

PATENT SPECIFICATION

DRAWINGS ATTACHED

L183,490



Date of Application (No. 54102/67) and filing Complete Specification: 28 Nov., 1967.

Application made in Australia (No. 14576) on 29 Nov., 1966.

Complete Specification Published: 4 March, 1970.



Index at acceptance:—F4 V (A2A2, A2C1); E2 M1A

International Classification:—E 06 b 7/08

COMPLETE SPECIFICATION

Improvements in Operating Means for Double Banks of Louvres

We, N.V. APPLETON PTY. LTD., a company incorporated under the laws of the State of Queensland, Commonwealth of Australia, of 128 Gerler Road, Hendra, in the State of Queensland, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to improvements in operating means for double banks of adjustable louvres and is concerned more particularly with means for operating adjustable louvres in a situation quite commonly used, wherein two louvre mullions are erected back-to-back with louvre blades extending from them to other mullions and a common operating means is employed in the back-to-back arrangement to open and close each bank of louvres conjointly with the other.

In an arrangement of this nature it is sometimes found that due to manufacturing inaccuracies or inaccurate mounting or assembly, one bank of louvres will be fully closed while the other is partially open and closure of the latter bank is then prevented because of the engagement of the blades of the first bank.

According to the present invention, there is provided an operating member having at least one driving pin extending through it and projecting from the faces thereof, the projecting ends of said pin or pins engaging in driven members which members function to effect opening and closing of the louvre blades, and the pin or pins being constructed and mounted so as to be capable of limited rocking motion whereby the driven members may move relative to each other to a limited extent.

According to a feature of the invention the pins may be of a double tapered construction and may be mounted in cylindrical holes extending transversely in the driving member

whereby they may rock to a limited extent according to the amount of taper.

It will be evident that pins of this construction have a differential effect enabling the driving member to continue to move one driven member after the other has been arrested by the complete closing of the louvre blades associated with it.

More particularly the driving member may be a worm-wheel or other rotary member mounted for partial rotation about its axis and the pins may extend transversely, parallel to the axis and engage with discs connected to actuating bars of the louvre mullions.

In the following description of a preferred form of the invention reference is made to the accompanying drawings wherein:—

Figure 1 is a fragmentary frontal view of a pair of louvre mullions fitted with operating means according to this preferred form of the invention,

Figure 2 is a view in section on line 2—2 of Figure 1, Figure 3 is a view in section on line 3—3 of Figure 2, and

Figure 4 is a view in section on line 4—4 of Figure 2.

The drawings illustrate louvre operating means comprising a two-part housing 11 which is constructed to be assembled together with two louvre mullions 12 of channel cross-section. For this purpose parts of the flanges 13 of the mullions 12 at the inner side of the window construction are cut away to provide a rectangular aperture and the housing 11 extends through this aperture into the interior of the space between the mullions. The housing is formed with a face plate 14 having a groove extending around its perimeter, this groove being engaged by the edges of the mullion flanges 13 surrounding the rectangular opening. In this way the housing is firmly supported by the mullions when they are assembled. To facilitate the assembly and improve

the rigidity of the construction the housing also has a flanged backing face 15 which seats firmly against the interior of the flanges 16 at the opposite sides of the mullions.

5 The housing 11 is made in two parts which are separable along the plane between the two mullions and the two halves are secured together by bolts 17 or other suitable means.

10 The housing supports a worm-wheel 18 and two driven discs 19, these three members being mounted on a common spindle 20. Each driven disc 19 is located within a circular aperture in one part of the housing and the worm-wheel 18, which is of larger diameter than the discs, is located between them in the interior of the housing. Thus the apertures for the discs provide bearings for the assembly, and the engagement of the faces of the worm-wheel with the inner faces of the two parts of the housing retains the assembly in position within the housing. The outer faces of the driven discs 19 are flush with the outer faces of the housing and the discs are retained on the spindle 20 by means of circlips 21, or by other means such as rivetting over the ends of the spindle.

25 Both the worm-wheel 18 and the driven discs 19 are free to turn on their common spindle 20, and in accordance with the invention two driving pins 22 are included in the assembly. The said pins are each of double tapered construction, the largest diameter being midway between the ends of each pin and the length of each pin is equal to the spacing between the outer faces of the housing. Each pin extends through a cylindrical hole 23 in the worm-wheel, the holes 23 being diametrically opposite each other and at the same radius, and the ends of the pins are reduced in diameter and extend into holes 24 of appropriate size and location in the driven discs 19.

