A wall ventilation device and associated method of use, which device includes a plurality of orifices in the front of the device and a means for filtering in the rear of the device to achieve an improved method of ventilating the exterior walls of a brick home, reducing the likelihood of mold buildup, and reducing unwanted pest entry through the traditional weep holes placed between layers of brick.
WALL VENTILATION APPARATUS AND METHOD OF VENTILATING A WALL STRUCTURE

BACKGROUND OF THE INVENTION

[0001] 1. Field of The Invention

[0002] The present invention relates to ventilation of structures or portions of structures and to the prevention or abatement of fungal growth in structures.

[0003] 2. Background Information

[0004] Weep holes are small rectangular spaces or circular holes left in the masonry on the exterior walls of homes built for residential use. Weep holes are placed in several different areas on the exterior wall of homes, such as: in the outside of masonry walls near the home’s foundation, below all windows and door sills, at the top of all window, door and any other wall opening, at supporting points, at shelf angles, at copings, projecting trim, and at wall and roof intersections. Weep holes have been used increasingly in brick homes over the past 30 years and are required by the International Building Code in order to ventilate the cavity between the interior and exterior walls of a home.

[0005] Unfortunately, weep holes are actually a very ineffective means of carrying out their intended function: promoting healthy ventilation of the home, preventing the growth of toxic mold on the interior walls of residential homes, and in preventing unwanted pests from entering the home. Nevertheless, over the past 50 years, weep holes have been the only method used for ventilating the exterior walls of brick homes built for residential use. In fact, most residential building codes in the United States require builders to place weep holes, usually open vertical mortar joints, in the first course of masonry above finished ground level, as well as in the previously mentioned places on the exterior of residential homes.

[0006] Weep holes were originally intended to prevent rain water from coming in the exterior wall of a residential home by controlling the water, which has penetrated the walls. Masonry walls are known to leak, especially in today’s housing market, where homes are built faster and cheaper than ever. Of course, a tightly sealed mortar joint is a masonry walls first line of defense against water penetration. However, water can easily pass through a crack that is merely \( \frac{\text{1}}{100} \) th of an inch wide. Hairline cracks in the mortar between bricks are common and nearly invisible, allowing water to enter the exterior wall of a residential home. As a result, weep holes are supposed to allow the water that accumulates on the flashing to drain out of the home. Moreover, weep holes are supposed to equalize the air pressure on both sides of the exterior wall, making it less likely that wind-driven rain will penetrate the wall. When water does penetrate the wall, weep holes are supposed to expel it, and adequate ventilation through the holes would help dry the cavity between the inner and exterior walls of the home. Finally, the presence of weep holes is supposed to allow any condensation that accumulates on the inner surface of the brick to dissipate.

[0007] In many cases, construction companies fail to install the necessary weep holes when building a new home, or the holes are mistakenly covered by residents of the homes after construction. Currently, the most common technique for placing weep holes in the exterior of a home requires the builder to leave an open space where mortar would otherwise be placed between two bricks. Unfortunately, the open spaces needed to create weep holes are easily forgotten when contractors and subcontractors are laying brick. Often the contractor is hurried or distracted and, as a result, the brick and mortar are placed without the requisite weep holes. Further, home owners are often unaware of the purpose or existence of weep holes. As a result, many home owners, after seeing the lack of masonry in their home, will actually fill the gaps created by weep holes with caulking in order to prevent water and pests from entering the exterior wall of the home. Finally, even if the contractor does properly install the weep holes and the home owner does not mistakenly fill the weep hole with caulking, many weep holes are filled with dirt, debris or landscaping over normal course of time.

