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PATENT SPECIFICATION

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(54) ANTI-RATTLE ELEMENT/

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pany incorporated under the laws of the State
of New South Wales, Commonwealth of
5 Australia, of 34-36 Manigold Street,
Revesby, N.S.W. 2212 Australia, do hereby
declare the invention, for which we pray that
a patent may be granted to us, and the method
10 by which it is to be performed to be par-
ticularly described in and by the following
statement:—

This invention relates to closures for build-
ing wall openings and the like of the kind in
which a "curtain sheet" slides substantially in
15 the plane of the opening in guideways at
opposite edges of the opening from a closed
position wherein it fills the opening to an open
position wherein it is disposed above, below
or to one side of the opening and vice versa.
20 Usually, the curtain shutter slides in the ver-
tical direction in guideways extending verti-
cally of the side edges of the opening, and again
in most cases the curtain shutter slides up-
wardly to open the opening and is then wrap-
25 ped upon a drum structure extending hori-
zontally above the opening or slides into termi-
nal portions of the guideways disposed above
the opening.

The term "curtain sheet" as used herein
30 covers corrugated or similarly conformed sheets
as well as sheet-like structures comprising a
plurality of slats or sheet portions hinged
together which are stiff in one direction and
flexible in a direction at 90° to the said one
35 direction. Thus the curtain sheet may effec-
tively close the opening when held at its edges
by the aforesaid guideways, but nevertheless
may, for example, be rolled onto a drum struc-
ture above the opening to open the closure.

Typically, closures of the kind in question
40 are used as garage doors or as doors in factory
buildings and they are well known and require
no detailed description. For the sake of con-
venience, all such "curtain sheets" are referred
45 to as "curtains" hereinafter.

Conventionally, the curtain is provided with
anti-rattle devices at its edges so that it is
a relatively neat fit within the guideways at

the edges of the opening within which the cur-
tain slides.

Hitherto, those anti-rattle structures have
usually comprised separate elements applied
to each side of the curtain. Typical anti-rattle
elements comprise wooden blocks, plastics
55 studs or buttons secured to the curtain, or in
one widely used instance, the anti-rattle de-
vices comprise pairs of resilient strips at
opposite edges of the curtain extending longi-
tudinally thereof, with the members of each
60 pair respectively on opposite sides of the cur-
tain and secured to the curtains by staples or
the like passing through both strips of the pair
and the curtains.

In all of the prior known instances where,
as is desirable, anti-rattle devices at each edge
65 are provided on each side of the curtain, it
has been necessary for them to be assembled
to the curtain from each side. This has added
to the cost of assembly and manufacture of the
closures and an object of the present inven-
70 tion is to provide an inexpensive anti-rattle
element which may be applied to the edge of
the curtain to provide rubbing surfaces on each
side of the curtain without requiring separate
75 operations to be carried out from each side of
the curtain.

According to the invention there is pro-
vided an anti-rattle element for use with a
curtain of a movable closure, the curtain hav-
ing generally parallel edges and a plurality
80 of engageable portions positioned adjacent at
least one of the parallel edges, the engageable
portions being at least partially spaced from
adjoining portions of the curtain, said anti-
rattle element comprising a body having first
85 and second abutment side faces and a rear face
having a recess therein for embracing a part of
the edge of the curtain in such a manner that
said abutment side faces are disposed on
90 opposite sides of the curtain and face out-
wardly therefrom; and a resilient latching
tongue protruding from said rear face of said
body and having a tip quick-releasably engage-
95 able with one of the engageable portions of the
curtain to hold said anti-rattle element to the
curtain.

According to a preferred embodiment of the invention the engageable portions of the curtain are formed by a strap affixed to a shutter portion of the curtain, and said tip is shaped to hook over an edge of the strap.

By way of example, preferred embodiments of the invention are described hereinafter with reference to the accompanying drawings.

Figure 1 is a side elevation of an anti-rattle element according to the invention.

Figure 2 is a plan view of the element of Figure 1.

Figure 3 is a rear elevation of the element of Figure 1.

Figure 4 is a perspective view of the element of Figure 1 shown in position as applied to the corrugated curtain of a curtain shutter.

Figure 5 is a view similar to Figure 4 of the element applied to a second type of corrugated curtain of a curtain shutter.