40 The arrangement permits the pins 22 to have a limited rocking movement within the holes 23 in the worm-wheel whereby if one driven disc is held firmly the other can be turned to a limited extent by the worm-wheel, the disc turning through twice the angle turned by the worm-wheel and the pins rocking until further movement is prevented by the tapered faces of the pins engaging the cylindrical faces of the holes 23.

50 The discs are provided with further holes 25 diametrically located with respect to each other and these are dispersed so as to engage with pins 26 which project from the actuating bars of the louvre mullions. These actuating bars operate the louvre mechanism in the usual way such as is shown, for example, in the specification of our prior Australian patent No. 157060. As the pins 26 extend inwardly beyond the inner faces of the driven discs 19 the worm-wheel 18 is provided with holes 27 which accommodate the ends of the pins 26 and are of larger diameter than them so as to provide clearance for the full range of rocking movement of the pins 22.

The housing also encloses means for operating the worm-wheel. This includes a worm 28 mounted with its axis in the plane of division of the two mullions and at right angles to the longitudinal direction of the mullions. The said worm may be connected directly with a manual handle for operating the mechanism or it may be coupled as shown to a driving wheel 29 disposed to be driven through the agency of a flexible cable 30. For this purpose the housing 11 includes a cylindrical projection 31 wherein the wheel 29 is mounted, with integral tubular connections 32 to which the flexible cable mountings may be attached. The projection 31 is closed by a flexible cap 33.

80 It will be evident that in the operation of the mechanism if one set of louvre blades should be closed while the other is still slightly open the movement of the driven disc associated with the first set of blades will remain stationary while the worm-wheel continues to move and drive the other disc until the blades associated with it are also fully closed.

85 Having achieved the right adjustment in the initial closing operation the blades of both sets should continue to close simultaneously in future operations unless they are displaced either by hand movement of the blades or perhaps by moving the blades to the fully open position. However if the adjustment should be altered then the blades will be readjusted again when the mechanism is operated to close them.

90 It will be evident that instead of double tapered arrangements the differential pins may be of barrel shape or they may be of stepped cylindrical construction with a short intermediate section of full diameter with outer sections of smaller diameter.

95 Other variations may be employed and it is also possible to utilise cylindrical pins in apertures which are of double tapered shape, the apertures flaring out at each side from a minimum diameter at the mid-point.

100 It will also be evident that a plurality of operating devices in accordance with the invention may be used in conjunction with a plurality of banks of louvres. In this case a single operating cable may extend through each of the housings in turn, in engagement with the wheels 29, which are desirably adjustable upon the worm shafts to enable the banks controlled by different operating devices to close simultaneously.

WHAT WE CLAIM IS:—

1. Operating means for a double bank of adjustable louvres which operating means comprises an operating member having at least one driving pin extending through it and projecting from the faces thereof, the projecting ends of said pin or pins engaging in driven members which members function to effect opening and closing of the louvre blades, and the pin or pins being constructed and mounted so as to be capable of limited rocking motion whereby



the rigidity of the construction the housing also has a flanged backing face 15 which seats firmly against the interior of the flanges 16 at the opposite sides of the mullions.

5 The housing 11 is made in two parts which are separable along the plane between the two mullions and the two halves are secured together by bolts 17 or other suitable means.

10 The housing supports a worm-wheel 18 and two driven discs 19, these three members being mounted on a common spindle 20. Each driven disc 19 is located within a circular aperture in one part of the housing and the worm-wheel 18, which is of larger diameter than the discs, is located between them in the interior of the housing. Thus the apertures for the discs provide bearings for the assembly, and the engagement of the faces of the worm-wheel with the inner faces of the two parts of the housing retains the assembly in position within the housing. The outer faces of the driven discs 19 are flush with the outer faces of the housing and the discs are retained on the spindle 20 by means of circlips 21, or by other means such as rivetting over the ends of the spindle.

25 Both the worm-wheel 18 and the driven discs 19 are free to turn on their common spindle 20, and in accordance with the invention two driving pins 22 are included in the assembly. The said pins are each of double tapered construction, the largest diameter being midway between the ends of each pin and the length of each pin is equal to the spacing between the outer faces of the housing. Each pin extends through a cylindrical hole 23 in the worm-wheel, the holes 23 being diametrically opposite each other and at the same radius, and the ends of the pins are reduced in diameter and extend into holes 24 of appropriate size and location in the driven discs 19.

