July 8, 1969 H. H. MAN 3,454,073

WINDOW UNIT WITH ROLL-TYPE SLATS

Filed Feb. 8, 1967 Sheet 1 of 2

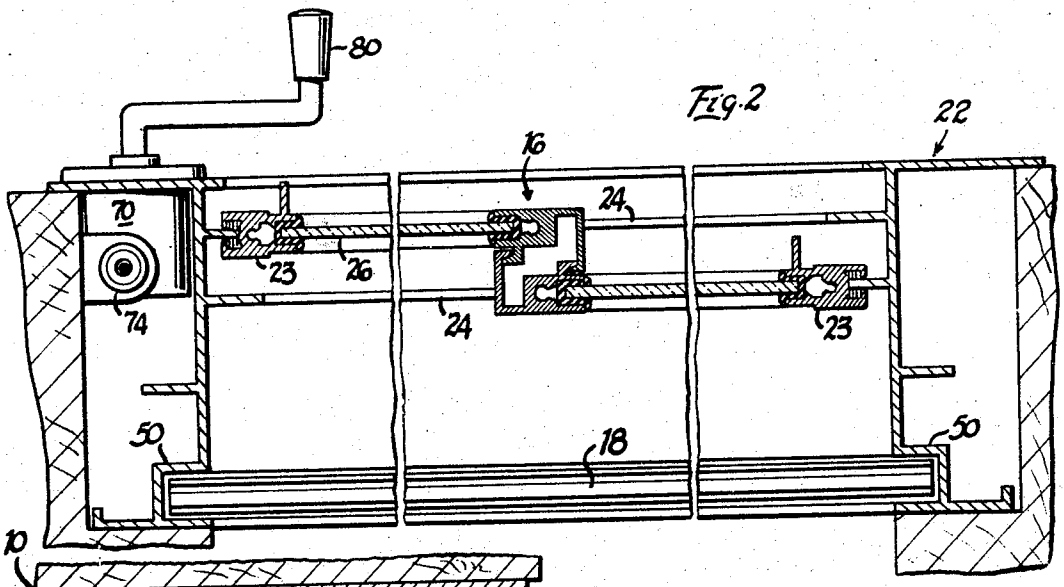


Fig. 2

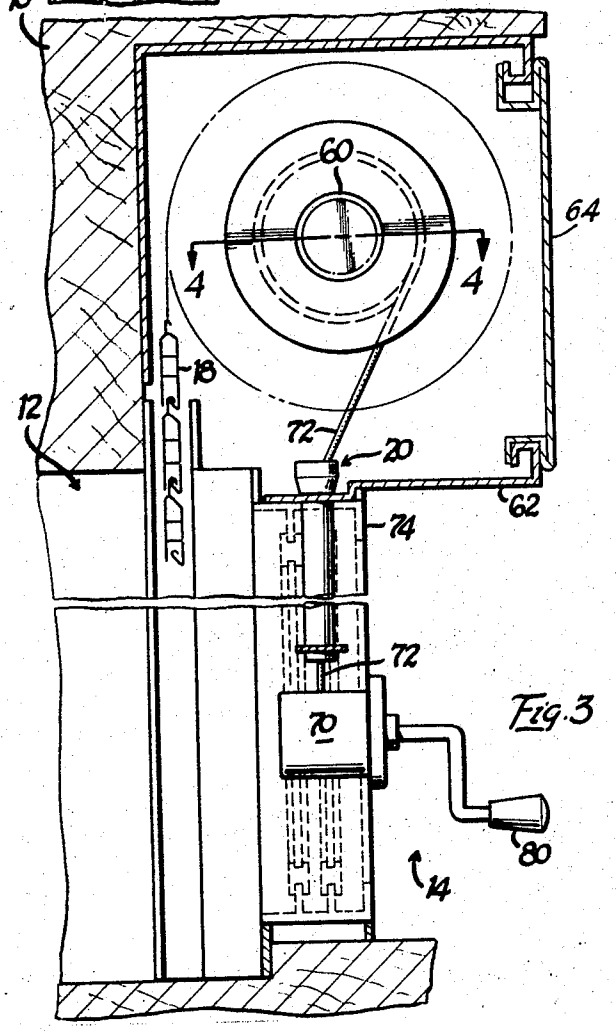


Fig. 3

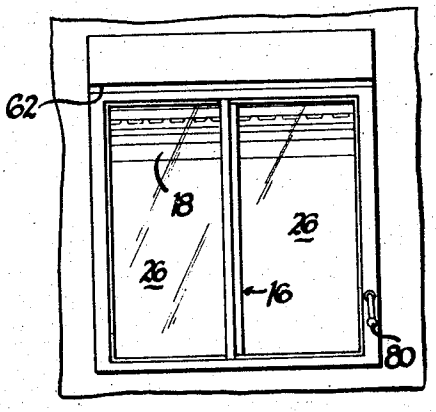


Fig. 1

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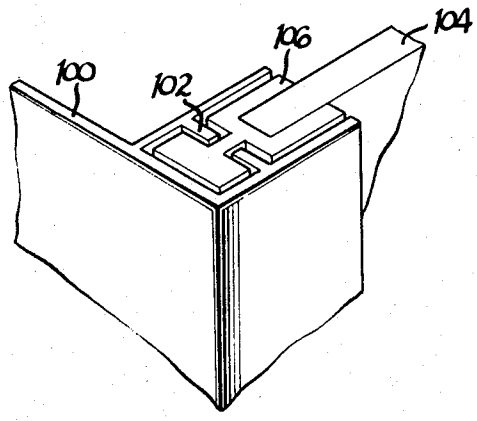


Fig. 6

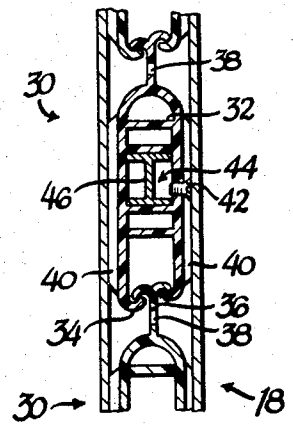


Fig. 5

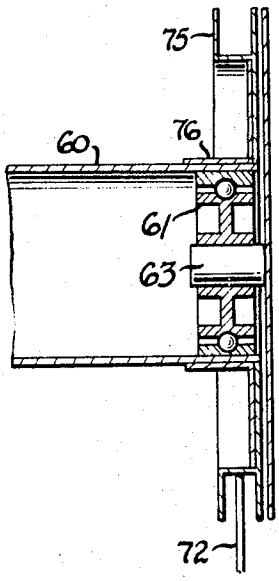


Fig. 4

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3,454,073

WINDOW UNIT WITH ROLL-TYPE SLATS

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Int. Cl. E06b 3/32, 9/08
U.S. Cl. 160—107 1 Claim

ABSTRACT OF THE DISCLOSURE

A self-contained closure unit including a frame, a closure element and a shutter member with the frame being an integral structure defining guide means for the shutter, support means for the closure element, and support means for an actuating member for the shutter. The self-contained unit is designed for delivery to a job site in a completely assembled condition ready for setting into position in an opening defined in a building structure.

Background of the invention

The present invention relates generally to closure units and more particularly to a self-contained closure unit including a closure member and a blind or shutter member.

Summary of the invention

Generally speaking, the present invention includes a completely self-contained closure unit which is completely assembled and delivered to the job site in an assembled condition ready for installation into an opening. The closure unit includes a frame having integral element defining guides and supports for a shutter member, a closure unit and actuating means for raising and lowering the shutter member with respect to the frame. Also, the invention incorporates unique cooperating retaining elements between the shutter member and the frame.

The primary object of the present invention is to provide an improved closure unit which is capable of being delivered to the site in completely assembled condition ready for installation in an opening of a building.

Another object is to provide a self-contained closure unit in which all of the elements of the closure unit are carried by a single frame.

