(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 968 349 B2

(12) **NEW EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the opposition decision:
13.12.2006 Bulletin 2006/50

(45) Mention of the grant of the patent:
16.07.2003 Bulletin 2003/29

(21) Application number: **98909651.6**

(22) Date of filing: **17.03.1998**

(51) Int Cl.:
E05D 15/34 *(2006.01)* ***E05D 15/12*** *(2006.01)*

(86) International application number:
PCT/GB1998/000787

(87) International publication number:
WO 1998/042941 (01.10.1998 Gazette 1998/39)

(54) **A VENT**

EIN ENTLÜFTUNGSFENSTER

EVENT

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IE IT LI NL PT

(30) Priority: **20.03.1997 GB 9705721**

(43) Date of publication of application:
05.01.2000 Bulletin 2000/01

(73) Proprietor: **SECURISTYLE LIMITED**
Cheltenham, Gloucestershire GL51 7RE (GB)

(72) Inventors:
- **STRATFORD, Grant, Russell**
  South Cerney,
  Gloucestershire GL7 5XX (GB)
- **BAKER, Neil, Martin**
  Barnwood,
  Gloucestershire GL4 7JN (GB)

(74) Representative: **Jackson, Richard Eric**
Carpmaels & Ransford,
43 Bloomsbury Square
London WC1A 2RA (GB)

(56) References cited:
EP-A- 0 552 721
CH-A- 75 417
FR-A- 1 220 735
WO-A-87/05963
DE-U- 9 200 039
FR-A- 2 690 198

EP 0 968 349 B2

Description

[0001] This invention relates to vents.

[0002] Various sorts of vent exist wherein an opening member moves relative to a fixed-frame member between a position closing the vent and an open position. Often the opening member is supported by two hinges on opposite sides of the opening member and one free side of the opening member swings outwardly from the fixed frame whilst the other free side of the opening member remains close to the fixed frame. Such arrangements are satisfactory in most instances and are well known.

[0003] Another form of vent requires the opening member to move away from the fixed frame whilst remaining substantially parallel at all times to the fixed frame. Parallel hinges are known which, when attached to opposite sides of the opening member, enable both free sides of the opening member to move away from the fixed frame during opening of the vent. Such parallel hinges are described in French patent application FR-1220735. However, If a drive means, such as a motor driven plunger, drives one free side of the opening member away from the fixed frame, misalignment and crabbing of the opening member can occur due to only three sides of the opening member being supported. Hence, to try to overcome this type of problem associated with the prior art vents of this kind, it has been known to apply a second drive means to the second free side of the opening member to assist in driving the opening member away from the fixed frame during opening of the vent. Although this arrangement has overcome the problem highlighted above, the cost of a second drive means is not insubstantial.

[0004] With the foregoing in mind, the present invention aims to Improve upon the known prior art vents of the parallel hinge type. More particularly, the present applicant has found that a relatively simple alternative arrangement overcomes the problems associated with the prior art without incurring significant expense.

[0005] According to the present invention, there is provided a parallel hinge according to claim 1.

[0006] The sliding shoes may be lipped sliders. The friction between each sliding shoe and its respective track is preferably adjustable.

[0007] According to another aspect of the present invention, there is provided a vent comprising a fixed frame and an opening member attached to the fixed frame by parallel hinges according to claim 1 hereinafter, the opening member being movable between a position closing the vent and an open position, wherein three hinges support three sides of the opening member such that the opening member, when moving, is constantly substantially parallel to the fixed frame.

[0008] In such a vent, the opening member may be movable between a position closing the vent and an open position by drive means, wherein three hinges support three sides of the opening member and a fourth side is driven by the drive means. As a result, smoother opening of such a vent occurs without the need for a second drive means.

[0009] Although the arrangement may appear relatively straight forward once the invention has been explained, it was not obvious to those skilled in the art because it was thought that a hinge on the side of the opening member opposite to the drive means would simply collapse during opening, thereby resulting In misaligned opening as with the prior art vents which used only one drive means,

[0010] Preferably the opening member is four sided, In theory, however, an opening member with more sides, and perhaps with more hinges but only one drive means, could also take advantage of the present invention.

[0011] Preferably the drive means Is motor driven. In theory, however, the drive means could be activated by a manual drive device, for example, or by hand. If the drive means is motor driven, it preferably has an electric motor.

[0012] Following significant use of a vent according to the present invention, one or more of the hinges may begin to sag, thereby placing unwanted stresses in the vent system. Hance, it may be desirable to include an adjustment means for repositioning at least one of the hinges after initial installation, thereby assisting smooth operation of the hinges. Such a hinge adjustment means is described in detail in U.K. patent application GB. 2313405. Other devices may of course alternatively be used.

