

[54] WINDOW DRAIN VALVE
[75] Inventor: Clarence Harold Jolly, New South
Wales, Australia
[73] Assignee: Comalco Limited (formerly K/a
Comalco Industries Pty. Limited),
Melbourne, Australia
[22] Filed: July 17, 1972
[21] Appl. No.: 272,336

Related U.S. Application Data

[63] Continuation of Ser. No. 64,671, Aug. 18, 1970,
abandoned.

[30] Foreign Application Priority Data

Aug. 18, 1969 Australia..... 59641/69

[52] U.S. Cl..... 52/209, 52/302, 137/247.23
[51] Int. Cl..... E04f 17/00, E06b 7/14
[58] Field of Search..... 52/209, 302, 303;
137/247.23

References Cited

UNITED STATES PATENTS

1,291,511 1/1919 Hester..... 52/209

1,451,021 4/1923 Hanson..... 52/209
3,466,819 9/1969 Giger..... 52/1

FOREIGN PATENTS OR APPLICATIONS

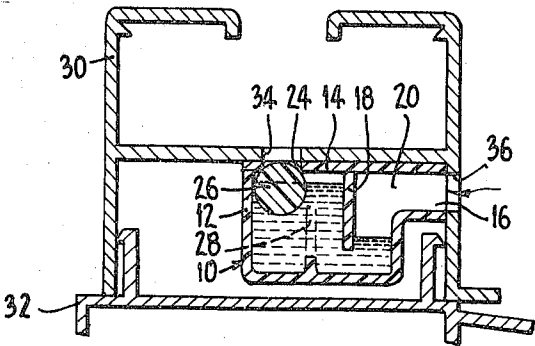
67,558 5/1940 Czechoslovakia 137/247.23
438,489 3/1912 France 52/209

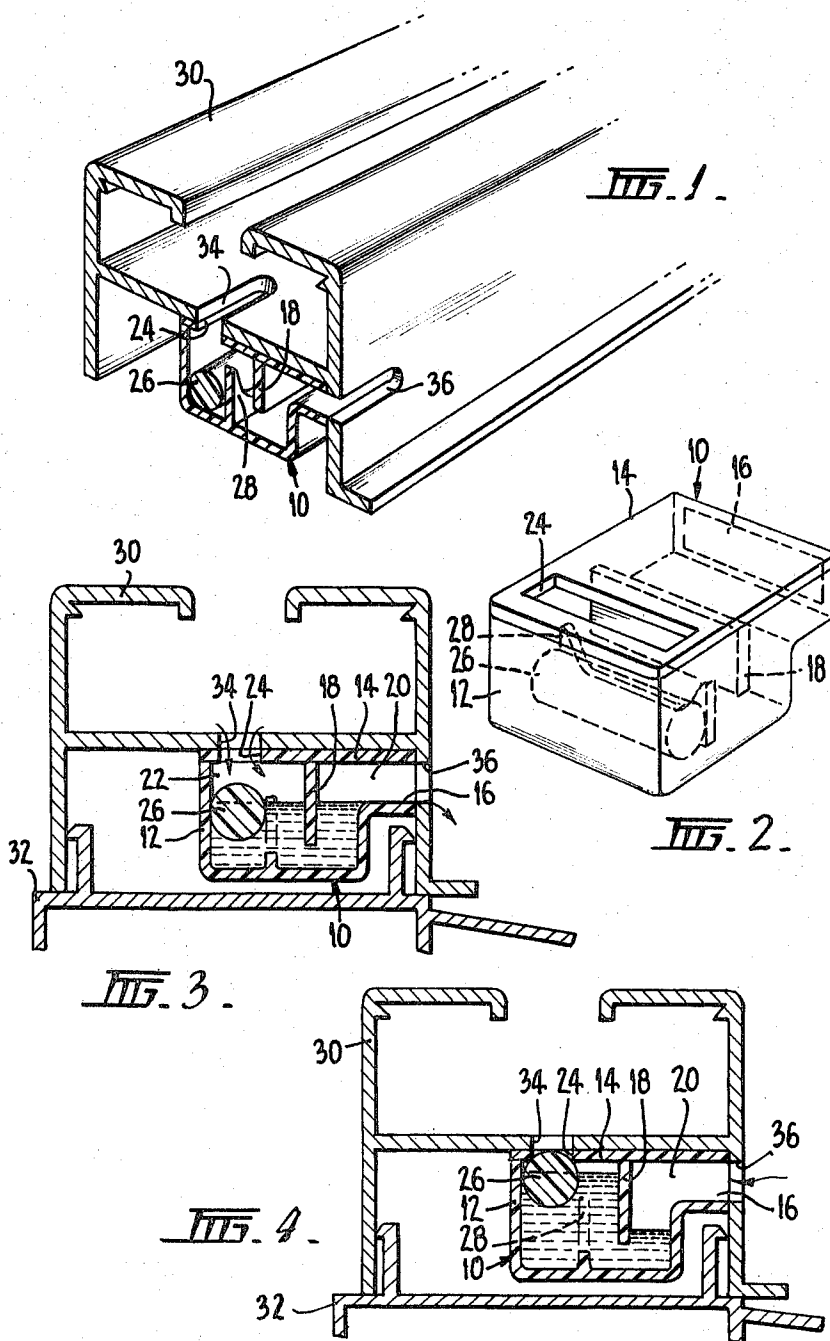
Primary Examiner—John E. Murtagh
Assistant Examiner—James L. Ridgill, Jr.
Attorney, Agent, or Firm—Cushman, Darby &
Cushman

