April 1, 1958 J. NESTOR 2,828,816

WINDOW SHUTTER

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Fig. 1.

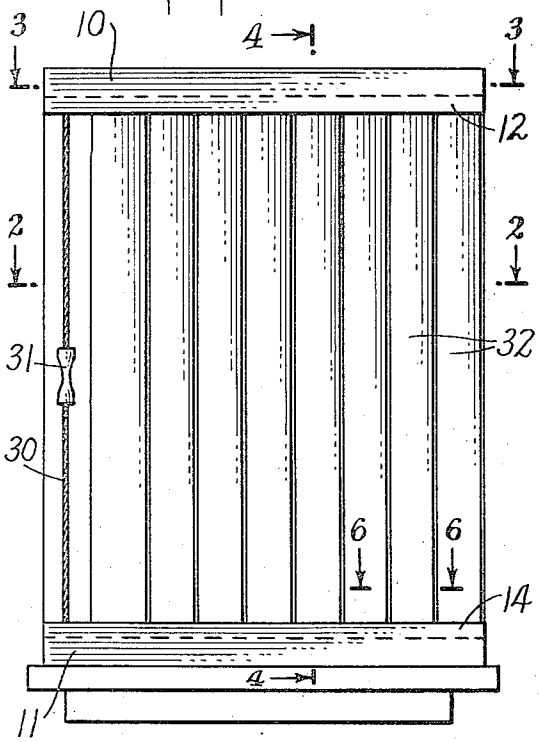


Fig. 2.

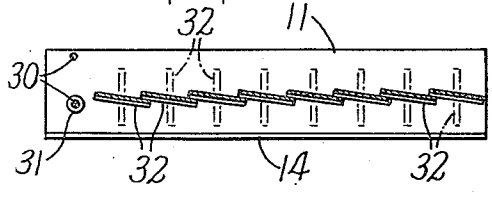


Fig. 3.

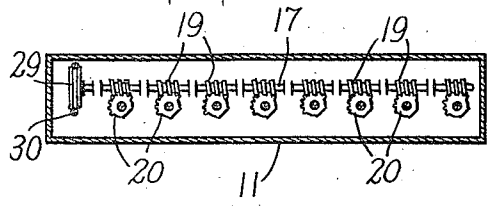
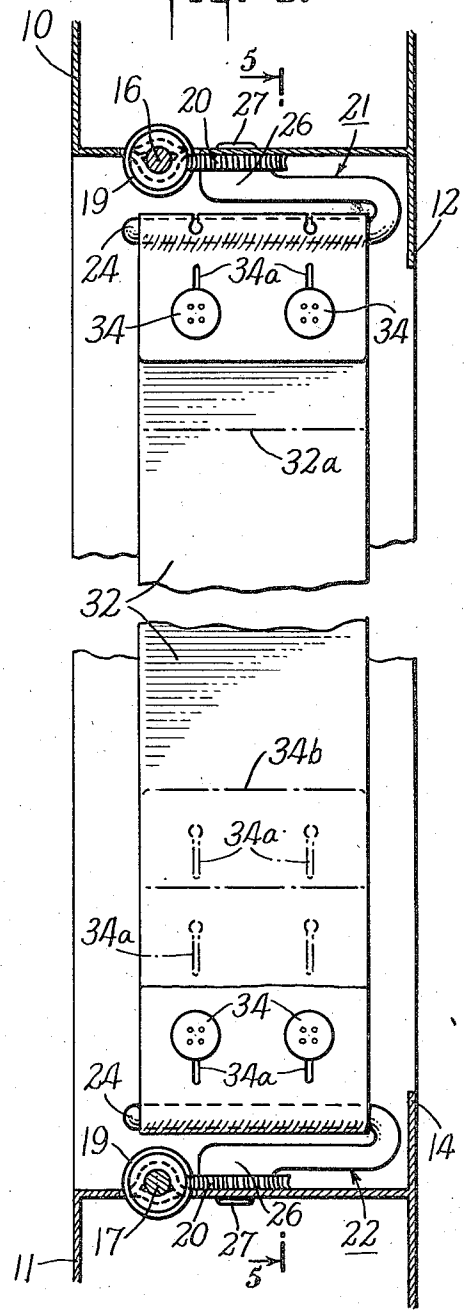


Fig. 4.