[0013] A guidance means is preferably included for guiding the opening member during closing of the vent to assist in weathersealing of the vent. Such a guidance means may comprise a roller and keep mechanism which assists in pulling-in the opening member during closing of the vent. In a particular embodiment, a roller may be provided on the opening member and a keep provided on the fixed frame or hinge to guide the roller via a camming action.

[0014] The opening member is preferably a window, but other forms of vent, such as a simple air vent, could also take advantage of the present invention.

[0015] Preferably the drive means acts, in use, on the lower or bottom side of the opening member, in theory, however, the drive means could alternatively act on the top or upper side of the opening member. In any event, the drive means preferably acts on the upper or lower side of the opening member, rather than the right or left side of the opening member.

[0016] A specific embodiment of the present invention is now described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a schematic perspective view of a prior art vent;

Figure 2 is a schematic perspective view of a vent according to the present invention; and

Figure 3 is a schematic plan view of a parallel hinge according to the present invention.

[0017] With reference to the drawings, a prior art vent 1 comprises a fixed frame 3, an opening member 5, a pair of parallel hinges 7 and a pair of motor drives 9. The parallel hinges 7 are mounted between the fixed frame 3 and the opening member 5 on the right and left sides of the vent. The two motor drives 9 are mounted on an upper and lower edges of the fixed frame 3 and engage upper and lower sides of the opening member 5. During opening of the vent 1, the motor drives 9, when activated, each drive a plunger 11 away from the fixed frame 3 and force the opening member 5 to travel outwardly from the fixed frame. Due to the use of two motor drives 9. the opening member 5 is held substantially parallel to the fixed frame throughout the opening process. The parallel hinges 7 obviously assist in this regard.

[0018] A vent 10 according to the present invention is shown in Figure 2 of the drawings. Although the general arrangement of the fixed frame 3, opening member 5 and parallel hinges 7 mounted on opposite sides of the opening member 5 are substantially the same as the corresponding components in the prior art vent 1 shown in Figure 1, the two motor drives 9 of the prior art are not included. Rather, the upper and lower sides of the opening member 5 are attached to the fixed frame 3 by means of only one motor drive 9 and a third parallel hinge 12. This third parallel hinge 12 is the same type of hinge as the parallel hinges 7 used elsewhere in the vent 10.

[0019] Although all four sides of the opening member 5 are once again supported either by a parallel hinge 7,12 or the motor drive 9 as in the prior art vent 1, the applicant has found surprisingly that the second motor drive 9 can be replaced by the third parallel hinge 12. This arrangement was in no way an obvious arrangement to try, because those skilled in the art considered that the alignment of the opening member 5 could not be held in the desired orientation without the use of a second motor drive 9. Accordingly, the significant advantage provided by only requiring one expensive motor drive 9, rather than two, can be realised by means of the vent arrangement according to the present invention.

[0020] A typical parallel hinge for use in a vent 10 according to the present invention comprises two mounting plates 13 joined by two links 15 which are both pivotally attached to each mounting plate 13 and pivotally attached to each other at a central pivot 17. One of the mounting plates 13 is for attachment to the fixed frame 3 and the other mounting plate 13 is for attachment to the opening member 5.

[0021] A preferred novel form of parallel hinge 12, which helps to improve the performance of a vent 10 according to the present invention, has mounting plates 13 which are C-shaped in section. These C-shaped tracks 13, which are shown in Figure 3 of the drawings, each carry a sliding shoe 19 (or slider), which carries one end of a link 15. More particularly, one end of each link 15 is pivotally mounted to a sliding shoe 19, thereby allowing the end of the link 15 to move back and forth along the track 13 during use of the hinge 12.

[0022] Each sliding shoe 19 includes a device (not shown) for adjusting the friction between the sliding shoe 19 and its respective track 13. As a result, the opening and closing of the hinge 12 can be controlled more accurately.

[0023] It will of course be understood that the present invention has been described above purely by way of example, and that modifications of detail can be made within the scope of the invention as defined by the appended claims.

Claims

1. A parallel hinge (7,12) comprising a pair of parallel tracks (13) and a pair of diagonally crossing links (15) **characterised in that** the tracks (13) are C-sectioned tracks, the diagonally crossing links (15) are each pivotally connected to each track (13) and to each other, and wherein each track (13) accommodates a sliding shoe (19) which carries a pivot connected to a respective link (15).

2. A hinge as claimed in claim 1, wherein the sliding shoes (19) are lipped sliders.

3. A hinge as claimed in claim 1 or claim 2, wherein friction between each sliding shoe (19) and its respective track (13) is adjustable.