[57] ABSTRACT

The invention provides means whereby the recesses which accommodate the panes in an extruded aluminium window frame may be drained and provides means to prevent water draining from the recesses being blown back into the building in adverse wind conditions. This is achieved by the provision of a drain valve having an inflow compartment and an outflow compartment separated by a depending web with a float valve member in the inflow compartment which closes the communication between the window sill recess and the drain valve when the outlet of the outflow compartment is subjected to external wind pressure.

4 Claims, 8 Drawing Figures





INVENTOR
CLARENCE HAROLD JOLLY

BY
Cushman, Rosley & Cushman
ATTORNEYS

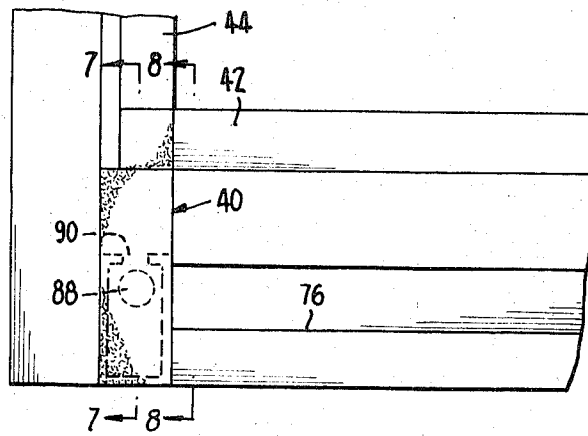


FIG. 5.

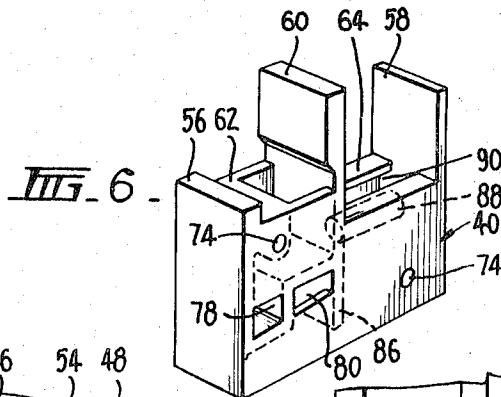


FIG. 6.

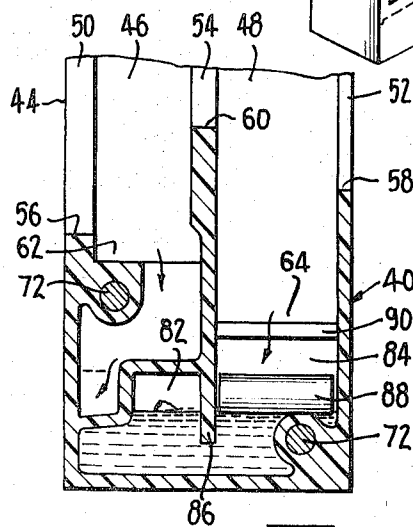


FIG. 7.

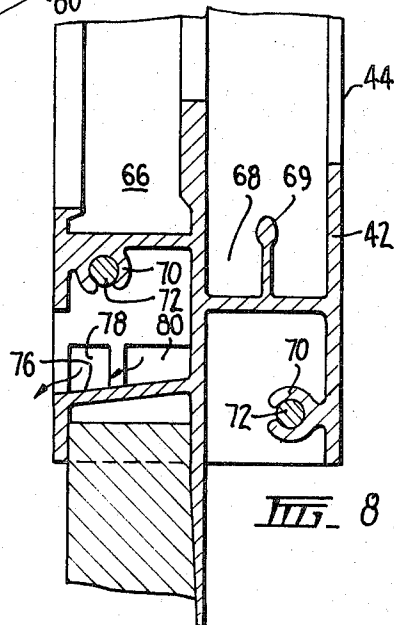


FIG. 8.