A further object is to provide an improved closure unit having a shutter member disposed between the closure member and the outside surrounding atmosphere.

A still further object is to provide an improved self-contained closure unit having a shutter member which is simple and inexpensive to manufacture and is capable of withstanding severe forces.

Other objects and features of the invention will become apparent when considered in conjunction with the following specification and the accompanying drawings wherein,

FIGURE 1 is a fragmentary elevational view of a building having the closure unit of the invention mounted in an opening therein;

FIGURE 2 is a fragmentary horizontal sectional view of the closure unit shown in FIGURE 1;

FIGURE 3 is a vertical sectional view of the closure unit shown in FIGURE 1;

FIGURE 4 is a fragmentary sectional view taken along lines 4—4 of FIGURE 3;

FIGURE 5 is an enlarged fragmentary sectional view of the shutter shown in FIGURE 3; and

FIGURE 6 is a perspective view of a slightly modified form of guide means for the shutter.

Generally speaking, the closure unit of the present invention comprises a self-contained element having a closure member and a blind or shutter member and means for raising or lowering the shutter member with respect to the closure member with all three elements carried in a single frame which is adapted to be readily mounted in an opening.

FIGURES 1 through 3 of the drawings show a portion of a building **10** having an opening **12** therein, which receives the closure unit **14** of the invention therein. The closure unit **14** includes a closure member **16**, a blind or shutter member **18** and moving means **20** for raising and lowering the blind or shutter member **18**, all carried within a single frame **22**.

The closure member **16** is illustratively shown as a pair of window sashes **23** guided for generally horizontal movement with respect to the frame by guide members **24**, which form an integral part of the frame **22**. Thus, the sashes **23**, which carry the glass units **26**, may be individually moved with respect to the frame **22**. Although the closure member has been illustratively shown as a pair of sliding sashes, it is readily apparent that the closure member could be a single window unit, a double hung vertically sliding window unit or a conventional door mounted on hinges carried by the frame **22**.

The shutter member **18** may be any type of unit which is capable of being wound upon a drum. However, according to one aspect of the invention a shutter member is preferably of the type illustrated in FIGURE 5. The shutter member shown in FIGURE 5 includes a plurality of slats **30**, each of which includes a base element **32**, which is preferably formed of extruded plastic. The base member includes a pair of inwardly directed downwardly depending flanges **34** which form an opening therebetween to receive the base portion of a generally T-shaped member **36** formed on the upper end of each of the base members **32**. The leg portion of the T-shaped member **36** is provided with a plurality of openings **38**, for a purpose to be described later.

Each of the base members **32**, forming the respective slats **30**, includes a pair of anti-friction bearing surfaces **40**, preferably of a nylon material, which are removably secured to the opposed surfaces of the base member **32** by screws **42**. The extruded base member **32** includes a generally rectangular opening **44** which is adapted to receive a reinforcing member **46** for rigidifying the entire slat structure.

The plurality of adjacent slats are readily interconnected by sliding the base portion of the T-shaped member **36** in the opening formed between the respective flanges **34** of the adjacent slat **30**. The plurality of interconnected slats are then guided between an open and closed position by guide means formed on the frame **22**. In the embodiment shown in FIGURES 1 through 3, the guide means includes a pair of opposed aligned channels **50** formed as an integral part of the frame **22** and having their open ends directed toward each other. The side edges of the respective slats are received in the channels **50** and the bearing surfaces **40** are in direct contact with the inner surfaces of the channel members.