4. A vent (10) comprising a fixed frame (3) and an opening member (5) attached to the fixed frame (3) by parallel hinges (7,12) as claimed in any preceding claim, the opening member (5) being movable between a position closing the vent and an open position, wherein three hinges (7,12) support three sides of the opening member (5) such that the opening member (5), when moving, is constantly substantially parallel to the fixed frame (3).

5. A vent (10) as claimed in claim 4, wherein the opening member (5) is movable between a position closing the vent and an open position by drive means (9), and wherein three hinges (12) support three sides of the opening member (5) and a fourth side is driven by the drive means (9).

6. A vent as claimed in claim 5, wherein the drive means (9) is motor driven.

7. A vent as claimed in claim 6, wherein the drive means (9) is an electric motor.

8. A vent as claimed in any one of claims 5 to 7, wherein the drive means (9) acts, in use, on the lower or bottom side of the opening member (5).

9. A vent as claimed in any one of claims 4 to 8, further

comprising adjustment means for repositioning at least one of the hinges after initial installation.

10. A vent as claimed in any one of claims 4 to 9, further comprising guidance means for guiding the opening member (5) during closing of the vent to assist in weathersealing of the vent (10).

11. A vent as claimed in claim 10, wherein the guidance means comprise a roller and keep mechanism.

12. A vent as claimed in any one of claims 4 to 11, wherein the opening member is a window.

Patentansprüche

1. Paralleles Scharnier bzw, Gelenk (7, 12), umfassend ein Paar paralleler Schienen (13) und ein Paar diagonal gekreuzter Verbindungen (15), **gekennzeichnet dadurch, daß** die Schienen (13) Schienen mit C-förmigem Querschnitt sind, daß die diagonal gekreuzten Verbindungen (15) jeweils dreh- bzw. schwenkbar mit jeder Schiene (13) und untereinander verbunden sind, und wobei jede Schiene (13) einen Gleitschuh (19) unterbringt, welcher einen Drehpunkt bzw. Drehzapfen trägt, welcher mit einer entsprechenden Verbindung (15) verbunden ist.

2. Scharnier nach Anspruch 1, wobei die Gleitschuhe (19) mit einem Rand versehene Gleiter bzw. gelippte Gleiter sind.

3. Scharnier nach Anspruch 1 oder 2, wobei eine Reibung zwischen jedem Gleitschuh (19) und seiner zugehörigen Schiene (13) einstellbar ist.

4. Entlüftung bzw. Entlüfter (10), umfassend einen festen bzw, fixierten Rahmen (3) und ein Öffnungsglied (5), welches an dem festen bzw. befestigten Rahmen (3) durch parallele Scharniere (7, 12), wie nach einem der vorhergehenden Ansprüche beansprucht, befestigt ist, wobei das Öffnungsglied (5) zwischen einer die Entlüftung schließenden Position und einer offenen Position bewegbar ist, wobei drei Scharniere bzw. Gelenke (7, 12) drei Seiten des Öffnungsglieds (5) stützen, derart, daß das Öffnungsglied (5) beim Bewegen ständig im wesentlichen parallel zu dem festen Rahmen (3) ist.

5. Enfilüfiung (10) nach Anspruch 4, wobei das Öffnungsglied (5) zwischen einer die Entlüftung schließenden Position und einer offenen Position mit Hilfe eines Antriebsmittels (9) bewegbar ist bzw. bewegt werden kann, und wobei drei Schar niere (12) drei Seiten des Öffnungsgliedes (5) stützen und eine vierte Seite von dem Antriebsmittel (9) angetrieben ist.

6. Entlüftung nach Anspruch 5; wobei das Antriebsmittel (9) motorgetrieben ist.

7. Entlüftung nach Anspruch 6, wobei das Antriebsmittel (9) ein elektrischer Motor ist.

8. Entlüftung nach einem der Ansprüche 5 bis 7, wobei das Antriebsmittel (9) im Gebrauch auf die untere oder Bodenseite des Öffnungsgliedes (5) wirkt.

9. Entlüftung nach einem der Ansprüche 4 bis 8, weiterhin umfassend Einstell- bzw. Führungsmittel, um nach einer Erstinstallation wenigstens eines der Scharniere neu zu positionieren.

10. Entlüftung nach einem der Ansprüche 4 bis 9, weiterhin umfassend Führungsmittel, um das Öffnungsglied (5) während eines Schließens der Entlüftung zu führen, um beim Abdichten der Entlüftung (10) zu helfen.

11. Entlüftung nach Anspruch 10, wobei die Führungsmittel einen Walzen- bzw. Laufrollen- und Lager- bzw. Aufnahmemechanismus umfassen.