40 The arrangement permits the pins 22 to have a limited rocking movement within the holes 23 in the worm-wheel whereby if one driven disc is held firmly the other can be turned to a limited extent by the worm-wheel, the disc turning through twice the angle turned by the worm-wheel and the pins rocking until further movement is prevented by the tapered faces of the pins engaging the cylindrical faces of the holes 23.

50 The discs are provided with further holes 25 diametrically located with respect to each other and these are dispersed so as to engage with pins 26 which project from the actuating bars of the louvre mullions. These actuating bars operate the louvre mechanism in the usual way such as is shown, for example, in the specification of our prior Australian patent No. 157060. As the pins 26 extend inwardly beyond the inner faces of the driven discs 19 the worm-wheel 18 is provided with holes 27 which accommodate the ends of the pins 26 and are of larger diameter than them so as to provide clearance for the full range of rocking movement of the pins 22.

The housing also encloses means for operating the worm-wheel. This includes a worm 28 mounted with its axis in the plane of division of the two mullions and at right angles to the longitudinal direction of the mullions. The said worm may be connected directly with a manual handle for operating the mechanism or it may be coupled as shown to a driving wheel 29 disposed to be driven through the agency of a flexible cable 30. For this purpose the housing 11 includes a cylindrical projection 31 wherein the wheel 29 is mounted, with integral tubular connections 32 to which the flexible cable mountings may be attached. The projection 31 is closed by a flexible cap 33.

80 It will be evident that in the operation of the mechanism if one set of louvre blades should be closed while the other is still slightly open the movement of the driven disc associated with the first set of blades will remain stationary while the worm-wheel continues to move and drive the other disc until the blades associated with it are also fully closed.

85 Having achieved the right adjustment in the initial closing operation the blades of both sets should continue to close simultaneously in future operations unless they are displaced either by hand movement of the blades or perhaps by moving the blades to the fully open position. However if the adjustment should be altered then the blades will be readjusted again when the mechanism is operated to close them.

90 It will be evident that instead of double tapered arrangements the differential pins may be of barrel shape or they may be of stepped cylindrical construction with a short intermediate section of full diameter with outer sections of smaller diameter.

95 Other variations may be employed and it is also possible to utilise cylindrical pins in apertures which are of double tapered shape, the apertures flaring out at each side from a minimum diameter at the mid-point.

100 It will also be evident that a plurality of operating devices in accordance with the invention may be used in conjunction with a plurality of banks of louvres. In this case a single operating cable may extend through each of the housings in turn, in engagement with the wheels 29, which are desirably adjustable upon the worm shafts to enable the banks controlled by different operating devices to close simultaneously.

WHAT WE CLAIM IS:—

1. Operating means for a double bank of adjustable louvres which operating means comprises an operating member having at least one driving pin extending through it and projecting from the faces thereof, the projecting ends of said pin or pins engaging in driven members which members function to effect opening and closing of the louvre blades, and the pin or pins being constructed and mounted so as to be capable of limited rocking motion whereby

the driven members may move relative to each other to a limited extent.

2. Operating means as claimed in claim 1, wherein the operating member comprises a rotary member mounted for partial rotation about its axis, and the driven members comprise discs disposed one at each side of the rotary member for partial rotation about the same axis.

3. Operating means as claimed in claim 2, wherein the assembly comprising the rotary member and discs is mounted within a housing, and wherein the discs are engaged in circular apertures in the housing which provide bearings for the assembly.

4. Operating means as claimed in claim 3, wherein the housing is constructed to fit between a pair of louvre mullions disposed back-to-back, and to project through an opening formed by cutting away parts of the flanges of the mullions, and wherein the discs

are engaged with pins on actuating bars of the louvre mullions to effect operation of the louvres.

5. Operating means as claimed in any one of claims 2 to 4, wherein the operating member is a worm-wheel driven by a worm.

6. Operating means as claimed in any preceding claim wherein the pins are of double tapered construction and are mounted in cylindrical holes extending transversely in the driving member whereby the pins may rock to a limited extent.

7. Operating means for a double bank of adjustable louvres substantially as hereinbefore described with reference to the accompanying

N.V. APPLETON PTY. LTD.

Per. Boulton, Wade & Tennant,

112, Hatton Garden,

London, E.C.1.

Chartered Patent Agents.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1970.
Published by the Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

