Existing art sealed windows containing internal blind or louver structures are improved by replacing existing drawstring controls with a slider mechanism. Not only is this improved slider mechanism lower in profile, thereby facilitating a greater use with respect to sliding windows and other applications, the configuration is aesthetically appealing, and eliminates the problems and hazards that might be associated with drawstring-based solutions.
SEALED WINDOW LOUVER CONTROL MECHANISMS

FIELD OF THE INVENTION

This invention relates generally to sealed windows of the kind enclosing blinds and louvers and, in particular, to mechanisms to open and close such louvers and blinds.

BACKGROUND OF THE INVENTION

Sealed windows of the type containing internal louvers and blinds have become quite popular for many reasons. First, some of these products are entirely sealed, and are therefore very energy efficient. Also, by containing the louvers or blinds within a sealed structure, the internal mechanism may be operated without becoming dusty or dirty.

FIG. 1 is a drawing which shows an existing, prior-art mechanism used to control internal louvers or blinds. The product, shown generally at 100, includes two opposing panes of glass 104 sealed along the perimeter by spacer 102. Typically, the panes of glass are spaced apart by ½ inch or more or greater, allowing a set of louvers or blinds 106 to be disposed therein. U.S. Pat. No. 5,769,142, the entire content of which is incorporated herein by reference, discloses such an arrangement.

The sealed blinds 106 are suspended from a mechanism 110 through two or more control cables 112 used to open and close the blinds and to lift them up and down as desired by a user. In this entirely sealed arrangement, a magnetic coupling is used between a control mechanism 122 having a rotating magnet structure 124 that cooperates with a corresponding rotatable structure 120 on the mechanism 110. The structures 120 and 124, either or both of which may contain magnets, are disposed on opposing sides of the internal glass panel 104, thereby maintaining the seal.

The housing 122 receives a continuous pull string 130 which, when pulled in one direction or the other, causes the structure 124 to rotate accordingly. This couples the rotational movement to the structure 120 which, in turn, raises, lowers, opens and closes the blinds 112. A type of clutch mechanism is contained within this unit 110, whereby an initial rotation in one direction or the other causes the blinds to open while remaining substantially in their same position, whereas continued rotation in either direction causes the blinds to retract or lower, respectively.

There are certain disadvantages to the configuration just described. For one, the housing 122 tends to be sufficiently pronounced that the windows may not be installed on some locations, particularly if the windows open by sliding. In other words, the profile of the housing 122 may be sufficiently great that it would get in the way for opening and closing the window proper. Another disadvantage is that, since the control is located at the upper end of the window, very high windows require very long control strings 130, which may present problems associated with length, entanglement, or other hazards. Thus, whereas a sealed, magnetically-coupled arrangement is desirable for many reasons, the need remains for an alternative control mechanism.

SUMMARY OF THE INVENTION

This invention improves upon the existing art of sealed windows containing internal blind or louver structures, by replacing existing drawstring controls with a slider mechanism. Not only is this improved slider mechanism lower in profile, thereby facilitating a greater use with respect to sliding windows and other applications, the configuration is aesthetically appealing, and eliminates the problems and hazards that might be associated with drawstring-based solutions.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a drawing that illustrates a prior-art drawstring-operated sealed window configuration;

FIG. 2 is a drawing that shows a preferred slider mechanism according to the invention;

FIG. 3 is a drawing that shows a ratio-altering mechanism.

DETAILED DESCRIPTION OF THE INVENTION

Having discussed the prior-art with reference to FIG. 1, the reader's attention is now directed to FIG. 2, which shows a preferred embodiment according to the present invention. Broadly, the invention replaces the drawstring-operated configuration of FIG. 1 with a slider mechanism. Accordingly, the invention is applicable to windows of the type described with reference to FIG. 1, including the use of an internally sealed blind or louver structure, controlled by an open/close and/or raise/lower unit 110 controlled through a rotational magnetic coupling 120. However, the invention is not limited in terms of any particular manufacturer, and may be used with an entirely sealed or partially sealed configuration. Additionally, although the preferred embodiments are described with reference to a retrofit slider control, the invention may as well be provided in combination with a sealed window unit.

Continuing the reference to FIG. 2, the apparatus of this invention includes a housing 222, having a backside with a magnetic coupling 224, which is similar, if not identical, to structure 124 shown in FIG. 1. However, as opposed to the drawstring 130 and associated elements of the prior-art assembly, the housing 222 includes a wheel 226 which is turned through the movement of a belt 230, which, in turn, is dressed around two posts or wheels 232 and 234 within housing 222. The belt 230, which preferably includes grooves or serrations to enhance traction, extends down through a vertical housing 240, and is wound around a lower wheel 241.

A slider 242, which extends through a slot in the housing 240, is connected to the belt 230, such that movement of the slider up and down causes the belt to rotate wheel 226, which is connected to magnetic coupling 224, causing the blinds or louvers to operate in a manner akin to that associated with the prior-art control assemblies. Thus, according to a retrofit version of the invention, the device 222 replaces the device 122 and associated workings of FIG. 1, without needing to change any of the internal structure of the window assembly.

Some prior-art configuration use a step-up or step-down drive mechanism, depending upon the size and weight of the louvers. For example, some existing units facilitate a slow, standard, or fast operation using an internal worm gear. The present invention can accommodate such ratio reduction
or increases either by providing an appropriately engineered unit 110 or through gearing in the housing 222. More particularly, whereas the prior-art configuration discussed with reference to FIG. 1 uses a 12:1 reduction between the rotation of the drawstring and a magnetic coupling assembly, the instant invention might use a different ratio, such as 1:1 reduction.

[0015] FIG. 3, for example, shows the use of a separate wheel 300 coupled to the central post to speed up the rotation for a given amount of sliding. The configuration may be reversed to slow down the operation. In any case, a further advantage of the invention is that the slider may increase friction and compensate for “backlash” caused by large or heavy louvers or blinds.

I claim:

1. In a window assembly of the type wherein a louver or blinds and a lifting mechanism are sealed between two panes of glass and controlled through a rotational magnetic coupling, the improvement comprising:

   a slider having a rotational magnetic coupling that cooperates with the rotational magnetic coupling associated with the lifting mechanism.

2. The improvement of claim 1, further including a ratio increasing or reducing mechanism between the slider and the rotational magnetic coupling.

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