12. Entlüftung nach einem der Ansprüche 4 bis 11, wobei das Öffnungsglied ein Fenster ist.

Revendications

1. Articulation parallèle (7, 12) comprenant une paire de pistes parallèles (13) et une paire de liaisons (15) se croisant en diagonale, **caractérisée en ce que** les pistes (13) sont des pistes à sections en C, **en ce que** les liaisons (15) se croisant en diagonale sont respectivement montées à pivotement sur chacun des pistes (13) et l'une sur l'autre, et **en ce que** chaque piste (13) reçoit un sabot coulissant (19) qui porte un pivot relié à la liaison (15) correspondante.

2. Articulation selon la revendication 1, dans laquelle les sabots coulissants (19) sont des curseurs à lèvres.

3. Articulation selon la revendication 1 ou la revendication 2, dans laquelle le frottement entre chaque sabot coulissant (19) et la piste (13) associée est réglable.

4. Event (10) comprenant un cadre fixe (3) et un élément d'ouverture (5) fixé au cadre (3) par des articulations parallèles (7, 12) selon l'une quelconque des revendications précédentes, l'élément d'ouverture (5) étant mobile entre une position de fermeture de l'évent et une position d'ouverture, dans lequel trois articulations (7, 12) supportent l'élément d'ouverture (5) sur trois de ses côtés de façon que

l'élément d'ouverture (5), lorsqu'il se déplace, soit constamment sensiblement parallèle au cadre fixe (3).

5. Event (10) selon la revendication 4, dans lequel l'élément d'ouverture (5) est déplaçable entre une position de fermeture de l'évent et une position d'ouverture grâce à des moyens d'entraînement (9) et dans lequel trois articulations (12) supportent l'élément d'ouverture (5) sur trois de ses côtés et le quatrième de ses côtés est entraîné par les moyens d'entraînement (9).

6. Event selon la revendication 5, dans lequel les moyens d'entraînement (9) sont constitués par un moteur.

7. Event selon la revendication 6, dans lequel les moyens d'entraînement (9) sont constitués par un moteur électrique.

8. Event selon l'une quelconque des revendications 5 à 7, dans lequel les moyens d'entraînement 9 agissent, lors de l'utilisation, sur le côté inférieur de ou par dessous l'élément d'ouverture (5).

9. Event selon l'une quelconque des revendications 4 à 8, comprenant en outre des moyens de réglage destinés à repositionner au moins une des articulations après une installation initiale.

10. Event selon l'une quelconque des revendications 4 à 9, comprenant en outre des moyens de guidage destinés à guider l'élément d'ouverture (5) lors de la fermeture de l'élément afin de contribuer à rendre l'évent (10) étanche contre les intempéries.

