June 25, 1968 B. C. ARNOLD ET AL 3,389,737

VENETIAN BLIND FOR DOUBLE GLAZED SASH

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Fig. 1

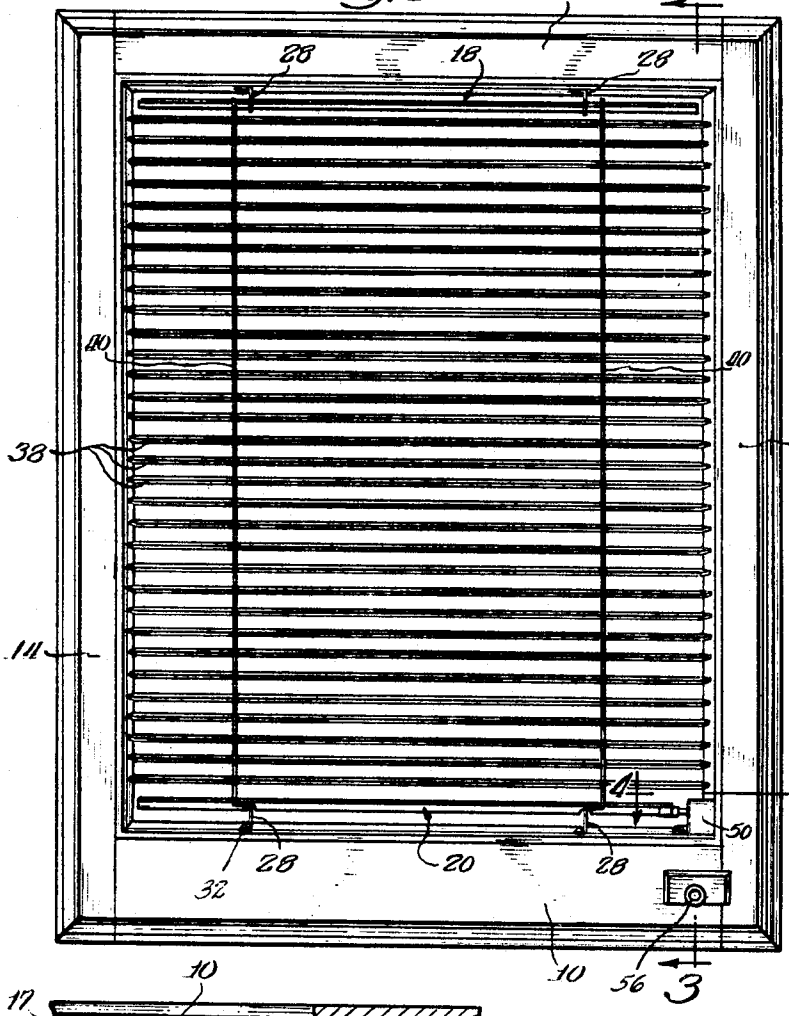


Fig. 3

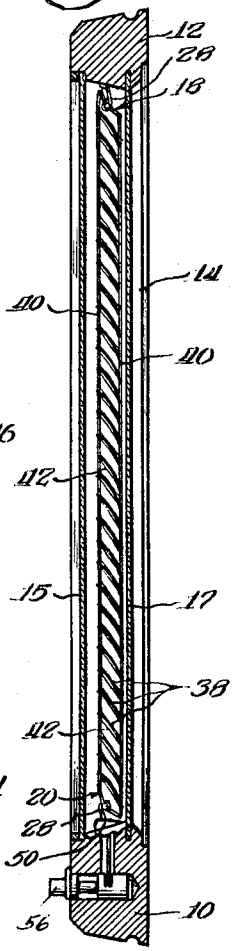


Fig. 4

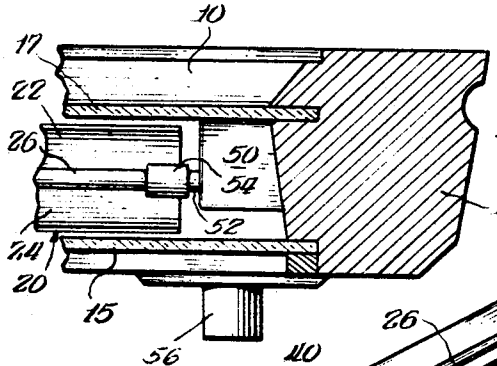


Fig. 2

