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SECURITY SCREEN FRAME ASSEMBLY

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(56) Related Art
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AU 2005201582 B2
US 2335361 A
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US 2011/0114268 A1
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Abstract

A frame assembly 10 for securing a screen 12 in a frame, the frame assembly 10 comprising: a channel 14 having an end wall 16 and first and second opposed side walls 18 and 20, a marginal edge 22 of the screen 12 being adapted to be secured in the channel 14.

The frame assembly 10 also comprises a retention key strip 24 which is adapted to be located in the channel 14 against the first side wall 18, the retention key strip 24 having a domed surface 26 on one face and a generally planar surface 28 on the opposite face, and wherein the first side wall 18 has a concave surface 30 adapted to receive the domed surface 26 of the retention key strip 24 in cooperating relationship therein.

The frame assembly 10 also comprises a keeper key strip 32 which is adapted to be located in the channel 14 against the second side wall 20 in an operative position, the keeper key strip 32 having a domed surface 34 on one face and a generally planar surface 36 on the opposite face, and wherein the second side wall 20 also has a concave surface adapted to receive the domed surface of the keeper key strip 32 in cooperating relationship therein.

In use, when the keeper key strip 32 is inserted into the channel 14 after the marginal edge 22 of the screen 12 is located against the generally planar surface of the retention key strip 24, the retention key strip 24 being already located within the channel 14 with its domed surface in cooperating relationship with the concave surface of the first side wall 18, the keeper key strip 32 is forced into its operative position in the channel 14 with its generally planar surface pressing against the marginal edge 22 of the screen 12 to secure the screen in the channel 14.

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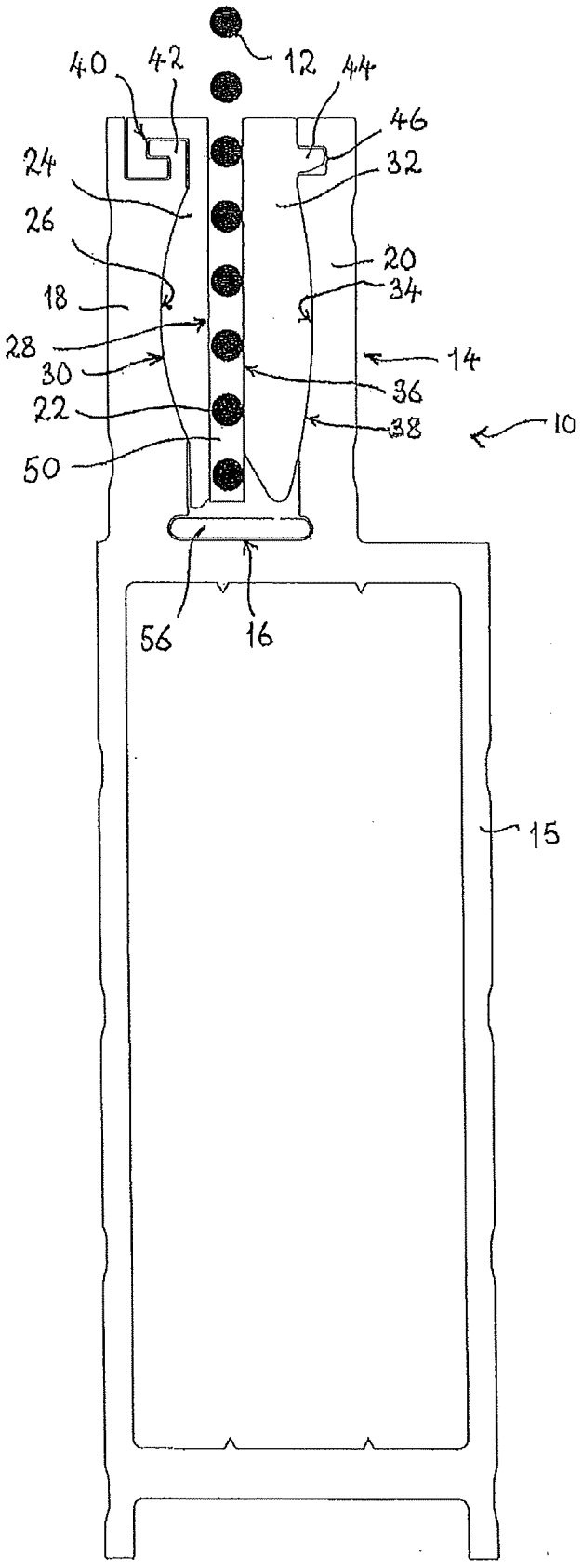

FIG. 1.

