

PATENT SPECIFICATION

DRAWINGS ATTACHED

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Improvements in adjustable louvre assemblies.

COMPLETE SPECIFICATION

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, Brisbane, 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 performed, to be particularly described in and by the following statement:

This invention relates to improvements in adjustable louvre assemblies.

It is well-known to use panels of adjustable louvres of which the blades are made of sheet metal, for the purpose of light control. For example, louvres of this description may be used in theatres, being left open for ventilation purposes or to admit light on certain occasions, and on other occasions being closed to exclude light, as, for example, during a matinee performance. These adjustable louvres ordinarily consist of conventional jamb assemblies, having a series of louvre blade clips pivoted thereto, the clips of at least one jamb assembly of a panel of louvres being operatively interconnected, and an operating handle being provided, so that all of the louvre blades of the panel may be simultaneously opened or closed. These conventional louvre clips are made to receive the ends of louvre blades of glass which are, of course, in more general use than are opaque blades.

Sheet metal, or "black-out", blades have hitherto been made of fairly light gauge sheet metal, for economy and lightness, the longitudinal edge portions of the blades being shaped to interfit, when the blades are in closed position, for better light exclusion, and also to impart additional rigidity to the blades. Blades of this description, however, require further reinforcement, and so are made of built-up construction, a sheet metal channel with out-turned longitudinal edge

flanges being applied and spot-welded to the main longitudinal mid-section of the blade.

Now, although this construction may give a satisfactory degree of rigidity, unless the blades are particularly long, it is an expensive mode of construction, and moreover unless very considerable care is exercised, the welding is likely to result in warping, with the result that, when the blades are brought as far as possible to closed position, succeeding blades may be firmly engaged at one side of the panel, and considerably spaced at the other side, so that light exclusion is very poor.

The present invention has been devised to overcome the said present disadvantages, and it has for its principal object the provision of adjustable louvres of the type having blades of sheet metal or analogous material of such improved construction as to be very simple and economical to manufacture, but at the same time highly efficient in effecting exclusion of light. Other objects of the invention are to provide adjustable louvres having the said advantages, and which furthermore are of very neat and attractive appearance, are simple and convenient to assemble, and are sturdy and durable in use.

With the foregoing and other objects in view, our invention resides broadly in the provision of an adjustable louvre assembly comprising a pair of jambs, a plurality of louvre clips pivotally connected to each jamb for receiving the ends of louvre blades, operating means for interconnecting the clips of each jamb so that the clips on that jamb are constrained to move together and to remain in parallelism and a rigid torque transmitting bar having its ends mounted in clips of the respective jambs so as to be non-rotatable relative to the clips, whereby the clips of one jamb are constrained to rotate simultaneously with the clips of the other jamb.

Other features of the invention will

(Price 3s. 6d.)

Price 4s. 6d.

become apparent from the following description.

In this description reference is made to the accompanying drawings wherein:

5 *Figure 1* is a frontal view of a louvre assembly according to the invention,

Figure 2 is a view partly in section on line 2—2 of *Figure 1*,

10 *Figure 3* is a view in section on line 3—3 of *Figure 1*,

Figure 4 is a perspective view of a louvre blade,

Figure 5 is a perspective view of a torque transmitting bar,

15 *Figure 6* is a fragmentary rear view of one end of a louvre blade and modified torque transmitting bar fitted in a louvre clip,

Figure 7 is a view in section on line 7—7 of *Figure 6*,

20 *Figure 8* is a fragmentary perspective view of the louvre blade and torque transmitting bar shown in *Figure 6*,

Figure 9 is a fragmentary rear view of one end of a louvre blade and further modified torque transmitting bar fitted in a louvre clip,

Figure 10 is a view in section on line 10—10 of *Figure 9*, and

30 *Figure 11* is a fragmentary perspective view of the louvre blade and torque transmitting bar shown in *Figure 9*.

In *Figure 1* of the drawings there is illustrated a rectangular frame comprising vertical side members 21 and horizontal upper and lower members 22. The frame defines an opening which is occupied by a panel of "black-out" louvre blades including a pair of jamb assemblies. Each jamb assembly, which is shown in more detail in *Figures 2* and 3, comprises a channel-section jamb 23 with embossed bearings 24 for pivots 25. The pivots 25 have enlarged heads 26 within the jamb channel, these heads being pivotally connected at diametrically opposed positions to a pair of vertically extending connecting bars 27 so that the pivots 25 are constrained to rotate together. Each pivot 25 has a channelled louvre clip 28 secured to it, these clips being of the type made to receive the ends of louvre blades of glass, and the clips on each jamb being all parallel to each other.