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FIG. 5

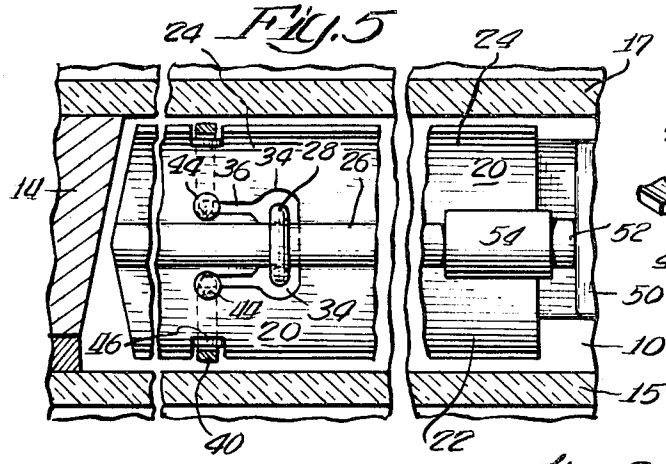


FIG. 6

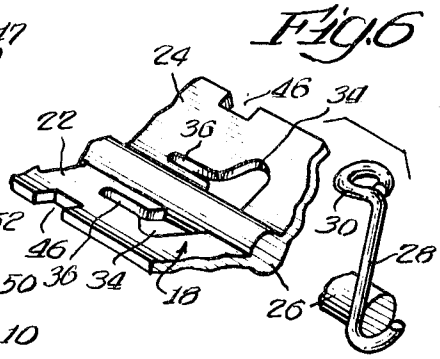


FIG. 7

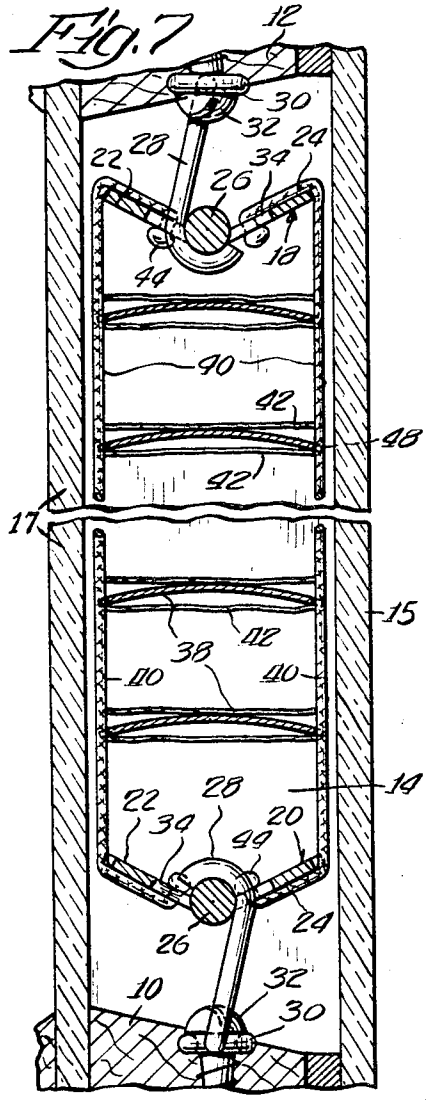


FIG. 8

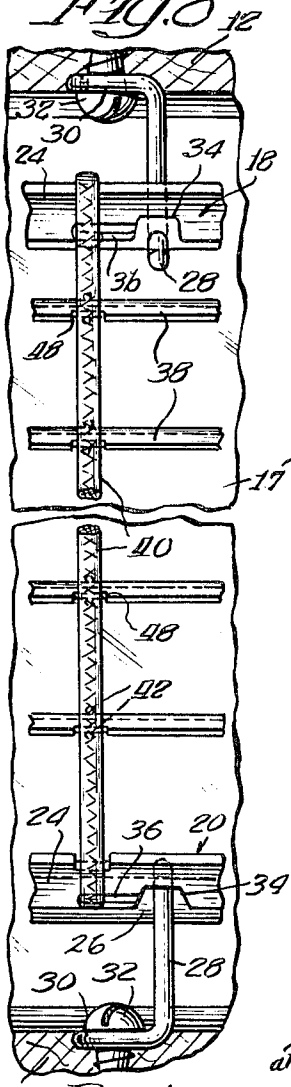
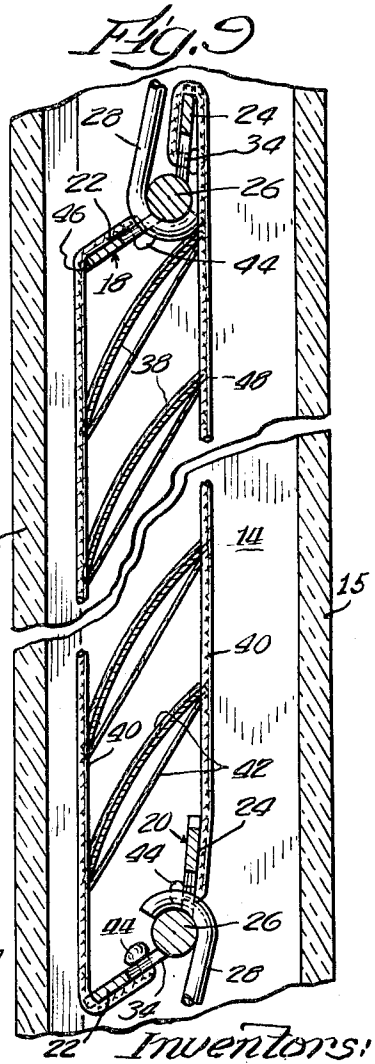


