PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION
No. 21694, A.D. 1948.

Improvements in or relating to Ventilators of the Louvre Type

We, G. JOHNSON BROS. LIMITED, a British Company, of Cornwall Road, London, N.15, and HENRY CHARLES JOHNSON, a British Subject, of 60, Cuckoo Hill Road, Pinner, in the County of Middlesex, do hereby declare the nature of this invention to be as follows:—

This invention relates to ventilators of the louvre type. These ventilators comprise a number of horizontal elongated panels or slats arranged one above another in the manner of the slats of a venetian blind, so that they can all be simultaneously rotated about individual horizontal axes either to a common substantially vertical plane in overlapping relation, when ventilation is not required, or to respective horizontal planes with spaces between them when full ventilation is required, or to positions in between when less than full ventilation is required.

The ventilators may be simple ventilators in which case the slats are of opaque materials, or the ventilators may also constitute windows, in which case the slats are of glass or other transparent material.

The invention has for its object the provision of improvements in ventilators of this type and the nature of the invention will be understood from the following description of one embodiment thereof as applied to a window ventilator.

In accordance with this embodiment each of the transparent horizontal slats has its two ends fitted into respective channel-shaped holders. The two holders for each slat are mounted so as to be rotatable about a common horizontal axis which is substantially coincident with the centre line of the slat. The several holders at each end of the slats are linked together so that they must all rotate simultaneously and in unison (i.e. remaining parallel). Means are provided to effect such rotation of the holders at one end of the slats. Consequently the slats themselves, together with the holders at their other ends, must also rotate simultaneously in unison and the slats will function as above described.

Two vertical mounting members are provided one at each end of the slats, each one forming a mounting on which several holders at that end of the slats are pivotally mounted. Each of these vertical mounting members is of channel form and is secured to the adjacent vertical frame member of the window surround with its channel cavity towards said frame member. For mounting the holders on these mounting members, each of said holders has a trunnion-like pivot extending rigidly from it and passing through a bearing hole in the channel bottom of the adjacent mounting member. The ends of the pivots within the cavities of the mounting members may carry enlarged heads or flanges to prevent withdrawal of said pivots from said mounting members.

In order that the actual slats shall touch one another when at their closed or overlapping position, each of the channel-shaped holders has one of its channel walls cut away at one end and the other cut away at the other end. Thus, say, the inner surface of each slat at the bottom can make actual contact with the outer surface of the slat beneath it at the top. Accordingly the slats make good weather proof engagement with one another when closed.

Nevertheless, with the construction as so far described, it will be seen that, when the slats are at the closed position, there will still be slight clearances between the holders and the mounting members, through which clearances between draughts and rain could seep. To cover

[Price 2/-] 8d.

these clearances two weather fillets are provided, one at each end the slats. Each of these weather fillets consists of an elongated member and the outer extremities of the holders at the each end of the slats are pivotally connected to the weather fillet at the same end at spaced intervals along said weather fillet. By the expression "outer extremities of the holders" is meant the ends of the holders which point out of doors when the slats are at the open position.

It will be seen that the weather fillets are always vertical and move outwardly and upwardly when the slats are actuated to the open position and downwardly and inwardly when said slats are actuated to the closed position. At the closed position of the slats the weather fillets cover the said clearances between the holders and the mounting members, and thus exclude draughts and rain.

These weather fillets also constitute the means for linking together the holders as aforedescribed. The aforesaid means for effecting the rotation of the holders at one end of the slats are constituted by a co-engaging worm and worm wheel located within the cavity of the mounting member at that end, the worm wheel being fast on the trunnion-like pivot of the lowermost holder, and the worm rotating in bearings in the said cavity of the mounting member, with its shaft projecting rearwardly (i.e. into the room) from said mounting member, and having a milled knob mounted on its projecting extremity. It will be seen that by rotating this milled knob the worm is rotated, and therefore the worm wheel and the said lowermost holder are rotated. This, through the weather fillet at that end of the slats, effects the like rotation of all the other holders at that end, and this effects rotation of the slats and all the holders at the other end.