[0008] Without proper ventilation, residential homes are subject to greater risk of exposure to toxic mold. For years, experts in building science have predicted that changes in building materials and improper building techniques would eventually cause widespread mold problems for homeowners. Today, home builders are commonly using paper-covered gypsum board, cellulose ceiling tile, particle board and other materials that are highly susceptible to toxic mold growth. When combined with the inadequacies of weep holes, other features designed to boost energy efficiency, such as tight windows and walls, preclude the necessary air-flow between the exterior and interior walls of the home, creating serious moisture problems. Currently, the only method used to provide ventilation through exterior masonry walls of a residential home are weep holes. As previously stated, weep holes are often not installed or sealed by unknowing home owners. Their ability to be easily blocked and inability to be easily opened or closed, for more or less ventilation, promotes the further growth of mold in the home. According to David Weekly Homes, a large home builder in the Southwest United States, the primary tool to fight mold in homes is ventilation. Unfortunately, weep holes have failed to provide the needed ventilation for the prevention of mold growth. Studies show that most mold problems resulting from a lack of ventilation are formed between the exterior and interior walls, going unnoticed by home owners for months and years. The only way to remove the mold is to tear down parts of the interior or exterior walls of the home. Thus, mold literally destroys the home from within, devouring the paper on Sheetrock and the glue that hold together particle board and other materials. In one recent Texas case, the framing of a house was found to be rotting because water had been trapped behind the exterior brick wall of the home. The home was appraised at $60,000 and needed an estimated $450,000 in repairs.

[0009] The growth of mold in residential homes has caused enormous economic and physical damages to home owners over the past several years. As recently as 2001, mold cases in residential homes within the United States cost the insurance industry an estimated $18 billion dollars. In addition, over the past three years, the number of mold related claims has risen by 500% and the average cost of a mold claim has increase by over 800%. More importantly, mold has caused numerous health related risks and hazards to humans. According to the Center for Disease Control (the "CDC"), toxic mold may cause pulmonary hemorrhage or memory loss. Further, the CDC reports that inhaling mold in a residential home may cause respiratory problems, hay
fever, allergic reactions, and an increased risk in infections. However, the CDC, the Environmental Protection Agency (the “EPA”), and other research analysts have insisted that mold alone will not typically cause health problems. According to the EPA, mold exists in every home. It is only where mold is present in a damp, poorly-ventilated environment that mold can become hazardous to homes and humans. Consequently, an effective means for ventilating the exterior walls of brick homes is desperately needed for the economic and physical health of home owners in the United States.

Another unresolved problem with the current weep hole technology is the inability for weep holes to prevent unwanted pests from entering the home. Numerous pest control companies have insisted that weep holes are a primary source of unwanted pests entering residential homes. Pests such as mice, snakes, and insects will often enter the weep hole in search of a dark, damp environment in which to nest. Similarly, the Texas Agricultural Extension Service has reported that bees and wasps, who like to nest in protected locations and cavities, have been known to enter the exterior walls of homes through weep holes, forming colonies in the interior cavity between the exterior and interior walls of the home. This problem costs home owners millions of dollars each year in pest control. Further magnifying the problem, the typical home owner will remedy the infestation by sealing the weep hole, without understanding the purpose of the hole in providing much needed ventilation and water drainage. Many pest control companies suggest covering weep holes with a wire screen. But covering every weep hole on a residential home (which may have over 100 weep holes) is time consuming, difficult and ineffective at controlling pests and promoting the healthy ventilation of the home.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved method of ventilating the exterior walls of a brick home, reducing the likelihood of mold buildup and preventing health and economic risks associated with mold buildup in the home.

It is another object of the present invention to reduce unwanted pest entry through the traditional weep holes placed between layers of brick.

In satisfaction of these and related objects, the present invention provides a robust method of preventing dangerous and costly mold buildup in homes while reducing the number of pests allowed through traditional weep holes. Furthermore, the superior design of the device will prevent home owners from covering well needed ventilation means by removing the purpose for covering the ventilation means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a frontal view of the preferred embodiment.

FIG. 2 is a rear view of the preferred embodiment.

FIG. 3 is a top plan view of the preferred embodiment.

FIG. 4 is a perspective view of the preferred embodiment.

FIG. 5 is an elevational side view of the preferred embodiment.

FIG. 6 is an exploded perspective view of the preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The brick ventilation device is identified generally by the reference number 5 in the accompanying drawings. Device 5 is made up of three essential parts: (1) a face plate 10, (2) a louver plate 12 which is slidably supported in a juxtaposed position with face plate 10, and (3) an encasing member 20.

Face plate 10 is in the preferred embodiment, a rectangular plate which, when put into place, will sit generally flush with an exterior brick wall, as seen in FIG. 1. Face plate 10 will preferably be made of aluminum or some other metallic alloy. In the alternative, however, plastic may be a suitable substitute.