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"SECURITY SCREEN FRAME ASSEMBLY"

Field of the Invention

The present invention relates to a frame assembly for a screen of the kind used on windows and doors and relates particularly, though not exclusively to a frame assembly for a security screen to inhibit the entrance of intruders.

Background to the Invention

In security screens the main point of weakness is usually the edge of the screen mesh where it is joined to the frame. In order to provide a secure attachment of the mesh to the frame a means of locking the peripheral edge of the screen mesh in the frame has to be devised.

Australian Patent No 2005202591 discloses a screen assembly comprising a rigid stainless-steel screen 19 mounted in a surrounding frame assembly 10. The frame assembly has a channel 32 with an end wall 14 and opposed side walls 12, 13, and a marginal edge section of the screen 19 is secured in the channel. First and second channel insert strips 15, 24 are adapted to be inserted into the channel in turn, one before and one after the screen 19, resulting in the marginal edge section of the screen being sandwiched between the strips. The first strip 15 is located in the channel 32 against one of the side walls 13.

This first strip 15 has a plurality of projections 20 and recesses 21 which cooperate with respective recesses 22 and projections 23 in the first strip 15 to aid in locating the first strip and inhibiting its removal. The first strip also has a terminal edge section 16 located adjacent the end wall 14 of the channel between the end wall and a peripheral edge 18 of the screen 19. The terminal edge section 16 is defined by a return flange 17 which effectively surrounds the peripheral edge 18 of the screen 19.

The second strip 24 is located in the channel 32 after the edge of the screen 19 is located in position adjacent the first strip 15, and acts as a locking strip

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which is forced into the channel and directly engages the screen 19. The relative dimensions of the channel 32, the strips 15, 24 and the screen 19 are selected such that as the locking strip 24 is forced into its operative position in the channel 32 the marginal edge section of the screen 19 is secured in the channel 32 between the strips.

The present invention was developed with a view to providing an improvement on the design of the frame assembly of AU2005202591. It will be apparent that the present invention is also applicable to other types of screens, such as insect screens, and is not limited in its application to security screens.

References to prior art in this specification are provided for illustrative purposes only and are not to be taken as an admission that such prior art is part of the common general knowledge in Australia or elsewhere.

Summary of the Invention

According to one aspect of the present invention there is provided a frame assembly for securing a screen in a frame, the frame assembly comprising:

a channel having an end wall and first and second opposed side walls, a marginal edge of the screen being adapted to be secured in the channel;

a retention key strip which is adapted to be located in the channel against the first side wall, the retention key strip having a domed surface on one face and a generally planar surface on the opposite face, and wherein the first side wall has a concave surface adapted to receive the domed surface of the retention key strip in cooperating relationship therein;

a keeper key strip which is adapted to be located in the channel against the second side wall in an operative position, the keeper key strip having a domed surface on one face and a generally planar surface on the opposite face, and wherein the second side wall also has a concave surface adapted

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to receive the domed surface of the keeper key strip in cooperating relationship therein;

whereby, in use, when the keeper key strip is inserted into the channel after the marginal edge of the screen is located against the generally planar surface of the retention key strip, the retention key strip being already located within the channel with its domed surface in cooperating relationship with the concave surface of the first side wall, the keeper key strip is forced into its operative position in the channel with its generally planar surface pressing against the marginal edge of the screen to secure the screen in the channel.

Preferably the frame assembly further comprises a retention holding strip which is provided in connection with the retention key strip and which is adapted to engage with the marginal edge of the screen to assist with holding the marginal edge against the retention key strip. Advantageously the retention holding strip is glued to the retention key strip.

Preferably the frame assembly further comprises a channel base strip which is received adjacent to the end wall of the channel.

Preferably the retention key strip and the keeper key strip are both made from a strip of hard PVC plastics material. Preferably the retention holding key strip is made from a soft PVC plastics material. Preferably the channel base strip is also made from hard PVC plastics material.

Preferably the retention key strip is formed with a retention groove extending along its outer longitudinal edge on the same side as the domed surface. The first side wall of the channel is preferably formed with a matching retention tongue adjacent to the concave surface, the retention tongue being adapted to be received in the retention groove in the operative position of the retention key strip.

