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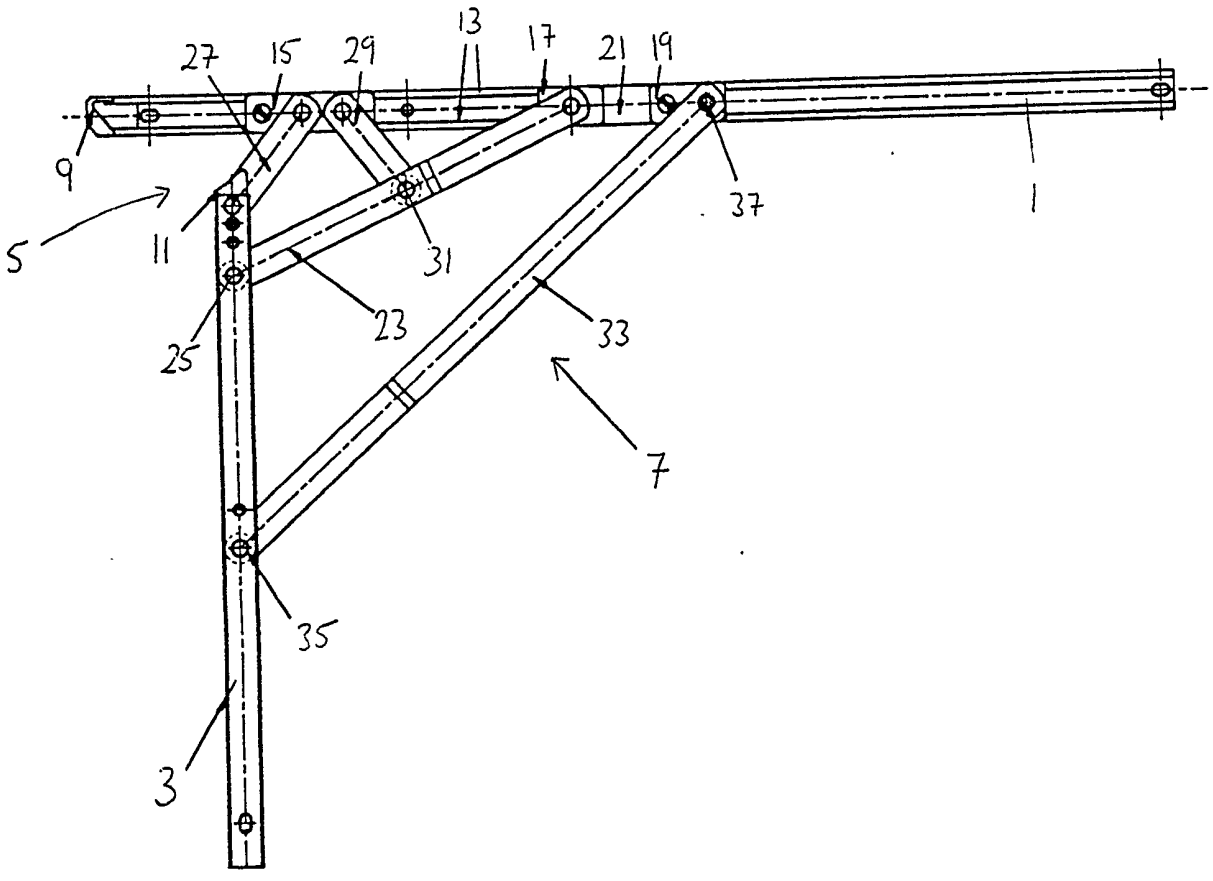
(56) Documents cited
GB 2217778 A **GB 2214230 A** **GB 2147047 A**
GB 2083131 A **GB 1565703 A** **GB 1262646 A**
US 4833754 A

(58) Field of search
UK CL (Edition K) **E2F FCA FSG**
INT CL[5] **E05D**

(54) A link assembly for mounting an egress vent

(57) A link assembly comprises a support track 1 for attachment to a solid support, a vent arm 3 for receiving an egress vent, such as a window, a hinge mechanism 5 joining the vent arm 3 to the support track 1 and a positive stop means 7 arranged to prevent, in use, the vent being opened more than a predetermined amount. The stop means comprises a link 7 with a movable mounting block 19 on the track and a stop 21 fixed to the track for abutting the mounting block 19.