In construction each holder consists of sheet metal doubled back to the appropriate channel form. The metal is again doubled back flush against the outer side of that channel wall which faces outwardly when the slats are closed (and upwardly when the slats are open). The metal is then bent at right angles away from said channel wall, thus constituting a flange level with the channel bottom. It is the extremity of this flange which is connected to the weather fillet. The weather fillet is also of channel form and is arranged with its channel cavity facing inwards, i.e. towards the room. The flanges of the holders are pivotally connected to the inner surface of one of the channel walls of the weather fillet (viz. that which is furthest from the vertical frame member of the window surround). The other channel wall is arranged to mate, when the slats are at the closed position, with a re-entrant part of the mounting member, and thus the weather fillet forms a very effective protection against the weather as before described.

In the case of a simple ventilator, the construction would be substantially the same except that the slats would be of opaque material.

Dated this 17th day of August, 1948.

A. A. THORNTON & CO.,
Chartered Patent Agents,
Napier House, 24—27, High Holborn,
London, W.C.1,
For the Applicants.

PROVISIONAL SPECIFICATION
No. 4249, A.D. 1949.

Improvements in or relating to Ventilators of the Louvre Type

We, G. JOHNSON BROS. LIMITED, a British Company, of Cornwall Road, London, N.15, and HENRY CHARLES JOHNSON, a British Subject, of 60, Cuckoo Hill Road, Pinner, in the County of Middlesex, do hereby declare the nature of this invention to be as follows:—

This invention relates to ventilators of the louvre type.

The object of the invention is the provision of an improvement in the invention which is the subject of prior Application No. 21694/48.

In accordance with one embodiment of the present invention the construction is the same as in the embodiment described in the provisional specification of said prior application except for the means for effecting rotation of the holders at one end of the slats. In the present embodiment these means comprise a horizontal screwed shaft arranged, within the cavity of the mounting member at that end, beneath the trunnion-like pivot of the lowermost holder, and transversely to the axis of said trunnion-like pivot. On said screw shaft is a nut, and said nut is formed with a bifurcated lug on its upper side, and, between the two branches of said lug is pivoted one end of a rod which passes through a hole bored diametrically through an enlarged head of said trunnion-like pivot. The rod is slidable in said diametrical hole, and it will be seen that, as said screwed shaft is rotated, the nut will move along it and will thereby, through the medium of the

rod, cause the trunnion-like pivot to turn about its axis, and thus the lowermost holder at that end, and therefore all of the slats, are caused to rotate.

The screwed shaft projects into the room and has a milled knob on its projecting extremity, and it will be seen that, by rotating said miled knob in opposite directions, the slats will be rotated in opposite directions.

This mechanism is deemed to be simpler and better than the worm and worm-wheel mechanism described in said prior provisional specification.

Dated the 16th day of February, 1949.

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For the Applicants.

COMPLETE SPECIFICATION

Improvements in or relating to Ventilators of the Louvre Type

We, G. JOHNSON BROS. LIMITED, a British Company, of Cornwall Road, London, N.15, and HENRY CHARLES JOHNSON, a British Subject, of 60, Cuckoo Hill Road, Pinner, in the County of Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to ventilators of the louvre type. These ventilators comprise a number of horizontal elongated panels or slats arranged one above another in the manner of the slats of a venetian blind, so that they can all be simultaneously rotated about individual horizontal axes either to a common substantially vertical plane in overlapping relation, when ventilation is not required, or to respective more-or-less horizontal planes with spaces between them when full ventilation is required, or to positions in between when less than full ventilation is required.

The ventilators may be simple ventilators in which case the slats are of opaque material, or the ventilators may also constitute windows, in which case the slats are of glass or other transparent material.

The invention has for its object the provision of improvements in ventilators of this type. The invention consists broadly of a louvre type ventilator, comprising a number of horizontal elongated panels or slats mounted one above another between upright members at their ends, so that they can be rotated about individual horizontal axes, two weather fillets pivoted to the slats at the ends thereof so as to couple said salts together for movement simultaneously about there axes to a substantially vertical plane in overlapping relation or to more-or-less horizontal planes with spaces between them, or to intermediate positions, the arrangement being such that said weather fillets, when the slats are in their vertical plane, cover and protect from the weather the clearances or cracks between the ends of the slats and said upright members, and that as said slats move towards their horizontal planes, said weather fillets move outwards from said upright members, a manually rotatable actuating element accessible from the room or space to be ventilated, and transmission means between said actuating element and one of said slats, whereby, by rotating said actuating element in opposite directions, said slat is moved in opposite directions about its axis, said wether fillets forming the sole coupling means for causing the other slats to move in unison with said one slat.