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Fig. 5.

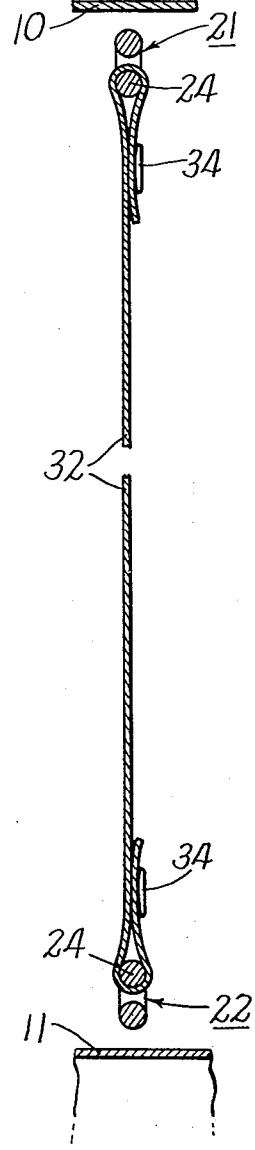


Fig. 6.

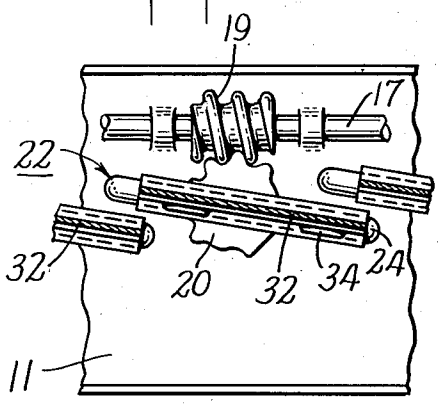
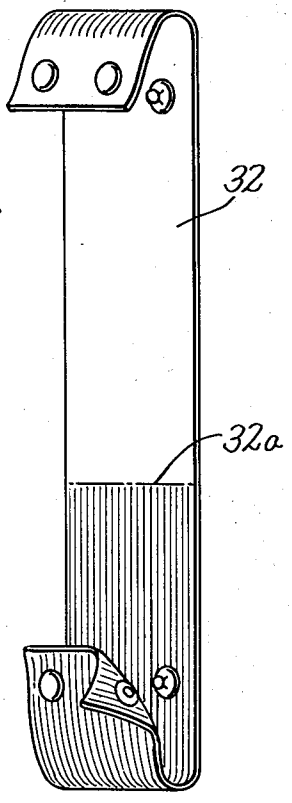


Fig. 7.



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2,828,816

WINDOW SHUTTER

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Application February 28, 1955, Serial No. 491,054

2 Claims. (Cl. 160—166)

This invention relates to improvements in window shutters and window shutter mechanisms of the type in which there are a plurality of strips, straps or louvers extending in mutual parallelism across a window opening for rotation on their respective parallel axes, as well as to an improvement in a method of installing such window shutters.

It has been suggested heretofore to mount louvers, strip members or the like vertically or horizontally in window openings and to provide rack mechanisms at their ends so as to rotate or oscillate the louvers on their respective axes. For the most part, however, the actuating mechanisms for such structures have been bulky, expensive, and generally difficult to operate and maintain in working order.

One of the difficulties heretofore encountered with window shutters of this type has been that they are either unstable in the sense that they are too easily opened or closed by accident, or if stable, they are difficult to operate. Thus, for example, with a rack and pinion type of mechanism, if constructed and adjusted for easy manipulation, the louvers can inherently also have their position changed too readily by accident, i. e., by application to them as distinguished from their control mechanism, of an extraneous force. If, on the other hand, the mechanism is such that the friction therein will be sufficient to keep the louvers from say accidentally opening and closing, then the friction therein will inherently also make desired oscillation of the louvers more difficult.