One only of the jambs 23 is provided with an operating handle 29 which passes through a slot in the rear web of the jamb and is pivotally connected to the two connecting bars 27.

The louvre panel includes a number of louvre blades 30 of identical construction and one additional louvre blade 31 of slightly different construction. Each blade 30 is made of fairly light gauge sheet metal in the form of an elongated rectangle, with its longitudinal edges shaped for interfitment with adjacent blades, and for additional

rigidity. The upper longitudinal edge portion is bent rearwardly through about forty degrees, and then forwardly through about one hundred and thirty degrees to form a top flange 32 substantially perpendicular to the main part of the blade. The bottom longitudinal edge portion 33 is bent over rearwardly and upwardly through an angle of about one hundred and forty degrees.

Each of the blades 30 is of such dimensions that at each end it may be slidably engaged in a pair of corresponding louvre clips of the two jambs, the bend defining the bottom edge portion 33 coming to rest upon the supporting stops 34 at the normally lower ends of the two clips, and the acute angle bend defining the top flange 32 snapping into engagement under the retaining stops 35 of the normally upper ends of the two clips. Because of the thinness of the sheet metal blades 30 in relation to the channelled louvre clips 28, which are adapted to receive glass blades of considerably greater thickness, there are expressed near to each end of each blade 30 two aligned transverse substantially arcuate leaves 36, each formed by making a pair of parallel cuts in the metal of the blade and stretching and bending to a fairly flat arc the metal between the cuts. These leaves 36 extend rearwardly of the main part of the blade 30 so as to bear against the rear webs of the clips 28 and hold the main parts of the blades 30 against the front webs of the clips. It should be noted that in *Figure 2* the blade 31 and the blade 30 immediately above it are both shown in section on the line 2—2 of *Figure 1*, whereas fragments of the immediately adjacent blades 30 are shown in end view and fragments of the right-hand clips of *Figure 1* are shown engaging them.

The blade 31 which is shown in *Figures 1* to 4 is basically similar to each of the blades 30 but instead of having the leaves 36 a concavity 37 of substantially rectangular outline is formed in the mid-portion of each end of the blade as shown in *Figure 4*, the concavity being such that when the blade end is engaged in a louvre clip, the depressed metal formed in making the concavity 37 will bear against the rear web of the clip channel to hold the remainder of the end of the blade against the front web of the clip, as illustrated in *Figure 2*.

There is provided a torque transmitting bar 38 which consists of a rigid length of metal bar or tube 39 having a torque transmitting bar bracket 40 welded or otherwise secured to each end, as illustrated in *Figure 5*. Each bracket 40 consists of a rectangular metal plate adapted to seat within one of the rectangular concavities 37 in the blade 31. The parts are so made and connected that the torque transmitting bar 38 may be

laid along and in contact with the front of the blade 31, along its longitudinal centre line with the two brackets seated in the concavities 37.

5 All the blades 30 and the blade 31 have their ends engaged in corresponding louvre clips of the two jambs, the blade 31 being installed close to the operating handle of the louvre panel, with the torque transmitting
10 bar 38 held to it while it is slid into its clips.

In use, when the handle 29 is operated to close the blades the connecting bars 27 act to turn the pivots of that jamb correspondingly. This motion is transmitted
15 through the rigid torque transmitting bar to a pivot of the opposite jamb and through the connecting bars of that jamb to all the associated pivots. Consequently each of the blades is acted upon from both ends and
20 there is no likelihood of the blades being distorted or twisted. The lower edge portion 33 of each blade 30 and 31 interfits below the flange 32 and against the correspondingly inclined part of the blade directly
25 below it so as to provide for the effective exclusion of light when the blades are closed.

To give further rigidity to the blades, which may be desirable in the case of very
30 long blades, each blade may be given a slight arcuate curvature from top to bottom concavely forward. The curvature at the ends of each blade will be more or less flattened out when the ends are engaged in
35 the louvre clips, but the slight curvature remaining in the main parts of the blade will prove effective.