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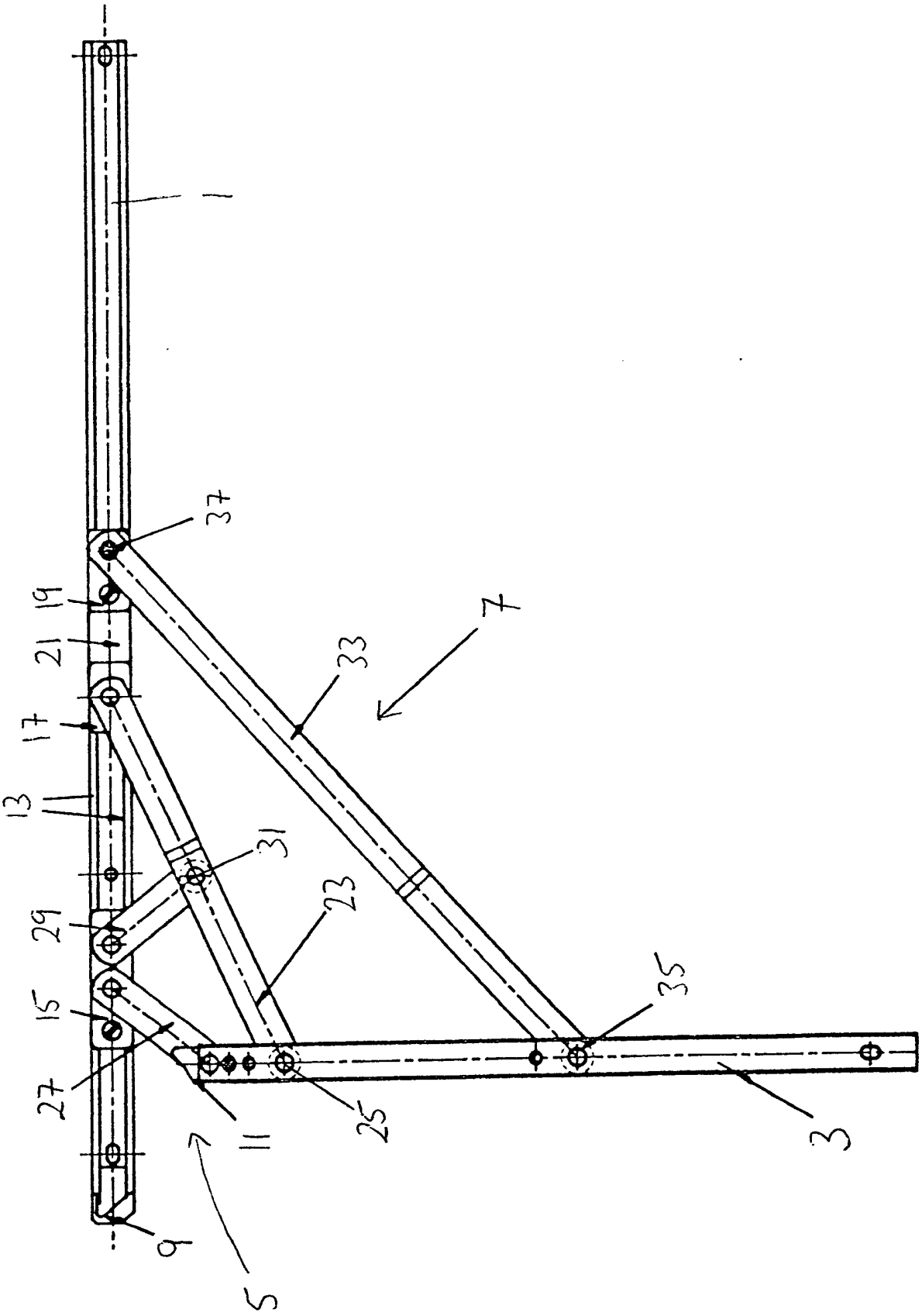
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A LINK ASSEMBLY

This invention relates to link assemblies for vents, and in particular to an egress link assembly.

With the advent of stricter safety standards for buildings, additional escape routes have been sought. Vents, such as windows, have provided an obvious source of escape, thus attracting increased development in this area. Such escape routes must, however, satisfy certain requirements.

Firstly, an escape vent must be sufficiently large to enable a person to pass through without hindrance. Accordingly, the vent must be relatively large, and is therefore heavy.

Secondly, the vent should open easily to its fully open position. It should then be held against further opening, thereby providing a firm support during egress.

And finally, access should be available to the outside of the vent for cleaning purposes.

A known egress link assembly satisfies these requirements, but it has the disadvantage that its maximum angle of opening is fixed by the geometry of the links. This is because the assembly relies upon the clashing of the link members of the assembly to dictate the maximum opening of the vent. Hence, if the vent is to have a different maximum angle of opening, the whole link assembly must be re-designed. Further, if a different sized vent is to be carried by the link assembly, problems will arise due to the insufficient project-out provided by this prior art egress link assembly.