Face plate 10 includes a plurality face plate orifices 14, while louver plate 12 includes louver plate orifices 15. Louver plate orifices 15 align with face plate orifices 14 when louver plate 12 slides to one limit of its movement (in the ventilation position), but are out of alignment, and prevent such ventilation, when louver plate 12 is at the other limit of movement (in the closed position).

Louver plate 12 is substantially rectangular in nature in the preferred embodiment, and is juxtaposed in a flush configuration with face plate 10, as seen in FIG. 6.

In the presently preferred embodiment, louver plate 12 is connected to face plate 10 by four rivets punched through face plate 10 and louver plate 12, as seen in FIG. 6.

In the presently preferred embodiment, a lever mechanism 16 protruding out from face plate 10 is actually connected to and a part of louver plate 18, as seen in FIG. 20. By manually sliding the lever to each limit of its movement, louver plate 18 is correspondingly slid back and forth to the same degree behind face plate 10, having an opening and closing effect on the series of face plate orifices 14 on face plate 10. In reality, the sliding of lever mechanism 16 moves louver plate orifices 15 on louver plate 18 out of sync with face plate orifices 14 on face plate 10, effectively closing the openings which were created by lining up face plate orifices 14 on face plate 10 and louver plate 18.

Encasing member 20 is in the preferred embodiment a substantially rectangular prism, allowing air and water to pass freely through device 5, as seen in FIG. 6. Encasing member 20 will preferably be made of aluminum or some other metallic alloy. One side of encasing member 20 is open, allowing face plate 10 and louver plate 18 to be attached, forming a front of brick ventilation device 5. On the rear end of encasing member 20 is a filtering mechanism 24, which prevents unwanted pests from entering the interior of the home, as seen in FIG. 2. The bottom, sides and top of encasing member 20 form the outer structure of the device, which will preferably be surrounded by the other bricks.

Although the invention has been described with reference to specific embodiments, this description is not meant to be construed in a limited sense. Various modifica-
tions of the disclosed embodiments, as well as alternative embodiments of the inventions will become apparent to persons skilled in the art upon the reference to the description of the invention. It is, therefore, contemplated that the appended claims will cover such modifications that fall within the scope of the invention.

I claim:

1. A device for providing ventilation and eliminating unwanted pest entry through the outer wall of a structure comprising:

   a face plate having a ventilation means for providing air ventilation through said face plate;
   a mechanism for the opening and closing of said ventilation means on said face plate; and
   an encasing member sized and shaped for reception into an opening of a wall structure and having openings in communication with said ventilation means and with space adjacent said apparatus, opposite said face plate.

2. The device of claim 1 wherein said ventilation means comprises:

   a first plurality of orifices in said face plate;
   a louver plate juxtaposed to said face plate and having a second plurality of orifices which, when substantially aligned with said first plurality of orifices, provides ventilation through the combination of said face plate and said louver plate; and
   means for moving said louver plate relative to said face plate for moving between a first ventilation position wherein said first and second plurality of orifices are substantially aligned for providing said ventilation and a second position wherein said first and second plurality of orifices are substantially non-aligned for substantially obstructing air flow through said combination of said face plate and said louver plate.

3. The device of claim 2 further comprising filter means attached to said encasing member.

4. A method for providing ventilation to an interior space of a wall structure comprising the steps of:

   selecting a device comprising:
   a face plate having a ventilation means for providing air ventilation through said face plate;
   a mechanism for the opening and closing of said ventilation means on said face plate; and
   an encasing member sized and shaped for reception into an opening of a wall structure and having openings in communication with said ventilation means and with space adjacent said apparatus, opposite said face plate.

   inserting said encasing member into an opening formed in a wall structure to establish air flow communication between space outside of said wall and space interior of said wall structure; and

   securing said device in said opening.

5. The method of claim 4 wherein said ventilation means of said device comprises:

   a first plurality of orifices in said face plate;
   a louver plate juxtaposed to said face plate and having a second plurality of orifices which, when substantially aligned with said first plurality of orifices, provides ventilation through the combination of said face plate and said louver plate; and

   means for moving said louver plate relative to said face plate for moving between a first ventilation position wherein said first and second plurality of orifices are substantially aligned for providing said ventilation and a second position wherein said first and second plurality of orifices are substantially non-aligned for substantially obstructing air flow through said combination of said face plate and said louver plate.

6. The method of claim 5 wherein said device further comprises filter means attached to said encasing member.

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