Figure 6 is a view similar to Figure 1 of a second anti-rattle element according to the invention.

Figure 7 is a view similar to Figure 2 of the element of Figure 6 applied to a curtain.

Figure 8 is a view similar to Figure 3 of the embodiment of Figure 6.

Figure 9 is a sectional view taken on line 9—9 of Figure 8.

Figure 10 is a view similar to Figure 3 of still another embodiment of the invention.

Figure 11 is a sectional view taken on line 11—11 of Figure 10.

Figure 12 is a detailed view of that portion of Figure 11 marked 12 thereon, drawn to a larger scale.

Figure 13 is a sectional view taken on line 13—13 of Figure 10.

Figure 14 is a view similar to Figure 2 of the embodiment of the invention of Figure 10.

Figure 15 is a perspective view of the anti-rattle element of Figure 10 shown applied to a curtain.

Figure 16 is a view seen from the reverse side and drawn to a larger scale of that portion of Figure 15 within the enclosure marked 16 thereon.

The embodiment of the invention illustrated by Figures 1 to 5 is a one-piece moulding of nylon or other resilient plastics material which, in the moulded form, has a low coefficient of friction. The moulding comprises a body 6 which itself comprises a web 7 from which projects a first flange structure 8, a resilient latch arm 10 and a second flange structure 11.

The first flange structure 8 comprises a flange 12 of arcuate cross-section and, integral therewith, two curved relatively thin fins 13 spaced, except at their junction therewith, from the flange 12.

In use, the upper surfaces of the fins 13 (as seen in Fig. 3) constitute one of the abutment surfaces of the element, that is to say, in use, they contact and slide upon a guiding surface of the guideway for the curtain, and due to

their ability resiliently to flex provide a cushioning effect which prevents or, at least greatly lessens, any rattling which otherwise might occur between the curtain and the guideway.

The flange 12 defines an arcuate abutment surface 14 adapted to contact an edge surface portion of the trough of a corrugation of a corrugated curtain, as is described in more detail hereinafter.

The flange structure 11 comprises a flange 15 of rectangular cross-section and a slightly bowed, relatively thin bridge piece 16, which functions in much the same way as the fins 13 to provide resilience in the lower surface of the element, it being the outer face of the bridge piece 16 which constitutes the element's second abutment surface.

Turning now to Figure 4, there is shown shutter curtain 17 comprising a corrugated metal sheet 17A of conventional kind and a strap 18 riveted to the crests of each corrugation of the sheet 17A. The figure illustrates the emplacement of an element according to Figures 1 to 3 and it will be seen that the resilient latch arm 10, which includes a cantilever portion 19 and a hooked, end flange 20, hooks over the strap 18 while the edge portion of a trough of a corrugation of the sheet 17A contacts the surface 14. Thus, the element is secured in position and may be placed in position from one edge of the sheet 17A simply by manually or otherwise thrusting it into engagement as shown in Figure 4. Under those circumstances, the bridge piece 16 and the fins 13 provide resilient abutment surfaces one on each of the sheet 17A and facing away therefrom.

Figure 5 illustrates the emplacement of the element of Figures 1, 2 and 3 on a sheet similar to sheet 17A, but one which does not have a strap corresponding to 18 but rather is formed with bridges 21 extending across the troughs of the corrugations adjacent to the edges thereof to constitute detent formations adapted to be engaged by the resilient tongue 10 in exactly the same way as that tongue engages the strap 18 of Figure 4.

The embodiment of the invention illustrated by Figure 6 is similar in function and very largely in conformation to the embodiment illustrated by Figures 1 to 5 and those parts which correspond clearly to parts of the Figure 1 embodiment are not described in detail hereinafter but their reference numerals correspond to those used in Figures 1 and 5 followed by the suffix A.

The primary difference between the two embodiments is that in the Figure 6 embodiment the fins 13 of the Figure 1 embodiment are replaced by two ribs, flange structure 11A is considerably more elongate than flange structure 11 and in place of the bridge piece 16 is furnished with a rib 22. The central portion of the structure 11A comprises a project-

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ing tongue 15A corresponding to the flange 15 and furnished with a second bead 23. In this embodiment of the invention rib 21, and the beads 22 and 23 define the first and second abutment faces of the anti-rattle element.