A link assembly according to the present invention satisfies all three of the requirements mentioned above, but also improves over the prior art by being readily adaptable to change its maximum angle of opening. The egress link assembly described herein is also suitable for use with a wider variety of shapes and sizes of vent and/or structural frame due to the increased project-out of the vent arm as the assembly opens.

According to the present invention, there is provided an egress link assembly comprising a support track for attachment to a solid support, a vent arm for receiving a vent, a hinge mechanism joining the vent arm to the support track and a positive stop means arranged to prevent, in use, the vent being opened more than a predetermined amount.

Preferably the hinge mechanism comprises at least two links in sliding engagement with the support track. Two of the links may engage a single mounting block which is free to slide along the support track or, alternatively, each of the two links may engage their own respective mounting block.

In a preferred embodiment, at least two links of the hinge mechanism engage both the support track and the vent arm.

In an operative arrangement, at least one link preferably engages the support track at a fixed pivot. The fixed pivot may be releasable to enable the vent arm, hinge mechanism and positive stop means to move relative to the support track, thereby providing ready access to the outside of a vent mounted on the vent arm for cleaning purposes and the like.

Preferably the positive stop means comprises a restricting link attached to the vent arm and engaging the support track. If the maximum angle of opening of the vent is to be changed, the length of this restricting link needs only to be lengthened or shortened. Alternatively, the position of the pivot, at which the restricting link is attached to the vent arm, may be changed.

The restricting link may engage the support track via a mounting block which is free to slide along a predetermined portion of the support track. The predetermined portion of the support track may be defined by a stop fixed to the support track. The stop may be a fixed pivot associated with the hinge mechanism.

Where used, the mounting blocks are preferably smooth running friction blocks which engage the support track sufficiently tightly to hold a vent in a desired, partially

open position during normal use, but allowing easy opening or closing of the vent when a force is applied.

Preferably the support track includes a shaped end which receives an end of the vent arm to increase pull-in as the vent is closed.

According to another aspect, the present invention provides a link assembly comprising a support track for attachment to a solid support, a vent arm for receiving a vent, a hinge mechanism joining the vent arm to the support track and a positive stop means, including a restricting link attached to the vent arm and to the support track, arranged to prevent, in use, the vent being opened more than a predetermined amount.

In practice, an egress assembly will comprise a vent, such as a window, and two link assemblies according to the present invention. One link assembly will usually be attached to the top of the window and the other assembly will support the bottom of the window. Other mounting configurations can, of course, be envisaged.

A specific embodiment of the present invention is now described, by way of example only, with reference to the accompanying drawing which is a plan view of an egress link assembly, according to the invention, in an open position.

The egress link assembly comprises a support track 1, a vent arm 3, a hinge assembly 5 and a positive stop means 7. The support track 1 includes a shaped end cap 9 which engages with a corresponding shaped end 11 of the vent arm 3 to increase pull-in as the assembly is closed. This increased pull-in ensures that, in use, the vent is tightly shut.

The support track 1 has a channel cross section and a pair of inwardly facing flanges 13 running along its length. The flanges 13 retain mounting blocks 15, 17, 19 and a spacer/anti-rubbing block 21 in engagement with the support track 1. The vent arm 3 may be any suitable shape, such as a flat bar or a bar having a U-shaped cross-section.

The hinge mechanism 5 includes a formed link 23 attached to the vent arm 3 at a pivot 25 and to the support track 1

via the mounting block 17. The mounting block 17 is held at a fixed point on the support track 1 by a catch (not shown), thereby defining the position of the vent arm 3, hinge mechanism 5 and positive stop means 7 with regard to the support track 1.

The hinge mechanism 5 further comprises a first link 27 and a second link 29, both mounted pivotally on mounting block 15. The first link 27 joins the vent arm 3 to the mounting block 15, whereas the second link 29 joins a mid-point of the formed link 23, via a pivot 31, to the mounting block 15.

The hinge mechanism 5 enables a vent mounted on the vent arm 3 to be opened and closed simply by sliding the mounting block 15 along the support track 1. However, this hinge mechanism 5 alone cannot prevent the vent arm 3 from opening more than, say, 90°, if a force is applied to the free end of the vent arm 3.

Hence, to prevent the vent arm 3 from opening more than a predetermined amount, such as 90°, the positive stop means 7 is provided. This stop means 7 comprises a restricting link 33 joined to the vent arm 3 via a pivot 35 and to the support track 1 via a pivot 37 on the sliding mounting block 19.

In use, as the vent arm 3 is swung away from the support track 1, the mounting blocks 15, 19 move along the support track 1 towards each other, the support block 17 being fixed. Due to the arrangement of the hinge mechanism 5, such motion forces the vent arm 3 to move away from the support track 1, thereby increasing the project-out in comparison with prior art arrangements. This is helpful because it prevents unwanted clash between the vent and the support track 1 (or associated structural frame) which can occur in certain arrangements.