FIG. 9



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VENETIAN BLIND FOR DOUBLE GLAZED SASH

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Filed Dec. 7, 1965, Ser. No. 512,098
2 Claims. (Cl. 160—107)

ABSTRACT OF THE DISCLOSURE

A Venetian blind to be mounted between two panes of a double glazed sash. The head and sill slats of the blind are designed for pivoting on hooks carried by upper and lower supporting members, and tape ladders for the blind slats have knotted ends coacting with slots to retain the tape ladders assembled relative to the head and sill slats.

This invention relates to a Venetian blind particularly adapted for double glazed windows.

One object of the invention is to provide a comparatively inexpensive Venetian blind which can be mounted in the relatively narrow space between two panes of a double glazed sash such as a casement sash, and can be tilted to different adjusted positions in a manner illustrated and claimed in our copending application, Ser. No. 512,134, filed Dec. 7, 1965.

Another object is to provide a Venetian blind assembly which can be mounted between two panes of glass in a double glazed sash and adjusted from outside the space between the two panes, the position of adjustment however being indoors with respect to the sash, whereupon the sash may be swung to an opened position and the adjustment will be retained due to constructional features of the Venetian blind and its mounting means.

Still another object is to provide such constructional features in the form of head and sill slats which have wings sloping upwardly away from a cylindrical central rib when the slats are in level position so that when tape ladders and Venetian blind slats are associated with the head and sill slats there is a tendency for the Venetian blind assembly to remain in any position to which it is adjusted thereby permitting the adjustment of the blind while the casement window is closed and thereafter permitting opening of the casement window with assurance that the blind will stay in its adjusted position due to frictional forces.

A further object is to provide head and sill slats which may be made in the form of extrusions provided with the central ribs which function as pivot rods when certain holes are cut in the wings of the head and sill slats adjacent the ribs thereby permitting the use of comparatively simple hook-like supports screwed to the top and bottom rails of a double glazed sash and a resulting inexpensive construction.

An additional object is to provide the holes for the supporting hooks with slots to receive the knotted ends of tape ladders and a notching arrangement in the head and sill slats as well as in the Venetian blind slats to keep the tape ladders in proper vertical position at all times and in all positions of adjustment of the Venetian blind.

Summary of the invention

The Venetian blind disclosed is designed for mounting between two panes of a double glazed window with simple hardware comprising hooks for pivoting and a simple slot-and-knot arrangement for assembling the tape ladders to head and sill slats of the Venetian blind.

With these and other objects in view, our invention consists in the construction, arrangement and combination of the various parts of our Venetian blind for double glazed sash, whereby the objects above contemplated are attained, as hereinafter more fully set forth, pointed out in our claims and illustrated in detail on the accompanying drawings, wherein:

FIG. 1 is an inside elevation of a casement sash showing our Venetian blind mounted therein and with the slats in a substantially level position;

FIG. 2 is a perspective view of a sill slat of our Venetian blind;

FIG. 3 is a vertical sectional view on the line 3—3 of FIG. 1 and shows the slats partially closed;

FIG. 4 is an enlarged sectional view on the line 4—4 of FIG. 1;

FIG. 5 is a further enlargement of FIG. 4 and also shows a plan view of a pivoting connection for a sill slat of the Venetian blind;

FIG. 6 is an enlarged perspective view of a portion of the head slat and an adjacent hook-like bracket for pivoting the same;

FIG. 7 is an enlargement of portions of FIG. 3 showing the blind slats in level position;

FIG. 8 is an enlargement of portions of FIG. 1 to show details, and

FIG. 9 is a sectional view similar to FIG. 6 showing the Venetian blind partially closed.

