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ABSTRACT

The present invention relates to a louvre vent assembly and blade therefor. The assembly is aesthetically pleasing and more effective in providing a barrier to strong wind and rain in that the blades are generally S-shaped and are arranged in a vertically disposed "interlocking" relationship, providing a more complex air flow path through the vent and less likelihood for water from rainfall to penetrate a building through the vent.
Fig 4
Improved louvre vent assembly and blade therefor

The present invention relates to a louvre assembly for use in ventilating a building, the assembly having a plurality of louvre blades secured within an outer frame. More specifically, the present invention relates to a multi-bladed louvre assembly and a blade therefor, the louvre assembly being aesthetically pleasing whilst providing a more effective barrier to wind and rain.

BACKGROUND OF THE INVENTION

Louvre vents have long been used in association with buildings and equipment to permit the intake and exhaust of air. In providing minimal airflow through a building for example, mildewing is reduced and the vent allows for the escape of hot air within the building.

Conventionally, louvres have comprised a plurality of metal louvre blades secured within an outer metal frame of generally rectangular shape. The blades are typically flat and angled downwardly so that rain which falls onto the blades is directed downwardly and outwardly with respect to the structure being vented.

A problem with louvre vents of the prior art is that they are often quite aesthetically displeasing, and in strong wind and rain environments, often do not form an effective barrier against the elements. As mentioned, the purpose of a louvre is to allow for minimal airflow, however, in strong wind environments air flow through a louvre of the type described above can be excessive. Furthermore, during heavy rainfall and strong winds, rain drops can often be blown up the flat angled surface of the louvre blades and into the building.

It is an object of the present invention to overcome the aforementioned problems, or at least provide the public with a useful alternative.

SUMMARY OF THE INVENTION

Therefore, in a first form of the invention there is proposed a louvre blade for use in a louvre vent, said blade including an elongate body including a generally S-shaped cross-section. The cross sectional shape of the blade is advantageous because it provides a complex flow path for air entering the vent.

Preferably the blade is adapted to extend substantially horizontally.
Preferably said blade includes an upper curved edge and a lower curved edge which form said S-shaped profile, wherein at least one of said upper or lower curved edges terminates in a hooked section for affecting the flow of air.

In preference when said blade includes a lower hooked section, the lower hooked section provides a channel for liquid which collects on said blade. Typically, liquid may collect in rainfall and strong wind environments wherein water which falls on the surface of each blade is blown up and into the lower curves of each blade by the force of the wind.

In a further form of the invention there is proposed a louvre vent assembly including:
an outer frame including walls defining an opening there through;
a plurality of blades adapted to be housed between said walls such that said blades extend across said opening, each of said blades includes a generally S-shaped cross section having an upper curved edge and a lower curved edge; and
wherein adjacent blades are arranged such that the lower curved edge of a first blade extends inside the upper curved edge of a second blade.

Preferably said assembly includes a plurality of disposed adjacent blades arranged as defined above, thereby providing a complex air flow path through said vent.

Preferably the outer frame is square or rectangular and includes vertical side walls between which each blade extends horizontally, the blades being in a vertically disposed arrangement.

In preference at least one of said upper or lower curved edges of each blade terminates in a hooked section for further disrupting the flow of air.

Preferably said lower curved edge of each blade terminates in a hooked section for providing a channel for liquid which collects on said blade.

In a still further form of the invention there is proposed a louvre vent assembly including:
an outer frame including walls defining an opening there through;
a plurality of elongate blades extending across said opening, each of said blades including a generally S-shaped cross section having a central rod which separates an upper curved edge and a lower curved edge forming said S-shape, said central rod being rotatably housed between said walls; and
wherein adjacent blades are arranged such that the lower curved edge of a first blade extends inside the upper curved edge of a second blade, and so on, thereby providing a complex air flow path through said vent.
In preference said rods and hence said blades are rotatable between a fully open position which allows for maximum air flow through said vent, and a fully closed position which allows for minimum air flow through said vent.

Preferably rotation of said rods is achieved using a manual actuation means.

Alternatively rotation of said rods is achieved using an electrical actuation means.

In preference the outer frame is square or rectangular and includes vertical side walls between which each rod extends horizontally in a vertically disposed arrangement.

Preferably at least one of said upper or lower curved edges of each blade terminates in a hooked section for further disrupting the flow of air.

In preference said lower curved edge of each blade terminates in a hooked section for providing a channel for liquid which collects on said blade.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate several implementations of the invention and, together with the description, serve to explain the advantages and principles of the invention. In the drawings,

Figure 1 illustrates a perspective view of a louvre vent assembly in accordance with a first embodiment of the present invention;

Figure 2 illustrates a vertical cross sectional view of the louvre vent assembly of Figure 1;

Figure 3 illustrates a perspective view of a single blade from the louvre vent assembly of Figure 1;

Figure 4 illustrates an enlarged cross sectional view of two adjacent blades of the louvre vent assembly of Figure 1; and

Figure 5 illustrates an enlarged cross sectional view of two adjacent blades of a louvre vent assembly in accordance with a second embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS
The following detailed description of the invention refers to the accompanying drawings. Although the description includes exemplary embodiments, other embodiments are possible, and changes may be made to the embodiments described without departing from the spirit and scope of the invention. Wherever possible, the same reference numbers will be used throughout the drawings and the following description to refer to the same and like parts.

The present invention relates to a louvre vent assembly 10 and blade 12 therefor. The assembly 10, which includes a plurality of vertically disposed blades 12, is shown in Figure 1 where it can be appreciated immediately how aesthetically pleasing the assembly 10 is when compared to hitherto known assemblies. As will be discussed further below, the overall pleasing appearance and also the effectiveness of the louvre vent assembly is achieved by the particular shape, configuration and arrangement of the blades 12.