Other difficulties have been that the installation of such window shutters has required skill and tools generally not possessed by the householder, and that the shutters must be manufactured in as many sizes as there are sizes of windows to be fitted. It will readily be appreciated that window shutters must meet esthetic requirements, such as a minimum bulk of operating mechanism, in addition to providing easy and trouble-free operation.

The window shutter of my invention meets both these esthetic and practical requirements and in addition provides means for readily altering the appearance of the shutter without in the least affecting the operating mechanism. The shutter of my invention is easy to manufacture, assemble, install and operate and has a minimum of parts.

Generally, the window shutter of my invention comprises a pair of support members adapted to be attached to opposite edges of a window frame. These support members carry like series of carrier members for the strips or louvers and at least one of the support members carries a rotatable driving shaft. The carrier members are mounted on each of the support members for rotation on axes normal to the driving shafts. Each carrier member has a driven shaft portion rotatable in a support member and a transverse arm portion extending inwardly of the window frame. Strip members, preferably partly or wholly of elastic material, are each connected at opposite ends to the arm portions of corresponding carrier members. The shaft portions of the carrier members are provided with worm wheels in meshing engagement with worms on the driving shafts and actuating means interconnecting the driving shafts are provided for simultaneously rotating the driving shafts and therefore in turn oscillating the louvers or strips.

The advantages of the invention are many. Among the more outstanding and surprising of these is the ability of the louvers of the shutter, when installed, to resist accidental opening and closing while at the same time requiring a minimum of effort for intentional opening and closing by manipulation of an actuating member. Another outstanding advantage is the facility with which a window shutter of the invention can be adapted to windows of different sizes. Other advantages include the simplicity of structure, the facility with which it can be installed and kept in good operating order, the smaller size of the operating mechanism and consequent greater esthetic appeal.

These and other advantages, as well as the utility of the invention, will become further apparent from the following detailed description made with reference to the accompanying drawing. It is to be understood that this detailed description made with reference to the accompanying drawing is merely illustrative of the best mode contemplated presently of carrying out my invention and is not to be considered as limitative thereof.

In the drawing:

Figure 1 is a view in elevation of a vertical louver window shutter in accordance with one embodiment of the invention;

Figure 2 is a view in horizontal section taken on line 2—2 of Figure 1;

Figure 3 is a view in horizontal section taken on line 3—3 of Figure 1;

Figure 4 is an end view on an enlarged scale taken on section line 4—4 of Figure 1;

Figure 5 is a sectional view in elevation taken on line 5—5 of Figure 4;

Figure 6 is a detail in horizontal section taken on line 6—6 of Figure 1; and

Figure 7 is a view similar to Figure 4 and illustrating another embodiment of the invention.

While the invention has other uses and applications, it will be described herein as a window shutter having vertical louvers or strips all interconnected for rotation in unison. It is to be understood that it is within the scope of the invention to have the louvers in horizontal position or to make other alterations within the skill of the art.

In the form of the invention shown in the drawing, support members **10** and **11** are adapted to be attached to the opposite edges, such as the header and the sill, respectively, of a window frame and are desirably provided with facia **12** and **14** to hide the operating mechanism from view. The supporting members **10** and **11** support driving shafts **16** and **17**, respectively, which carry like series of worms **19** in meshing engagement with worm wheels **20** for rotating the upper and lower carrier members **21** and **22**, respectively. The carrier members each have a transverse arm portion **24** and a shaft portion **26** for carrying the worm wheels **20**. The shaft portions **26** are rotatably mounted in the supporting members **10** and **11** and the ends thereof are, as shown as **27**, upset or otherwise secured to prevent substantial longitudinal movement of the carrier members **21** and **22**.