Figures 6 to 8 illustrate a modified construction according to the invention in which
40 all the blades are identical with the blades 30 shown in Figures 1 and 2 and a modified construction of torque transmitting bar is used. This torque transmitting bar 41 consists of a length of rod or tubing having
45 secured to each end a rectangular plate 42 of suitable thickness to fit the space between the flanges of a clip 28 less the thickness of the plate of the blade 30. The width of each plate 42 is such as to enable it to fit
50 within the space between the leaves 36 at the rear of the blade 30. As illustrated the upper and lower edges of the plates 42 may be inclined in opposite directions so as to enable the area in contact with the rear
55 flange of the clip 28 to be increased. With this construction the torque transmitting bar is located at the rear of the particular blade to which it is fitted but it functions in a similar manner to that shown in Figures 1
60 to 5.

Figures 9 to 11 illustrate another modified construction which is similar to that of
Figures 6 to 8 in that all the blades are identical with the blades 30 of Figures 1
65 and 2 except for a detail relating to the

arcuate leaves 36. As illustrated these leaves are placed right at the ends of the blades, only one slit being cut before pressing the leaves out, and the leaves are somewhat wider than in the previous constructions. Blades with leaves of this character can be used with the previous constructions shown in Figures 1 to 8 just as well as the blades 30 shown therein. The torque transmitting bar 43 which is shown in Figures 9 to 11 is provided with two end plates 44, each being in the shape of a rectangle with two outwardly directed prongs 45. The prongs are of such dimensions that they will slide longitudinally into and fit the space between the leaves 36 and the flat surface of the blade 30. The end plates 44 have bosses 46 whereby they are secured to the rod 43 and the total length of the rod and plates is made substantially equal to the length of the blade 30. The torque transmitting bar is assembled to the blade by placing it at the rear of the blade and inserting the prongs 45 at one end forwardly of the leaves at that end, then inserting the prongs at the other end forwardly of the leaves at the other end, and then centralising the torque transmitting bar. The blade and bar can then be slid into the appropriate clips in the louvre assembly.
WHAT WE CLAIM IS:

1. An adjustable louvre assembly comprising a pair of jambs, a plurality of louvre clips pivotally connected to each jamb for receiving the ends of louvre blades, operating means for interconnecting the clips of each jamb so that the clips on that jamb are constrained to move together and to remain in parallelism, and a rigid torque transmitting bar having its ends mounted in clips of the respective jambs so as to be non-rotatable relative to the clips, whereby the clips of one jamb are constrained to rotate simultaneously with the clips of the other jamb.

2. An adjustable louvre assembly according to claim 1 including a plurality of blades of thin sheet material having their ends engaged in clips pivoted to the respective jambs, and wherein the torque transmitting bar is disposed adjacent one blade with its ends engaged in the clips supporting that blade.

3. An adjustable louvre assembly according to claim 2 wherein parts of the ends of the blades are distorted out of their general plane so as to fit the width of the clips, and wherein the ends of the torque transmitting bar are engaged in the spaces provided by the said distortion in the blade to which the bar is adjacent.

4. An adjustable louvre assembly according to claim 3 wherein the distortion in the blade adjacent the torque transmitting bar comprises recesses of rectangular outline and wherein the torque transmitting bar termi-



laid along and in contact with the front of the blade 31, along its longitudinal centre line with the two brackets seated in the concavities 37.

5 All the blades 30 and the blade 31 have their ends engaged in corresponding louvre clips of the two jambs, the blade 31 being installed close to the operating handle of the louvre panel, with the torque transmitting

10 bar 38 held to it while it is slid into its clips. In use, when the handle 29 is operated to close the blades the connecting bars 27 act to turn the pivots of that jamb correspondingly. This motion is transmitted

15 through the rigid torque transmitting bar to a pivot of the opposite jamb and through the connecting bars of that jamb to all the associated pivots. Consequently each of the blades is acted upon from both ends and

20 there is no likelihood of the blades being distorted or twisted. The lower edge portion 33 of each blade 30 and 31 interfits below the flange 32 and against the correspondingly inclined part of the blade directly

25 below it so as to provide for the effective exclusion of light when the blades are closed.

To give further rigidity to the blades, which may be desirable in the case of very

30 long blades, each blade may be given a slight arcuate curvature from top to bottom concavely forward. The curvature at the ends of each blade will be more or less flattened out when the ends are engaged in the louvre clips, but the slight curvature

35 remaining in the main parts of the blade will prove effective.