The assembly 10 shown in Figure 1 and in cross section in Figure 2 includes an outer frame 14 adapted to hold the louvre blades 12 in place horizontally between side walls 16 thereof. It is to be understood that the shape and configuration of the frame 14, and the way in which the blades 12 are held in place inside the frame 14, is not intended to be limited to the embodiment shown. For example, the frame could be triangular in shape, or even concave for example, in which case the length of each of the louvre blades 12 housed inside the frame would need to be different and perhaps the ends of each blade 12 profiled accordingly.

Turning now to Figures 3 and 4 which illustrate the shape of the blade most clearly, each blade 12 includes a generally S-shaped cross section and is mounted such that the upper curved edge 18 of one S-shaped blade extends inside the lower curved edge 20 of a second S-shaped blade disposed thereabove, and so on. The blades 12 are thus arranged in an “interlocking” type arrangement, but of course do not touch one another, although abutment of the blades may well be a possibility as will become apparent.

The shape and “interlocking” arrangement of the vertically disposed S-shaped blades 12 provide a functional improvement over existing louvre vents in a number of ways. Firstly, the path of air from outside a building (not shown) to inside the building, via the assembly 10, is more complex. Air must first travel forwards over and around the upper curve 18 of a blade, then back and under the lower curve 20 of an upper blade, before proceeding forwards again into the building. This air flow is indicated in Figure 4 by arrows 22. It can be seen that whilst the assembly will perform its function of providing ventilation to the building, it will not allow for excessive air flow when, for example, there are strong winds present outside the building. In addition, when there is also rainfall outside the building, there is less chance of water being
sprayed onto the blades, up and inside the building as does often occur when using flat angled blades.

In the embodiment shown, the upper and lower edge of each blade terminates in a rounded off hook section 24. Whilst this is a result of the manufacturing process for producing the S-shape of each blade 12, it also provides a useful advantage in that it causes further disruption to the natural flow of air through the internal curves of adjacent blades, and provides a reservoir for any water which may be sprayed onto the blades during excessive rainfall and strong wind. Although not shown, each blade 12 could indeed be mounted on a very slight angle from horizontal such that any liquid which does collect in the lower hooked edges 24 will travel towards the ends of each blade, this preventing build up of liquid. Each blade 12 and also the frame 14 is preferably constructed from a weatherproof material, as is known in the art.

Figure 5 illustrates an enlarged view of two adjacent blades 26 of a louvre vent assembly according to a second embodiment. The difference resides in the fact that rather than each blade 26 being fixed between side walls 16 of a frame 14, they are mounted to (or alternatively, integrally formed with) rotatable rods 32 extending longitudinally along a central axis of each blade between the upper 18 and lower 20 edges. The rods 32 extend between each side wall of the frame, and can be mounted using any suitable fastening means which allows for rotation of the rods.

The skilled addressee would realise that in this configuration, rotation of the rods 32 causes rotation of the S-shaped blades 26, and that a louvre vent assembly including such an arrangement is now adjustable to allow for more or less ventilation into a building as required. For example, if both of the S-shaped blades 26 shown in Figure 5 were to be rotated in say the anticlockwise direction, this would increase the flow path of air through the vent, whilst rotating the blades in the clockwise direction would decrease the flow path. Flow can also be prevented completely if the blades 26 are rotated to an extent where the lower edge 20 edge abuts with the inside curve of the upper edge 18 of a blade disposed there below, and the upper edge 18 of the blade below abuts with the inside curve of the lower edge 20 of the blade thereabove.

It is to be understood that actuation of the rods may be achieved using any known means. For example, rotation of the rods could be mechanically achieved through use of a connecting manual lever (provided the vent is within human reach). Alternatively, actuation could be achieved using for example an electric motor associated with each or a plurality of rods such that when the motor is activated, the rods rotate. A building could include a wall mounted control panel for example whereby a user can activate rotation of the rods in either the
clockwise or anticlockwise direction by pressing a switch. Further, rotation of the blades need not be to the fully open or closed positions, but anywhere in between too, allowing for maximum user flexibility.

Further advantages and improvements may very well be made to the present invention without deviating from its scope. Although the invention has been shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope and spirit of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

In any claims that follow and in the summary of the invention, except where the context requires otherwise due to express language or necessary implication, the word “comprising” is used in the sense of “including”, i.e. the features specified may be associated with further features in various embodiments of the invention.
CLAIMS:

1. A louvre blade for use in a louvre vent, said blade including an elongate body of a generally S-shaped cross section.

2. A louvre blade according to claim 1 wherein at least a lower curved edge of said blade terminates in a hooked section.

3. A louvre vent assembly including a plurality of disposed blades as defined in claim 1 or claim 2, the blades being so arranged that a lower curved edge of one blade extends inside the upper curved edge of an adjacent blade.

4. A louvre vent assembly including:
   a frame including walls defining an opening there through;
   a plurality of blades adapted to be housed between said walls such that said blades extend across said opening, each of said blades includes a generally S-shaped cross section having an upper curved edge and a lower curved edge; and
   wherein adjacent blades are arranged such that the lower curved edge of a first blade extends inside the upper curved edge of a second blade.

5. A louvre vent assembly including:
   a frame including walls defining an opening there through;
   a plurality of elongate blades extending across said opening, each of said blades including a generally S-shaped cross section and wherein adjacent blades are arranged such that the lower curved edge of a first blade extends inside the upper curved edge of a second blade; and
   a means of rotating said blades between a fully open position which allows for maximum air flow through said vent, and a fully closed position which allows for minimum air flow through said vent.