As the vent arm 3 reaches an open angle of approximately 90°, the mounting block 19 abuts a stop, in this case a spacer 21 abutting the fixed mounting block 17, on the support track 1. When this occurs, the vent arm 3 is prevented from opening any further, and even if an

additional force of, say, 200 newtons is applied to the vent arm 3, the restricting link 33 will prevent the force from moving the vent arm 3. In this way, a very positive stop means is provided which satisfies the requirements of the current British standards.

When the vent is to be closed, the mounting blocks 15, 19 are moved in opposite directions. Then, as the end 11 of the vent arm 3 approaches and engages the end cap 9 of the support track 1, the vent arm 3 is pulled into its fully closed position.

When it is necessary to obtain access to the outside of the vent, such as when the vent is a window and the window requires cleaning, the vent can be opened and the mounting block 17 can be released by de-activation of the catch (not shown). When the catch has been de-activated, the three mounting blocks 15, 17 and 19, and the spacer 21, are all free to slide along the support track 1. In this way, access can be readily obtained to the outside of the vent. The catch needs only to be re-activated for the assembly to be once again operative.

As will be appreciated, in practice, two egress link assemblies will be used, one attached to the top of a vent and the other supporting the base of the vent, thereby forming a side-mounted vent assembly. Alternatively, the link assemblies engage other edges of the vent, thus forming top- or bottom-mounted vent assemblies as required.

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.

CLAIMS

1. An egress link assembly comprising a support track for attachment to a solid support, a vent arm for receiving a vent, a hinge mechanism joining the vent arm to the support track and a positive stop means arranged to prevent, in use, the vent being opened more than a predetermined amount.

2. A link assembly as claimed in claim 1, wherein the hinge mechanism comprises at least two links in sliding engagement with the support track.

3. A link assembly as claimed in claim 2, wherein two of the links engage a single mounting block which is free to slide along the support track.

4. A link assembly as claimed in any preceding claim, wherein at least two links of the hinge mechanism engage both the support track and the vent arm.

5. A link assembly as claimed in any preceding claim, wherein, in an operative arrangement, at least one link attached to the vent arm engages the support track at a fixed pivot.

6. A link assembly as claimed in claim 5, wherein the fixed pivot is releasable to enable the vent arm, the hinge mechanism and the positive stop means to move relative to the support track.

7. A link assembly as claimed in any preceding claim, wherein the positive stop means comprises a restricting link attached to the vent arm and engaging the support track.

8. A link assembly as claimed in claim 7, wherein the restricting link engages the support track via a mounting block which is free to slide along a predetermined portion of the support track.

9. A link assembly as claimed in claim 8, wherein the predetermined portion of the support track is defined by a stop fixed to the support track.

10. A link assembly as claimed in claim 9, wherein the stop is a fixed pivot associated with the hinge mechanism.

11. A link assembly as claimed in any preceding claim,

wherein the support track includes a shaped end which receives an end of the vent arm to increase pull-in as the vent is closed.

12. A link assembly comprising a support track for attachment to a solid support, a vent arm for receiving a vent, a hinge mechanism joining the vent arm to the support track and a positive stop means, including a restricting link attached to the vent arm and to the support track, arranged to prevent, in use, the vent being opened more than a predetermined amount.

13. A link assembly substantially as hereinbefore described with reference to and as shown in the accompanying drawing.

14. An egress assembly comprising a vent and at least one link assembly as defined in any preceding claim.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number 9024752.9

Relevant Technical fields

(i) UK Cl (Edition K) E2F (FCA, FSG)

(ii) Int Cl (Edition 5) E05D

Search Examiner: A LITTLEJOHN

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search: 22.2.91

Documents considered relevant following a search in respect of claims 1-14

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2217778 A (DAVIS) see page 13 line 23 to page 15 line 6	1,4,5, 7,8,12
X	GB 2214230 A (CEGO) see eg page 9 line 15 to page 10 line 6	1-5
X	GB 2147047 A (COTSWOLD) see eg page 1 line 110-117 and 125-130	1-5
X	GB 2083131 A (SECURISTYLE) see eg page 2 lines 7-50 and 83-126	1-7, 11,12
X	GB 1565703 A (INTERLOCK) see especially page 4 line 63 to 85	1,4-7 12
X	GB 1262646 A (CODE) see page 2 lines 18-30	1,2,4,5, 7,8,9,12
X	US 4833754 A (YANG) see eg column 3 lines 9-20	1-5

SF2(p)

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Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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