Figures 6 to 8 illustrate a modified construction according to the invention in which

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50 within the space between the leaves 36 at the rear of the blade 30. As illustrated the upper and lower edges of the plates 42 may be inclined in opposite directions so as to enable the area in contact with the rear

55 flange of the clip 28 to be increased. With this construction the torque transmitting bar is located at the rear of the particular blade to which it is fitted but it functions in a similar manner to that shown in Figures 1

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arcuate leaves 36. As illustrated these leaves are placed right at the ends of the blades, only one slit being cut before pressing the leaves out, and the leaves are somewhat

70 wider than in the previous constructions. Blades with leaves of this character can be used with the previous constructions shown in Figures 1 to 8 just as well as the blades 30 shown therein. The torque transmitting bar

75 43 which is shown in Figures 9 to 11 is provided with two end plates 44, each being in the shape of a rectangle with two outwardly directed prongs 45. The prongs are of such dimensions that they will slide longitudinally

80 into and fit the space between the leaves 36 and the flat surface of the blade 30. The end plates 44 have bosses 46 whereby they are secured to the rod 43 and the total length of the rod and plates is made substantially equal to the length of the blade

85 30. The torque transmitting bar is assembled to the blade by placing it at the rear of the blade and inserting the prongs 45 at one end forwardly of the leaves at that end, then inserting the prongs at the other end forwardly of the leaves at the other end, and

90 then centralising the torque transmitting bar. The blade and bar can then be slid into the appropriate clips in the louvre assembly.

95 WHAT WE CLAIM IS:

1. An adjustable louvre assembly comprising a pair of jambs, a plurality of louvre clips pivotally connected to each jamb for receiving the ends of louvre blades, operating means for interconnecting the clips of each jamb so that the clips on that jamb are constrained to move together and to remain in parallelism, and a rigid torque transmitting bar having its ends mounted in clips of the respective jambs so as to be non-rotatable relative to the clips, whereby the clips of one jamb are constrained to rotate simultaneously with the clips of the other jamb.

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2. An adjustable louvre assembly according to claim 1 including a plurality of blades of thin sheet material having their ends engaged in clips pivoted to the respective jambs, and wherein the torque transmitting bar is disposed adjacent one blade with its ends engaged in the clips supporting that blade.

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3. An adjustable louvre assembly according to claim 2 wherein parts of the ends of the blades are distorted out of their general plane so as to fit the width of the clips, and wherein the ends of the torque transmitting bar are engaged in the spaces provided by the said distortion in the blade to which the bar is adjacent.

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4. An adjustable louvre assembly according to claim 3 wherein the distortion in the blade adjacent the torque transmitting bar comprises recesses of rectangular outline and wherein the torque transmitting bar termi-

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nates in rectangular plates which fit said recesses.

5. An adjustable louvre assembly according to claim 3 wherein the distortion in each blade comprises spring leaves pressed out of the plane of the blade and wherein the torque transmitting bar terminates in pronged plates, the prongs of which are engaged between the spring leaves and the body of the plate adjacent the torque transmitting bar.

6. In or for an adjustable louvre assembly, a blade of thin plate having its ends distorted out of their general plane to fit clips of spaced louvre jambs, and a torque transmitting bar having its ends constructed for interengagement with the ends of the blade so as to lie between the boundary planes of the distorted ends thereof, whereby said blade and torque transmitting bar may be engaged in the clips by sliding them laterally thereinto.

7. The combination as claimed in claim 6 wherein the distortion of the ends of the blade comprises the formation of spring leaves standing out therefrom and wherein the ends of the torque transmitting bar are adapted to be engaged between the spring leaves and the body of the blade.

8. An adjustable louvre assembly substantially as hereinbefore described with reference to Figures 1 to 5 of the accompanying drawings.

9. In or for an adjustable louvre assembly, a louvre blade and torque trans-

mitting bar substantially as hereinbefore described with reference to Figures 1 to 5 of the accompanying drawings.

10. An adjustable louvre assembly substantially as hereinbefore described with reference to Figures 6 to 8 of the accompanying drawings.

11. In or for an adjustable louvre assembly, a louvre blade and torque transmitting bar substantially as hereinbefore described with reference to Figures 6 to 8 of the accompanying drawings.

12. An adjustable louvre assembly substantially as hereinbefore described with reference to Figures 9 to 11 of the accompanying drawings.

13. In or for an adjustable louvre assembly, a louvre blade and torque transmitting bar substantially as hereinbefore described with reference to Figures 9 to 11 of the accompanying drawings.

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