The web at 7A, unlike web 7, includes a rounded thickened portion 24, which together with the surface 14A defines a groove into which the edge margin of the mound of the corrugated sheet 17A is homed when the element is applied thereto.

The hooked end flange 20A is maintained in pressure contact with the strap 18A by virtue of a resilient buffer 25 integral with the web 7A and including two resiliently deformable wings 26 which make contact with the edge of the sheet 17A.

The embodiment of the invention illustrated in Figures 10 to 16 is also similar in function to those of the earlier described embodiments, although it differs somewhat more in arrangement or shaping from the Figure 1 embodiment than does the Figure 6 embodiment. Nevertheless, those parts which correspond in function to parts of the Figure 1 embodiment are not described further hereinafter as they may be comprehended from the earlier description having regard to the fact that the reference numerals in Figures 10 to 16 correspond to those of Figures 1 to 5, but followed by the suffix B.

It will be noted, by reference to Figures 10 to 16, that the web 7B of this embodiment is furnished with two protruding beads 27 adapted to make contact with the inner face of the floor of the channel constituting the guide for the curtain of the shutter. Due to the lack of resilience in beads 27 compared for example with the wings 26 of the Figure 6 embodiment of the invention, the hooked portion of the resilient latch arm 20B is provided with two engaging faces (see Figure 12) to compensate for possible variations in width of the strap 18B and the spacing between the guides within which the shutter run.

It will also be seen that the resilient fins 13 are replaced by fins 13B which extends upwardly from the centre line of the element rather than inwardly as in the earlier described embodiment of the invention.

The flange 15 is replaced by two relatively short abutment elements 15B and adjacent thereto are further similar abutment elements 28 which make contact with the opposite side of the curtain sheet from that contacted by element 15B.

WHAT WE CLAIM IS:—

1. An anti-rattle element for use with a curtain of a movable closure, the curtain having generally parallel edges and a plurality of engageable portions positioned adjacent at least one of the parallel edges, the engageable

portions being at least partially spaced from adjoining portions of the curtain, said anti-rattle element comprising a body having first and second abutment side faces and a rear face having a recess therein for embracing a part of the edge of the curtain in such manner that said abutment side faces are disposed on opposite sides of the curtain and face outwardly therefrom; and a resilient latching tongue protruding from said rear face of said body and having a tip quick-releasably engageable with one of the engageable portions of the curtain to hold said anti-rattle element to the curtain.

2. An anti-rattle element according to Claim 1, wherein the engageable portions of the curtain are formed by a strap affixed to a shutter portion of the curtain, and said tip is shaped to hook over an edge of the strap.

3. An anti-rattle element according to Claim 2, wherein said rear face includes a resiliently displaceable portion.

4. An anti-rattle element according to Claim 3, wherein said resiliently displaceable portion is an outer surface of a curved resilient fin protruding from said rear face.

5. An anti-rattle element according to Claim 2, wherein said latching tongue includes a plurality of formations respectively spaced to differing extents from said rear face, one of said formations being engageable with the strap, said formations facilitating engagement of said tip with different width straps.

6. An anti-rattle element according to Claim 1, wherein the curtain has a corrugated surface with troughs extending transversely to the parallel edges, wherein said recess of said rear face is adapted to embrace at least a part of a trough wherein the engageable portions of the curtain are formed by bridges extending across the troughs, and having lower surfaces facing the troughs, and wherein said tip is passable underneath the lower surface and has a hook-shaped portion engageable with an edge of the bridge.

7. An anti-rattle element according to Claim 6, wherein said rear face includes a resiliently displaceable portion.

8. An anti-rattle element according to Claim 7, wherein said resiliently displaceable portion is an outer surface of a curved resilient fin protruding from said rear face.

9. An anti-rattle element according to Claim 6, wherein said latching tongue includes a plurality of formations respectively spaced to differing extents from said rear face, one of said formations being engageable with the strap, said formations facilitating engagement of said tip with different width straps.

10. An anti-rattle element substantially as described herein with reference to Figures 1 to 5, or 6 to 9, or 10 to 16 of the accompanying drawings.