In order that the invention may be the more clearly understood a louvre ventilator in accordance therewith will now be described, reference being made to the accompanying drawings wherein:—

Figure 1 is a perspective view of said ventilator viewed from the inside of the space to be ventilated.

Figure 2 is a sectional side elevation slats being of the lower portion of the same, the slats being in the vertical or non-ventilating position.

Figure 3 is a sectional plan in line III —III of Figure 2.

Figure 4 is a similar view to Figure 2, but with the slats near to the horizontal or fully ventilating position.

Referring to the drawings the ventilator comprises a number of horizontal elongated transparent slats 1 arranged one above another. Each of said slats 1 has its two ends fitted into respective channel-shaped holders 2. The two holders 2 for each slat 1 are mounted so as to be rotatable about a common horizontal axis which is substantially coincident with the centre line of the slat. The several holders at each end of the slats are linked together so that they must all rotate simultaneously and in unison (i.e. remaining parallel). Means are provided to effect such rotation of the holders at one end of the slats. Consequently the slats themselves, together with the holders at their other ends, must also rotate simultaneously in unison and the

slats will therefore function in the manner of the slats of a venetian blind, being all simultaneously rotatable about their individual horizontal axes either to a common substantially vertical plane in overlapping relation, when ventilation is not required, or to respective horizontal planes with spaces between them when full ventilation is required, or to positions in between when less than full ventilation is required.

Two vertical mounting members 3 are provided one at each end of the slats, each one forming a mounting on which the several holders 2 at the end of the slats are pivotally mounted. Each of these vertical mounting members 3 is of channel form and is secured to the adjacent vertical frame member 4 of the window surround, with its channel cavity towards said frame member. For mounting the holders 2 on these mounting members, each of said holders, except one of the lowermost holders whose mounting will be hereinafter described, has a simple trunnion-like pivot extending rigidly from it and passing through a bearing hole in the channel bottom of the adjacent mounting member. The ends of the pivots within the cavities of the mounting members 3 carry enlarged heads or flanges to prevent withdrawal of said pivots from said mounting members, and washers 5 are provided to space the holders 2 from said mounting members.

In order that the actual slats 1 shall touch one another when at their closed or overlapping position, each of the channel-shaped holders 2 has one of its channel walls cut away at one end and the other cut away at the other end. Thus, say, the inner surface of each slat at the bottom can make actual contact with the outer surface of the slat beneath it at the top. Accordingly the slats make good weather proof engagement with one another when closed.

Nevertheless, with the construction as so far described, it will be seen that, when the slats 1 are at the closed position, there will still be slight clearances between the holders 2 and the mounting members 3, through which clearances draughts and rain could seep. To cover these clearances two weather fillets 6 are provided, one at each end of the slats. Each of these weather fillets 6 consists of an elongated member and the outer extremities of the holders 2 at each end of the slats are pivotally connected at 7 to the weather fillet at the same end and at spaced intervals along said weather fillet. By the expression "outer extremities of the holders" is meant the ends of the holders which point out of doors when the slats are at the open position.

It will be seen that the weather fillets 6 are always vertical and move outwardly and upwardly when the slats are actuated to the open position and downwardly and inwardly when said slats are actuated to the closed position. At the closed position of the slats weather fillets 6 cover the said clearances between the holders 2 and the mounting members 3, and thus exclude draughts and rain.

These weather fillets also constitute the means for linking together the holders 2 as aforedescribed.

The aforesaid one of the lowermost holders which has a different pivot mounting from the others, is the one to which the drive is applied to effect the adjustment of all the slats. This is holder 2 shown in Figure 3. For pivotally mounting it, it has a trunnion member 8 secured to it which bears in the channel bottom of the adjacent mounting member 3 and also bears in the bottom of a box-like bracket 9 which is mounted inside said mounting member with its bottom spaced from the channel bottom of said mounting member. A horizontal shaft 10 is provided beneath the trunnion 8 and transverse to the axis thereof. This shaft extends into the cavity of the box-like bracket 9 and also to the outside of the mounting member 3 into the room or space to be ventilated where it is fitted with a milled knob 11 for rotating it. It rotates in bearings in the walls of said mounting member 3 and of said bracket 9.

