pulleys 7. This cord H when pulled in the direction of the arrow serves to elevate

one edge of each blind element, thereby varying the angle of inclination of the latter.

The blind element A is made of tubular fabric or of ordinarily woven fabric which is sewed into a tubular form. In the modification shown in Figure 15, the element A is formed by two sheets of fabric sewed together at both side edges along the seam 8 to form selvages *a*. This form has advantages that the suspension strips D can be easily connected by sewing to the elements A and that the selvages *a* withstand against wear.

Plaited extension pieces F are attached to the ends of the elements A and to the lower side of the lowermost element, which extension pieces contact with the window frame 9 and serve to prevent any light from stealing in through the gap between the blind and the window frame.

From the foregoing, it will be seen that inasmuch as each blind element consists of double layers of woven fabric, there is not only increased effect of shielding light, but also increased heat-proofing and noise-proofing effect can be attained according to the present invention. Moreover, according to the invention, the blind element consisting of woven fabric can be readily washed by removing the skeleton therefrom. As the blind element is made of tubular woven fabric stretched on the skeleton consisting of steel wires and reinforcing metal strips, the blind according to this invention is light in weight, while it is of durable construction.

Furthermore, according to the invention the blind can be readily lifted to the collapsed position by means of a pulling cord, and the angle of the inclination of the blind elements can be adjusted at will by a simple and easy operation to vary the amount of light or the amount of air passing through the window.

What I claim is:

1. A collapsible blind comprising a plurality of blind elements each consisting of a piece or pieces of woven fabric formed into a flat tubular shape and stretched on a skeleton frame having loops at both ends, means for suspending said blind elements arranged at suitable intervals, guide rods along which said loops on each element are slidably guided, and means for varying the angle of inclination of the blind elements.

2. A collapsible blind comprising a plurality of blind elements connected at suitable intervals by means of suspension strip, each of said elements being formed into a flat tubular shape and having a skeleton therein.

3. A collapsible blind comprising a plurality of blind elements, each element consisting of a piece or pieces of woven fabric formed into a flat tubular shape and sewed together at both side edges to form selvages, and having suspending strips sewed to said selvages.

4. A collapsible blind comprising a plurality of blind elements made of woven fabric formed into a flat tubular shape, each of said elements having an oblong skeleton consisting of parallel steel wires connected by cross members at both ends and at intermediate positions by corrugated reinforcing members.

5. A collapsible blind comprising a plurality of blind elements, each of which is provided at each end with a loop pivotally mounted thereon, and guide rods engaging with said loops for slidably guiding the blind elements.

6. A collapsible blind wherein each blind element is provided at each end with a loop consisting of interconnected two rings, one of which is fixed to the end of the blind element and the other is passed around the guide rod, so that the blind elements are turnably supported.

7. A collapsible blind comprising a plurality of blind elements, rods upon which said elements are slidably guided, each of said guide rods being provided with a covering of ebonite or hard rubber, and surface of which is provided with a plurality of longitudinal grooves.

8. A collapsible blind comprising a plurality of blind elements, wherein suspension strips on one side are connected by a horizontal bar to which is connected a pulling cord, so that by pulling said cord the angle of inclination of the blind elements can be varied.

9. A collapsible blind comprising a plurality of blind elements arranged at suitable intervals and connected by means of suspension strips, and provided at both sides and lower extremity with plaited fabrics contacting with the window frame.

In testimony whereof I affix my signature.

TAKESHI SUGIURA.