Preferably the keeper key strip is formed with a keeper protrusion extending along its outer longitudinal edge on the same side as the domed surface. The second side wall of the channel is likewise preferably formed with a matching keeper recess adjacent to the concave surface whereby, in use, when the

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keeper key strip is forced into its operative position in the channel, the keeper protrusion is adapted to be received in the keeper recess and helps to keep the keeper key strip in the channel.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers. Likewise the word "preferably" or variations such as "preferred", will be understood to imply that a stated integer or group of integers is desirable but not essential to the working of the invention.

Brief Description of the Drawings

The nature of the invention will be better understood from the following detailed description of several specific embodiments of the frame assembly, given by way of example only, with reference to the accompanying drawing, in which:

Figure 1 is a section view of a first embodiment of a frame assembly according to the present invention.

Detailed Description of Preferred Embodiments

A preferred embodiment of a frame assembly 10 in accordance with the invention for securing a screen in the form of stainless-steel screen mesh 12 in a frame, as illustrated in Figure 1, comprises a channel 14 having an end wall 16 and first and second opposed side walls 18 and 20. The channel 14 is formed on an inner longitudinal edge of an elongate frame member 15 for a screen door or window screen frame. The frame member 15 with the channel 14 is typically manufactured in the form of an aluminium extrusion.

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A marginal edge 22 of the screen mesh 12 is adapted to be secured in the channel 14. A retention key strip 24 is adapted to be located in the channel 14 against the first side wall 18 in an operative position. The retention key strip 24 has a domed surface 26 on one face and a generally planar surface 28 on the opposite face. The first side wall 18 of the channel 14 has a concave surface 30 adapted to receive the domed surface 26 of the retention key strip 24 in cooperating relationship therein. The generally planar surface 28 is designed to engage the marginal edge 22 of the screen 12 adjacent thereto in an operative position.

A keeper key strip 32 is adapted to be located in the channel 14 against the second side wall 20 in an operative position. The keeper key strip 32 has a domed surface 34 on one face and a generally planar surface 36 on the opposite face. The second side wall 20 also has a concave surface 38 adapted to receive the domed surface 34 of the keeper key strip 32 in cooperating relationship therein. The generally planar surface 36 is designed to engage the marginal edge 22 of the screen mesh 12 adjacent thereto in an operative position.

In use, the keeper key strip 32 is inserted into the channel 14 after the marginal edge 22 of the screen 12 is located against the generally planar surface of the retention key strip 24, and after the retention key strip 24 has already been located within the channel 14 with its domed surface 26 in cooperating relationship with the concave surface 30 of the first side wall 18. The relative dimensions of the channel, the strips and the screen are selected so that when the keeper key strip 32 is forced into its operative position in the channel 14, its generally planar surface 36 pressing against the marginal edge of the screen acts to secure the screen in the channel.

In the preferred embodiment the retention key strip 24 is formed with a retention groove 40 extending along its outer longitudinal edge on the same side as the domed surface 26. The first side wall 18 of the channel is likewise formed with a matching retention tongue 42 adjacent to the concave surface 30, the retention tongue 42 being adapted to be received in the retention

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groove 40 in the operative position of the retention key strip 24. In order to fit the retention key strip 24 in its operative position in the channel 14, it must typically be inserted longitudinally from one end of the channel 14 by sliding the retention tongue 42 into the matching retention groove 40 on the retention key strip.

Preferably the keeper key strip 32 is formed with a keeper protrusion 44 extending along its outer longitudinal edge on the same side as the domed surface 34. The second side wall 20 of the channel is likewise formed with a matching keeper recess 46 adjacent to the concave surface 38. When the keeper key strip 32 is forced into its operative position in the channel 14, the keeper protrusion 44 is adapted to be received in the keeper recess 46 and helps to keep the keeper key strip in the channel.

Preferably the frame assembly further comprises a retention holding strip 50 which is provided in connection with the retention key strip 24 and which is adapted to engage with the marginal edge of the stainless-steel screen mesh 12 to assist with holding the marginal edge against the retention key strip mesh 24. Advantageously the retention holding strip 50 is glued to the retention key strip 24. Preferably the retention holding strip 50 is made from a soft PVC plastics material. Hence when the marginal edge of the screen mesh 12 is pressed against the retention holding strip by the wedging force of the keeper key strip 32, the soft material of the retention holding strip is squeezed into the voids between the wires of the screen mesh 12. This helps to hold the marginal edge of the screen mesh 12 between the retention key strip 24 and the keeper key strip 32, and therefore retain it in the channel 14.