The plurality of slats **30** forming the blind or shutter member **18** are moved between the open and closed positions by the moving means **20**, which includes a drum **60** rotatably journalled at opposite ends on stub shafts **63** carried by the frame **22** with suitable bearings **61** interposed therebetween. As clearly shown on FIGURE 4, the ball bearings have one race fixedly secured to inner surface of the hollow drum **60** so that the drum acts as a shaft for raising and lowering the shutter. The frame **22** is provided with an enlarged portion **62** at the upper end thereof for receiving the enlarged drum **60** therein. Preferably a removable cover **64** forms a part of the en-

larged portion **62** so that access may be had to the drum **60** if the need arises. The cover is provided with channel portions at the upper and lower ends which cooperate with channels on the walls of the enlarged portion so that the cover may be affixed to the enlarged portion without the aid of screws. The drum **60** is adapted to be rotated in either direction by a winch **70** and a cable **72** interconnecting the winch and the drum **60**. Preferably, the cable or cord **72** is guided within the frame by guide means, such as a sleeve **74** carried by the frame **22** and is adapted to be wound upon a pulley **75** secured to the drum **60** by a flanged bracket **76** and screws (not shown). The winch **70** is preferably of the type disclosed in copending application of Mr. Claudio Gigante for a "Control Mechanism," Serial No. 614,716, filed on February 8, 1967, and assigned to the common assignee of this application.

As can readily be appreciated, the closure unit of the present invention provides a simple self-contained unit which may be completely assembled and delivered as a complete unit to the building site. The unit may be readily installed in an opening of a building by unskilled workmen since the unit need only be placed in an appropriate opening and secured therein.

After the closure unit has been installed in an opening **12** of the building **10** the blind or shutter member **18** may be readily raised or lowered from the inside of the building by turning the handle **80** of the winch **70** in the appropriate direction to raise or lower the shutter member. If the shutter member is stopped at any point intermediate the complete closed position, the openings **38** will allow a limited amount of light to enter through the shutters into the room of the building. However, if the shutter member is moved to its completely closed position, the lower slat **30** will engage a surface adjacent the bottom end of each of the channels **50** and continued counterclockwise rotation of the drum **60** will allow the weight of the respective slats to cause the slats to nest with each other thereby having the lower portion of one slat covering the openings **38** of the adjacent slat. This will completely eliminate any penetration of light beyond the shutter to thereby eliminate any heating of the glass, which forms a part of the illustrated closure unit.

Also, by forming the plurality of slats of a plastic material and placing the slats outside the closure member, the usual cleaning required by shutter members, such as venetian blinds, is eliminated. This is because the shutter member is outside of the building and is made of a smooth plastic, which is unlikely to catch dust or dirt. The slats may be readily provided in a variety of colors and thus eliminate any necessity of painting. Also, by reinforcing the plastic slats with a metallic member, the metallic member will provide the additional strength required to absorb the severe forces which may be imposed upon the individual slats.

A slightly modified form of the invention is disclosed in FIGURE 6 wherein the frame **100** is, in most respects,

identical to the frame **22**. However, the frame **100** includes generally H-shaped guides **102** (only one being shown) for guiding the respective slats forming the shutter members. In the modified embodiment shown in FIGURE 6, the respective ends of each of the slats **104**, similar to slats **30**, include generally I-shaped guide members **106**, preferably of nylon material, which are adapted to be respectively received in the guide members **102**.

The modified form of shutter member and guide means shown in FIGURE 6 is particularly adapted for use in areas where the unit may be subjected to extremely high forces caused by winds of hurricane strength.

I claim:

1. A self-contained closure unit including a frame adapted to be received in an opening of a building and a closure element and shutter member movably supported by said frame, the improvement of said frame comprising an integral unit having integral inwardly directed means supporting said closure element, means for slidably supporting said shutter member within said frame, said last means comprising spaced parallel pairs of flanges integral with opposed inner surfaces of said frame, said pairs of flanges extending towards each other and defining a shutter member receiving space between each pair of flanges, lugs extending from each said flanges into said spaces and defining retaining means for said shutter member, means defining cooperating slots on opposite edges of said shutter member cooperating with said lugs to retain said shutter member in said spaces while accommodating relative sliding movement of said members longitudinally of said flanges, integral means on one end of said flanges defining an enlarged recess, a drum rotatable in said recess with said shutter member secured thereto, an integral leg extending outwardly from one side of said unit and defining a space, rotatable means supported within said space, a cable within said space connecting said rotatable means with said drum, and a sleeve substantially completely enclosing said cable within said space.

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U.S. Cl. X.R.

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