The driving shafts **16** and **17** are provided with actuating means of any suitable type, such as rope and pulley, chain and sprocket, or other equivalent means. The actuating means shown by way of illustration in the drawing include pulleys **29** in engagement with a rope **30** adjacent one side of the window frame and provided with a suitable handle **31**.

Strips or louvers **32** are mounted between the arm portions **24** of the corresponding carrier members **21** and **22** and are provided at one or both ends with suitable buttons or snap fastener means **34** which may in turn serve as supports for suitably decorative designs. In the preferred embodiment of the invention, shown in Figure 7, the strips **32** are in part of an elastic material as, for example, at end portions **32***a*.

In operation, the louvers may simply be moved from the closed position, shown in solid lines of Figure 2, to the open position, shown in dashed lines of Figure 2, by pulling on the handle **31** attached to the rope **30** for rotating the shafts **16** and **17** and therefore the worms **19**, worm wheels **20** and the carrier members **21** and **22**. If it is desired to replace any or all of the strips **32**, it is a simple matter to unfasten the fasteners **34** and to slide the material off the arm portions of the carrier members **21** and **22**.

The louvers **32** may be formed of any desirable material, for instance fiber glass, and may be decorated as desired. When buttons such as indicated at **34** are used as fasteners, the louvers may be provided with a series of pairs of buttonholes **34***a*. This will enable the householder who himself installs the shutter to draw the louvers tightly between the arm portions **24** regardless of the height of the window frame and engage the buttons in the proper buttonholes. Thereafter he may remove the surplus material by simply severing it from the main body portion of the louvers, as for instance along the dot and dash lines **34***b*.

It is of course desirable that the louvers be kept as taut as possible. In one form of my invention, as shown in Figure 7, the portions of the louvers between dot and dash lines **32***a* and the ends of the louvers may be made of elastic material so that when the louvers are drawn tightly and fastened in place by means of the fasteners the tautness will be accomplished and will be maintained without requiring springs or other resilient means in the mechanism. This will be true whether the buttons and buttonholes are used or a different type of fastener is used.

With this construction heretofore described, it will be easy for the householder to open and close the louvers through the operation of the rope **30** and pulleys **29** or their equivalent because of the fact that the power is transmitted to the worm wheels **20** through the worms **19**. However, accidental opening or closing of the louvers will be resisted mechanically by the worms **19**. When

the louvers are provided with elastic sections such as heretofore described, the tautness of the louvers will also assist in resisting the accidental opening or closing of the louvers as they will in effect brake the rotation of the members **22**.

It is to be expected that numerous variations and modifications will readily occur to those skilled in the art upon reading this description. All such variations and modifications are intended to be included within the scope of the invention as defined in the accompanying claims.

I claim:

1. A window shutter comprising a pair of support members adapted to be attached to the header and sill of a window frame in substantially parallel positions; a plurality of pairs of upper and lower aligned carrier members rotatably mounted in said support members and extending inwardly between the same with the members of each pair mounted in fixed spaced relation to each other; a strip elastic louver member directly attached to and extending between the members of each pair of carrier members; means for adjustably connecting at least one end of each of said strip louver members directly to the adjacent carrier member said connecting means comprising a separable fastener element attached to said elastic louver and a plurality of complemental fastening elements arranged in a series longitudinally of said louver between said first mentioned fastener element and the adjacent end of said louver; and means for simultaneously rotating said carrier members.

2. The combination of elements recited in claim 1 in which each of said carrier members comprises a shaft portion mounted on the adjacent support for rotative motion only, and wherein said rotating means for each of said carrier members comprises a worm wheel rigid with said carrier member and located on the inner face of said support and an intermeshing worm mounted in bearings extending inwardly from said inner face.

References Cited in the file of this patent

UNITED STATES PATENTS

2,272,722	Morin	Feb. 10, 1942
2,288,260	Touchstone	June 30, 1942
2,524,373	Bopp et al.	Oct. 3, 1950
2,611,426	Randall	Sept. 23, 1952
2,625,219	Peck	Jan. 13, 1953