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ing tongue 15A corresponding to the flange 15 and furnished with a second bead 23. In this embodiment of the invention rib 21, and the beads 22 and 23 define the first and second abutment faces of the anti-rattle element.

The web at 7A, unlike web 7, includes a rounded thickened portion 24, which together with the surface 14A defines a groove into which the edge margin of the mound of the corrugated sheet 17A is homed when the element is applied thereto.

The hooked end flange 20A is maintained in pressure contact with the strap 18A by virtue of a resilient buffer 25 integral with the web 7A and including two resiliently deformable wings 26 which make contact with the edge of the sheet 17A.

The embodiment of the invention illustrated in Figures 10 to 16 is also similar in function to those of the earlier described embodiments, although it differs somewhat more in arrangement or shaping from the Figure 1 embodiment than does the Figure 6 embodiment. Nevertheless, those parts which correspond in function to parts of the Figure 1 embodiment are not described further hereinafter as they may be comprehended from the earlier description having regard to the fact that the reference numerals in Figures 10 to 16 correspond to those of Figures 1 to 5, but followed by the suffix B.

It will be noted, by reference to Figures 10 to 16, that the web 7B of this embodiment is furnished with two protruding beads 27 adapted to make contact with the inner face of the floor of the channel constituting the guide for the curtain of the shutter. Due to the lack of resilience in beads 27 compared for example with the wings 26 of the Figure 6 embodiment of the invention, the hooked portion of the resilient latch arm 20B is provided with two engaging faces (see Figure 12) to compensate for possible variations in width of the strap 18B and the spacing between the guides within which the shutter run.

It will also be seen that the resilient fins 13 are replaced by fins 13B which extends upwardly from the centre line of the element rather than inwardly as in the earlier described embodiment of the invention.

The flange 15 is replaced by two relatively short abutment elements 15B and adjacent thereto are further similar abutment elements 28 which make contact with the opposite side of the curtain sheet from that contacted by element 15B.

WHAT WE CLAIM IS:—

1. An anti-rattle element for use with a curtain of a movable closure, the curtain having generally parallel edges and a plurality of engageable portions positioned adjacent at least one of the parallel edges, the engageable

portions being at least partially spaced from adjoining portions of the curtain, said anti-rattle element comprising a body having first and second abutment side faces and a rear face having a recess therein for embracing a part of the edge of the curtain in such manner that said abutment side faces are disposed on opposite sides of the curtain and face outwardly therefrom; and a resilient latching tongue protruding from said rear face of said body and having a tip quick-releasably engageable with one of the engageable portions of the curtain to hold said anti-rattle element to the curtain.

2. An anti-rattle element according to Claim 1, wherein the engageable portions of the curtain are formed by a strap affixed to a shutter portion of the curtain, and said tip is shaped to hook over an edge of the strap.

3. An anti-rattle element according to Claim 2, wherein said rear face includes a resiliently displaceable portion.

4. An anti-rattle element according to Claim 3, wherein said resiliently displaceable portion is an outer surface of a curved resilient fin protruding from said rear face.

5. An anti-rattle element according to Claim 2, wherein said latching tongue includes a plurality of formations respectively spaced to differing extents from said rear face, one of said formations being engageable with the strap, said formations facilitating engagement of said tip with different width straps.

6. An anti-rattle element according to Claim 1, wherein the curtain has a corrugated surface with troughs extending transversely to the parallel edges, wherein said recess of said rear face is adapted to embrace at least a part of a trough wherein the engageable portions of the curtain are formed by bridges extending across the troughs, and having lower surfaces facing the troughs, and wherein said tip is passable underneath the lower surface and has a hook-shaped portion engageable with an edge of the bridge.

7. An anti-rattle element according to Claim 6, wherein said rear face includes a resiliently displaceable portion.

8. An anti-rattle element according to Claim 7, wherein said resiliently displaceable portion is an outer surface of a curved resilient fin protruding from said rear face.

9. An anti-rattle element according to Claim 6, wherein said latching tongue includes a plurality of formations respectively spaced to differing extents from said rear face, one of said formations being engageable with the strap, said formations facilitating engagement of said tip with different width straps.

10. An anti-rattle element substantially as described herein with reference to Figures 1 to 5, or 6 to 9, or 10 to 16 of the accompanying drawings.

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