The part of this shaft 10 within the bracket 9 is screwed, and a nut 12 is mounted in screwed relation thereon. Pivoted to this nut about an axis parallel to that of the trunnion member 8 is a link 13. This link is formed with a central longitudinal slot and said slot mates with a parallel sided rib 14 formed diametrically on the end of the trunnion member 8 adjacent to the bottom of the bracket 9. Thus said link 13 is fixed against rotation relative to said trunnion member 8 but is capable of sliding longitudinally relative to said trunnion member. It will now be seen that as said screwed shaft 10 is rotated, the nut 12 will move along it and will thereby, through the medium of the link 13, cause the trunnion element 8, together with the associated lowermost holder 2, to rotate. This, through the weather fillet 6 at that end, effects the like rotation of all the other holders at that end, and this effects rotation of the slats and all the holders at the other end. Thus, by rotating the knob 11 in opposite directions the slats 1 will all be rotated in opposite directions, the rotary movement of the slats being

very much less than that of the knob.

In construction each holder 2 consists of sheet metal doubled back to the appropriate channel form. The metal is again doubled back flush against the outer side of that channel wall which faces outwardly when the slats are closed (and upwardly when the slats are open). The metal is then bent at right angles away from said channel wall, thus constituting a flange 15 roughly level with the channel bottom. It is the extremity of this flange 15 which is pivotally connected at 7 to the weather fillet 6. The weather fillet 6 is in general of L section. The flanges 15 of the holders 2 are pivotally connected to the inner surface of one of the flanges of the weather fillet. The other flange of the weather fillet, when the slats are at the closed position, lies in front of the outside channel wall of the adjacent mounting member 3, and thus the weather fillet forms a very effective protection against the weather as before stated.

It will be seen from Figure 3 that the last-named flange of the weather fillet 6 and also the adjacent channel wall of the member 3 are logitudinally ribbed so that the clearance which is between them when the slats are at the closed position is of undulating cross-section. In this way additional obstruction to the ingress of wind and rain is provided.

In the case of a simpler ventilator, the construction would be substantially the same except that the slats would be of opaque material.

Other details are deemed sufficiently clear from the drawings.

In the following claims and in the opening paragraphs it is assumed that the ventilator as a whole is arranged in a vertical plane with the slats horizontal. It is however clearly to be understood that the ventilator as a whole could be arranged in any other orientation and that the opening paragraphs and claims are to be constructed as including such other orientations.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A louvre type ventilator, comprising a number of horizontal elongated panels or slats mounted one above another between upright members at their ends so that they can be rotated about individual horizontal axes, two weather fillets pivoted to the slats at the ends thereof so as to couple said slats together for movement simultaneously about their axes to a substantially vertical plane in overlapping relation or to more-or-less horizontal planes with spaces between them, or to intermediate positions, the arrangement being such that said weather fillets, when the slats are in their vertical plane, cover and protect from the weather the clearances or cracks between the ends of the slats and said upright members, and that as said slats move towards their horizontal planes, said weather fillets move outwards from said upright members, a manually rotatable actuating element accessible from the room or space to be ventilated, and transmision means between said actuating element and one of said slats, whereby, by rotating said actuating element in opposite directions, said slat is moved in opposite directions about its axis, said weather fillets forming the sole coupling means for causing the other slats to move in unison with said one slat.

2. A ventilator according to claim 1, wherein said transmission means is a step down transmission means so that the rotational movement of the actuating element is much in excess of that of the slats.

3. A ventilator according to claim 2, wherein said transmission means extends between said actuating element and a trunnion member secured to one end of said slat.

4. A ventilator according to claim 2, wherein said transmission mechanism comprises a screwed rod at right angles to the axis of said one of said slats, said screwed rod being rotatable by said actuating element, a nut in screwed relation on said screwed rod, whereby said nut travels horizontally along said rod in response to the rotation of the latter, and a link coupling said nut to said slat, whereby said horizontal travel of said nut effects rotary movement of said slat.

5. A ventilator according to claim 3 and claim 4, wherein said link is pivoted at one end to said nut and at the other end is connected to said trunnion member, so as to be capable of sliding longitudinally relative to said trunnion member, but to be incapable of rotating relative to said trunnion member about the axis of said slat.

6. A ventilator according to claim 5, wherein the connection of said link to said trunnion member is constituted by the engagement of a parallel sided part of said trunnion member in a longitudinal slot formed in said link.