11. Event selon la revendication 10, dans lequel les moyens de guidage comprennent un mécanisme à rouleau et de garde.

12. Event selon l'une quelconque des revendications 4 à 11, dans lequel l'élément d'ouverture est une fenêtre.

Fig.1

PRIOR ART

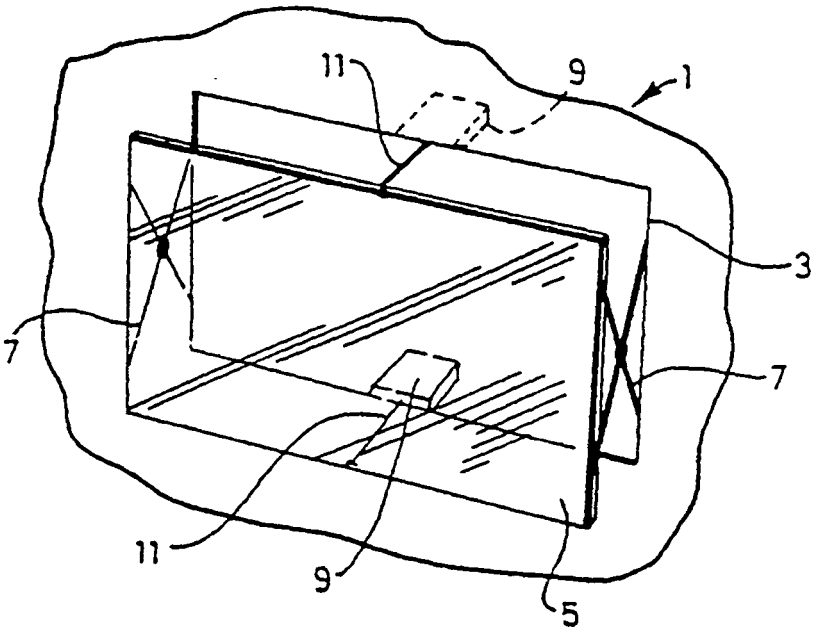
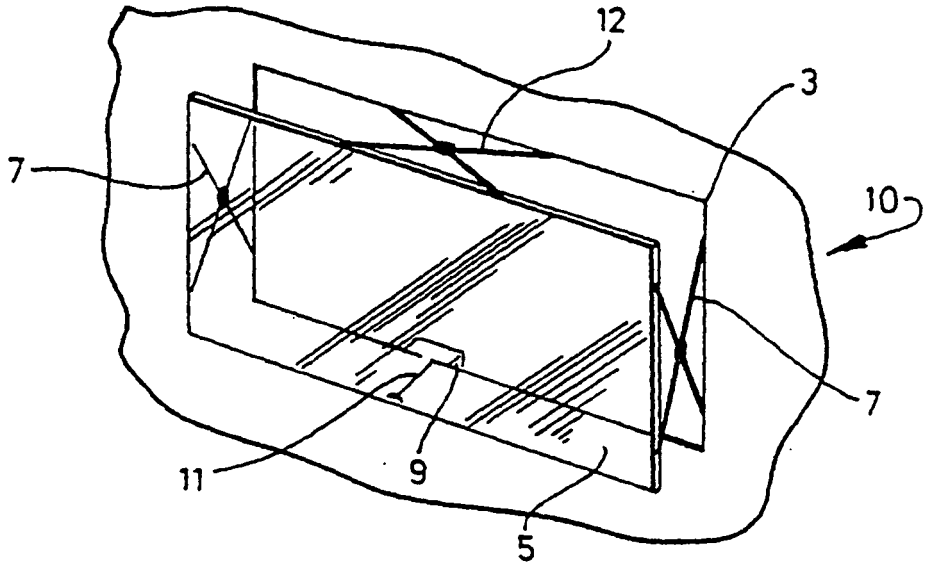


Fig.2



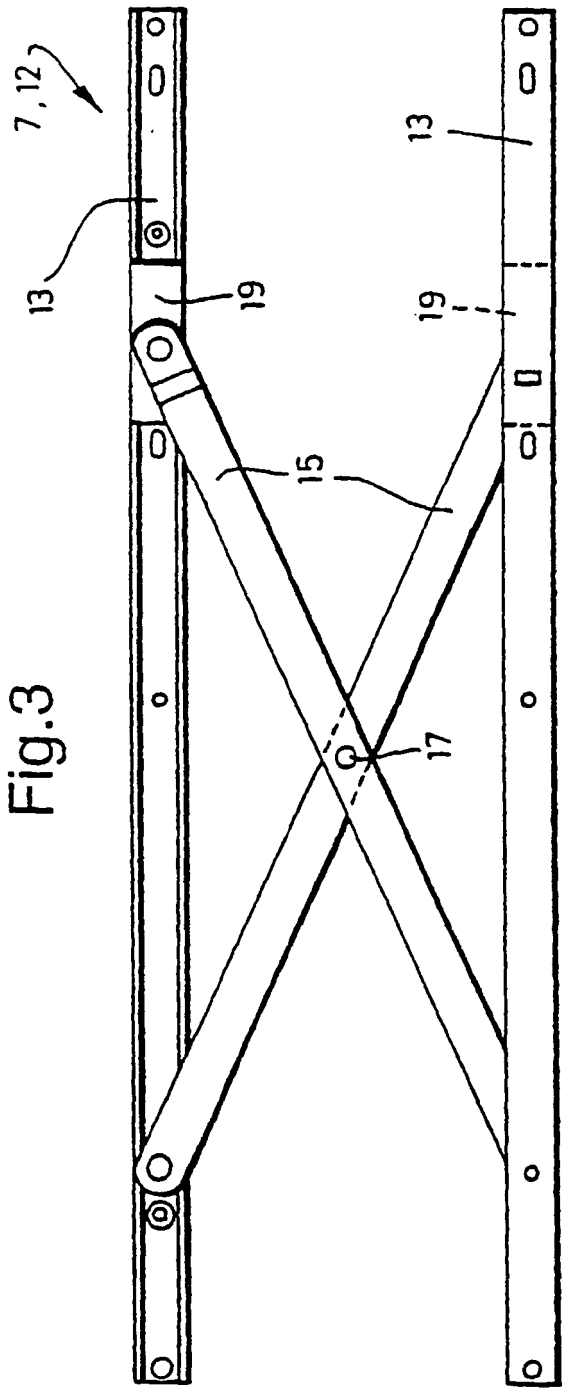


Fig.3