INVENTOR
CLARENCE HAROLD JOLLY

BY
Cushman, Barlett & Cushman
ATTORNEYS

WINDOW DRAIN VALVE

This is a continuation of application Ser. No. 64,671 filed Aug. 18, 1970, now abandoned.

This invention relates to a window drain valve and particularly to a valve which minimizes the effect of external parameters.

With windows, particularly windows formed by extrusion or fabrication of metals, particularly formed of aluminium extrusions it is often desirable to provide a drain means whereby any water which enters the window cavity either because of rain or atmospheric condensation within the window, can be drained to atmosphere but under such circumstances the arrangement should be such that external conditions will not be reflected within the room or other area having the window. Previous drain methods have normally provided direct venting whereby under extreme conditions this requirement is not met.

The principal object of the invention is to provide a window drain valve so formed that water in the window cavity can be passed to the external wall or the like in which the window is located but which is not adversely effected by external conditions.

In its broadest sense the invention includes a valve located in a window the valve having at least two compartments, an outflow compartment and an inflow compartment, the compartments being separated by a web, the outflow compartment being in direct connection with the external wall of the building or the like in which the window is located and the inflow compartment being in connection with the window cavity characterized in that a valve is located in the inflow compartment which can prevent ingress of water into the inflow compartment from the window cavity or the movement of water and or air from the outflow compartment to the cavity in accordance with the ambient conditions whereby water drains from the cavity but no water can return into the cavity nor can air enter the cavity from the external area.

More particularly the arrangement includes three compartments, an outflow compartment, an inflow compartment in connection therewith in a manner whereby a water manometer is formed and a float compartment in which the valve member is located, the inflow compartment and the float compartment being in direct connection.

The connection between the window cavity and the inflow or float compartment may be in the form of a drain slot and the float which constitutes the valve member is of such a size as to close its associated slot.

In order that the invention may be more readily understood, it will now be described by way of example with reference to the accompanying drawings wherein:

FIG. 1 is a perspective cross-sectional view showing a valve according to the invention installed in a window sill.

FIG. 2 is a perspective view of a valve according to the invention.

FIG. 3 is a cross-sectional elevational view of the valve installed in a window sill.

FIG. 4 is a view similar to FIG. 3 illustrating the effect of wind pressure on the valve.

FIG. 5 is an elevational view of an alternative form of valve installed in a window frame.

FIG. 6 is a perspective view of the valve of FIG. 5.

FIG. 7 is a cross-sectional elevational view on line 7—7 of FIG. 5, and

FIG. 8 is a cross-sectional elevational view on line 8—8 of FIG. 5.

The valve of this particular form is located between the window-sill and window sub-sill and may be in the form of an aluminium extrusion which can be integral with or able to be associated with the sill or the sub-sill.

Alternatively, the valve could be formed as a full length or as a short length of a plastic extrusion, it could be a plastic moulding or a metallic casting.

In the particular form of valve 10 illustrated in FIGS. 1 to 4, a plastic moulding has been used for the valve, consisting of a body section 12 and a cover 14 adhesively secured to the body. The body has an outlet 16, and a downwardly projecting web 18 on the cover divides the body into an outflow compartment 20 and an inflow compartment 22. An outlet slot 24 is formed in the cover 14 remote from outlet 16 and a float valve 26 is held in the inflow compartment in alignment with aperture 24 by means of a pair of projections 28 formed integrally with the body 12.

Valve 10 is installed in a window sill 30 above a sub-sill 32 with its inlet aperture 24 in alignment, with a similar aperture 34 in the sill 30 and with its outlet 10 in alignment with a similar aperture 36 in the outer face of sill 30. Preferably the valve is secured in position by means of a waterproof adhesive.

It will be appreciated that two or more such valves may be used for any given window sill or that, instead of separate valves, it is possible to use a single valve extending the length of the window sill with inlet and outlet apertures at appropriately spaced positions.

Under normal circumstances any water which enters the window sill, either through rain draining from the external surface of the window or from condensation from within the room, will pass through the slots 34 in the sill and enter inflow compartment 22 through aperture 24. The water level in compartments 20 and 22 will be maintained slightly above the lower extremity of outlet 16, any excess water being discharged through outlet 16 to the exterior of the building.

In windy conditions it would be possible, but for float valve 26, for water within the valve to be blown back into the sill 30.

Wind pressure acting against outlet 16 depresses the level of the water in outflow compartment 20 as illustrated in FIG. 4, thus raising the level in inflow compartment 22 and raising float valve member 26 to close aperture 24 and prevent water being forced back into the sill 30. The length of web 18 is such that float valve member 26 will close aperture 24 before the water level in outflow compartment 20 has been depressed to the level of the lower extremity of web 18. When the gust of wind has subsided, the water level in the two compartments will again be equalised as shown in FIG. 3 and outflow of water through outlet 16 will be resumed.