On the accompanying drawings we have used the reference numeral **10** to indicate the bottom rail of a double glazed sash and **12** the top rail thereof. The sash has a left side stile **14** shown in FIG. 1 and a right side stile **16**, and is glazed with an inside pane **15** and an outside pane **17** as shown in FIGS. 3, 4, 6 and 8.

Our Venetian blind comprises a head slat **18** and a sill slat **20**, the slat **18** being identical for economical production to the sill slat **20** shown in FIG. 2. Each of the slats **18** and **20** has an inside wing **22** and an outside wing **24** which extend from a cylindrical center rib **26**. As shown in FIG. 6, for instance, the wings **22** and **24** slope upwardly away from the center rib **26** and this is true of both the head slat **18** and the sill slat **20** both of which may be readily and inexpensively formed as aluminum extrusions.

For pivotally supporting the head slat **18**, a pair of hooks **28** formed of wire is provided and each has a foot **30** secured to the top rail **12** of the sash as by a screw **32**. The wings **22** and **24** are provided with holes **34** as shown in FIGS. 4 and 5 to accommodate the hooks **28**. Tape ladders are provided comprising ladder tapes **40** and rungs **42**, Venetian blind slats **38** of thin sheet metal being supported by the rungs **42** as shown in FIGS. 7, 8 and 9. The ladder tapes **40** extend from the head slat **18** to the sill slat **20** and are provided with knots **44** received in notches **36** extending along the slat away from the holes **34** as clearly shown in FIG. 5.

The sill slat **20** is likewise provided with hooks **28** having feet **30** secured by screws **32** to the bottom rail **10** of the sash, and the parts are so designed that the ladder tapes **40** are under tension in the mounted position of the Venetian blind so as to keep the bead **26** of the sill slat **20** in engagement with the lower hooks **28**. This tension also cooperates with the upwardly inclined wings **22** and **24** of the head and sill slats **18** and **20** to keep the Venetian blind in any position to which it is adjusted such as slanting downwardly and outwardly (FIG. 3), slanting downwardly and inwardly (FIG. 9), or in the intermediate or level position shown in FIGS. 1, 7 and 8.

In order to prevent the ladder tapes **40** from getting out of position, notches **46** are provided in the edges of the head and sill slats **18** and **20**, and notches **48** are provided in the edges of the Venetian blind slats **38** to receive the ladder tapes.

The Venetian blind assembly may be operated by a suitable operator **50** terminating in a control element **56**

carried by the casement sash, the details of which are shown in our copending application hereinbefore referred to and from which an operating shaft **52** extends. The shaft **52** is connected by a suitable coupler **54** with the bead **26** of the sill slat **20** for imparting rotation from the operator **50** through the shaft **52** to the sill slat to thereby tilt it as desired.

Since the head and sill slats (when the Venetian blind slats are level) have wings which slope upwardly from the pivot axis of the rib **26**, when these slats are tilted from the level position of FIG. 7 the downwardly tilted side has a greater lever arm length than the upwardly tilted side. We have found that this design permits tilting the blind to the fully closed position by controlling the sill slat **20**. Friction between the beads **26** and the hooks **28** keeps the slats of the Venetian blind in any position to which they are adjusted.

From the foregoing description it will be obvious that we have provided a comparatively simple Venetian blind structure which may have slats on the order of ¾ inch wide which can therefore be mounted between the sash panes **15** and **17** without prohibitive thickness of the casement sash, and yet will always be protected from accumulations of dirt and dust by the panes of glass. At the same time, the Venetian blind may be readily operated or adjusted as disclosed in our copending application and due to the constructional features shown and claimed herein will remain in adjusted positions when the casement sash is swung to an open position which disconnects certain operative parts of the adjusting means as also disclosed in our copending application.

Some changes may be made in the construction and arrangement of the parts of our Venetian blind as herein disclosed without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may reasonably be included within their scope.

We claim as our invention:

1. In an adjustable Venetian blind for the purpose disclosed, head and sill slats each comprising a central cylindrical bead and inside and outside wings extending from opposite sides thereof, tape ladders extending downwardly from said head slat to said sill slat, Venetian blind slats supported by the rungs of said tape ladders, means for pivotally supporting said head and sill slats to pivot about the axes of said beads, means for imparting pivotal movement to one of said head and sill slats, said means for pivotally supporting said head and sill slats comprising hooks carried by upper and lower supporting members, said head and sill slats having holes adjacent their beads to permit said hooks to partially encircle said beads, and said holes having slots merging therewith which receive knotted ends of said tape ladders to retain them assembled on said head and sill slats.

2. A Venetian blind for double glazed sash according to claim **1** wherein said head and sill slats and said Venetian blind slats have notches in their edges receiving the tapes of said tape ladders.

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