7. A ventilator according to claim 5 or 6, wherein said upright members at the ends of the slats are hollow and said screwed rod and said trunnion member both extend into the hollow interior of the adjacent upright member, and said

very much less than that of the knob.

In construction each holder 2 consists of sheet metal doubled back to the appropriate channel form. The metal is again doubled back flush against the outer side of that channel wall which faces outwardly when the slats are closed (and upwardly when the slats are open). The metal is then bent at right angles away from said channel wall, thus constituting a flange 15 roughly level with the channel bottom. It is the extremity of this flange 15 which is pivotally connected at 7 to the weather fillet 6. The weather fillet 6 is in general of L section. The flanges 15 of the holders 2 are pivotally connected to the inner surface of one of the flanges of the weather fillet. The other flange of the weather fillet, when the slats are at the closed position, lies in front of the outside channel wall of the adjacent mounting member 3, and thus the weather fillet forms a very effective protection against the weather as before stated.

It will be seen from Figure 3 that the last-named flange of the weather fillet 6 and also the adjacent channel wall of the member 3 are logitudinally ribbed so that the clearance which is between them when the slats are at the closed position is of undulating cross-section. In this way additional obstruction to the ingress of wind and rain is provided.

In the case of a simpler ventilator, the construction would be substantially the same except that the slats would be of opaque material.

Other details are deemed sufficiently clear from the drawings.

In the following claims and in the opening paragraphs it is assumed that the ventilator as a whole is arranged in a vertical plane with the slats horizontal. It is however clearly to be understood that the ventilator as a whole could be arranged in any other orientation and that the opening paragraphs and claims are to be constructed as including such other orientations.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A louvre type ventilator, comprising a number of horizontal elongated panels or slats mounted one above another between upright members at their ends so that they can be rotated about individual horizontal axes, two weather fillets pivoted to the slats at the ends thereof so as to couple said slats together for movement simultaneously about their axes to a substantially vertical plane in overlapping relation or to more-or-less horizontal planes with spaces between them, or to intermediate positions, the arrangement being such that said weather fillets, when the slats are in their vertical plane, cover and protect from the weather the clearances or cracks between the ends of the slats and said upright members, and that as said slats move towards their horizontal planes, said weather fillets move outwards from said upright members, a manually rotatable actuating element accessible from the room or space to be ventilated, and transmision means between said actuating element and one of said slats, whereby, by rotating said actuating element in opposite directions, said slat is moved in opposite directions about its axis, said weather fillets forming the sole coupling means for causing the other slats to move in unison with said one slat.

2. A ventilator according to claim 1, wherein said transmission means is a step down transmission means so that the rotational movement of the actuating element is much in excess of that of the slats.

3. A ventilator according to claim 2, wherein said transmission means extends between said actuating element and a trunnion member secured to one end of said slat.

4. A ventilator according to claim 2, wherein said transmission mechanism comprises a screwed rod at right angles to the axis of said one of said slats, said screwed rod being rotatable by said actuating element, a nut in screwed relation on said screwed rod, whereby said nut travels horizontally along said rod in response to the rotation of the latter, and a link coupling said nut to said slat, whereby said horizontal travel of said nut effects rotary movement of said slat.

5. A ventilator according to claim 3 and claim 4, wherein said link is pivoted at one end to said nut and at the other end is connected to said trunnion member, so as to be capable of sliding longitudinally relative to said trunnion member, but to be incapable of rotating relative to said trunnion member about the axis of said slat.

6. A ventilator according to claim 5, wherein the connection of said link to said trunnion member is constituted by the engagement of a parallel sided part of said trunnion member in a longitudinal slot formed in said link.

7. A ventilator according to claim 5 or 6, wherein said upright members at the ends of the slats are hollow and said screwed rod and said trunnion member both extend into the hollow interior of the adjacent upright member, and said

* C L M S *

nut and link are located in said hollow interior.

8. A ventilator according to any of the preceding claims, wherein said slats are pivoted to said upright members by virtue of each slat having its ends mounted in **U** section holding members, from which holding members trunnion members project into bearings in said upright members.

9. A ventilator according to claim 8, wherein the pivoting of said weather fillets to said slats is effected by forming said holding members with flanges and pivoting said weather fillets to said flanges.

10. A louvre type ventilator substantially as herein described with reference to the accompanying drawings.

Dated this 17th day of August, 1949.
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For the Applicants.

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