In the alternative form of the invention illustrated in FIGS. 5 to 8 inclusive a drain valve 40 is installed at one end of the sill 42 of a window, the stile 44 and the sill 42 being partly recessed to accommodate the valve. The stile 44 has two recesses 46, 48 to accommodate the two panes of a window, the recess being defined by an external rib 50, an internal rib 52 and a separating

rib 54. These ribs are shortened as best seen in FIGS. 7 and 8 to accommodate corresponding upstanding ribs 56, 58 and 60 on the body of valve 40. The valve thus has two recesses 62 and 64 on its upper surface to catch water draining from the respective window panes.

FIG. 8 illustrates the sill 42 of the window having recesses 66 and 68 corresponding to the recesses 62 and 64 in the upper surface of valve 40. Recess 68 is formed with an upwardly projecting track 69 to support the inner sliding pane of the window. The sill 42 is formed with screwing projections 70 adapted to receive screws 72 which pass through the stile 44 of the window frame and through apertures 74 in the valve.

The sill includes a sub-sill 76 which slopes downwardly and outwardly of the building in which the window frame is installed and is positioned to receive water discharged through apertures 78 and 80 in one side wall of the valve 40. Aperture 78, which is adapted to collect water drained from the outer fixed pane of the window, is directly connected to recess 62 in the upper surface of the valve 40. Aperture 80, on the other hand, is connected to an outflow compartment 82 within the valve 40. Compartment 82 is separated from an inflow compartment 84 by a downwardly extending web 86. A float valve member 88 is located within inflow compartment 84 below an inlet aperture 90 (see FIG. 5) and is adapted to close aperture 90 when the water level in inflow compartment rises.

The lowest point of aperture 80 is selected to maintain a water level in the outflow and inflow chambers similar to that illustrated in FIG. 7 and web 86 extends downwardly a sufficient distance to ensure that, when wind pressure acts against aperture 80, float valve member 88 will rise to close inlet aperture 90 before the water level in outflow compartment 82 has fallen below the lowest point of web 86. It will thus be clear that the principle operation of this form of valve is similar to that of the form of valve illustrated in FIGS. 1 to 4.

In an alternative form of the invention (not illustrated) the valve may have a circular inlet aperture closed by a float valve member in the form of a spherical ball. The construction of the valve may be generally as above described, i.e., having an inflow chamber, an outflow chamber separated from the inflow chamber by the depending web and an outlet connected to the outflow chamber. In some cases the inflow chamber, where a ball is used as the float valve member, may be of generally conical configuration, tapering upwardly, to guide the ball on to its seat.

I claim:

1. A window drain valve in combination with a horizontal window sill having a water drain aperture in its lower surface and an aperture in its external face, said

window drain valve having a body section disposed below said sill and also having a cover with an inlet slot formed therein being in communication with a liquid-containing inflow compartment formed in said body section, said inlet slot also being aligned with said drain aperture, said window drain valve having an overflow outlet aperture in communication with a liquid-containing outflow compartment formed in said body section, said overflow outlet facing horizontally and disposed at a level below said drain aperture while being aligned with said aperture in the external face,

wherein a downwardly projecting web from said cover divides said body section into said inflow and outflow compartments, said compartments being in liquid communication with each other, said compartments having upright walls extending from a bottom wall to said cover,

wherein a float valve member is provided in said inflow compartment and is arranged so that an increase in external air pressure against said outlet reduces the level of liquid in said outflow compartment and correspondingly raises the level of liquid in said inflow compartment to move said float valve member toward a position in which it closes said inlet,

said downwardly extending web being of sufficient length to ensure that said float valve member will reach its closed position before the liquid in said outflow compartment has dropped to the lower extremity of said web, and said overflow outlet being at a level such that liquid entering through the inlet passes under the web and out the inlet without raising the float valve member to a closed position.

2. A valve as claimed in claim 1 adapted to be located at the junction between the stile and the sill of an extruded aluminium window, said valve having an upper surface provided with a pair of cavities adapted to be aligned with the cavities for window panes in said sill and stile, one of said valve cavities being in communication with an outlet aperture adapted to discharge liquid to a sub-sill of said sill, and the other of said cavities being in communication through said inflow and outflow compartments with said outlet, said outlet being arranged to discharge liquid to said sub-sill.

3. A valve according to claim 1 wherein said float valve member is of elongated cylindrical configuration and said inlet is in the shape of a slot having substantially parallel sides.

4. A valve as claimed in claim 1 wherein said float valve member has a substantially spherical configuration and wherein said inflow compartment, at least in the area immediately below said inlet, has a frusto-conical configuration.

* * * * *