Preferably the frame assembly further comprises a channel base strip 56 which is received adjacent to the end wall 16 of the channel 14. Typically the base of the channel 14 is recessed at both ends to form a slot in which the channel base strip 56 is received. The purpose of the channel base strip 56 is to act as a barrier between the peripheral edge of the stainless-steel mesh screen mesh 12 and the channel 14 so as to inhibit galvanic action due to dissimilar metals being in close proximity.

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Preferably the retention key strip 24 and the keeper key strip 32 are both made from a strip of hard PVC plastics material. Preferably the channel base strip 56 is also made from hard PVC plastics material.

From the above description of the various parts of the frame assembly and their cooperating interrelationships, it will be seen that the marginal edge of the screen mesh 12 will be securely wedged in the channel 14 as it is retained in the channel by the combined actions of the retention key strip 24, the keeper key strip 32 and the retention holding key strip 50. The retention key strip 24 and the keeper key strip 32 in turn, will be held securely in the channel 14 by their respective domed surfaces 26, 34 received in the matching concave surfaces 30, 38.

Now that preferred embodiments of the frame assembly have been described in detail, it will be apparent that the described embodiments provide a number of advantages over the prior art, including the following:

(i) The domed surfaces on the retention key strip and the keeper key strip provide an effective means for securing these strips in the channel.

(ii) The combined effects of the retention key strip, the keeper key strip and the retention holding key strip provide a very secure mechanism for securing the marginal edge of the screen mesh in the channel.

It will be readily apparent to persons skilled in the relevant arts that various modifications and improvements may be made to the foregoing embodiments, in addition to those already described, without departing from the basic inventive concepts of the present invention. For example, the relative thicknesses and curvature of the domed surfaces may be varied from that shown in the illustrated embodiments. Therefore, it will be appreciated that the scope of the invention is not limited to the specific embodiments described.

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The Claims defining the invention are as follows:

1. A frame assembly for securing a screen in a frame, the frame assembly comprising:

a channel having an end wall and first and second opposed side walls, a marginal edge of the screen being adapted to be secured in the channel;

a retention key strip which is adapted to be located in the channel against the first side wall, the retention key strip having a domed surface on one face and a generally planar surface on the opposite face, and wherein the first side wall has a concave surface adapted to receive the domed surface of the retention key strip in cooperating relationship therein;

a keeper key strip which is adapted to be located in the channel against the second side wall in an operative position, the keeper key strip having a domed surface on one face and a generally planar surface on the opposite face, and wherein the second side wall also has a concave surface adapted to receive the domed surface of the keeper key strip in cooperating relationship therein;

whereby, in use, when the keeper key strip is inserted into the channel after the marginal edge of the screen is located against the generally planar surface of the retention key strip, the retention key strip being already located within the channel with its domed surface in cooperating relationship with the concave surface of the first side wall, the keeper key strip is forced into its operative position in the channel with its generally planar surface pressing against the marginal edge of the screen to secure the screen in the channel.

2. A frame assembly as defined in claim 1, wherein the frame assembly further comprises a retention holding strip which is provided in connection with the retention key strip and which is adapted to engage with the marginal edge of the screen to assist with holding the marginal edge against the retention key strip.

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3. A frame assembly as defined in claim 2, wherein the retention holding strip is glued to the retention key strip.

4. A frame assembly as defined in claim 1, wherein the frame assembly further comprises a channel base strip which is received adjacent to the end wall of the channel.

5. A frame assembly as defined in claim 1, wherein the retention key strip and the keeper key strip are both made from a strip of hard PVC plastics material.

6. A frame assembly as defined in claim 2, wherein the retention holding key strip is made from a soft PVC plastics material.

7. A frame assembly as defined in claim 5, wherein the channel base strip is also made from hard PVC plastics material.

8. A frame assembly as defined in claim 1, wherein the retention key strip is formed with a retention groove extending along its outer longitudinal edge on the same side as the domed surface.

9. A frame assembly as defined in claim 8, wherein the first side wall of the channel is formed with a matching retention tongue adjacent to the concave surface, the retention tongue being adapted to be received in the retention groove in the operative position of the retention key strip.

10. A frame assembly as defined in claim 1, wherein the keeper key strip is formed with a keeper protrusion extending along its outer longitudinal edge on the same side as the domed surface.

11. A frame assembly as defined in claim 10, wherein the second side wall of the channel is likewise formed with a matching keeper recess adjacent to the concave surface whereby, in use, when the keeper key strip is forced into its operative position in the channel, the keeper protrusion is adapted to be

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received in the keeper recess and helps to keep the keeper key strip in the channel.

Dated this 27th day of January 2015

Murray Leonard Collins

by his Patent Attorneys
Wrays

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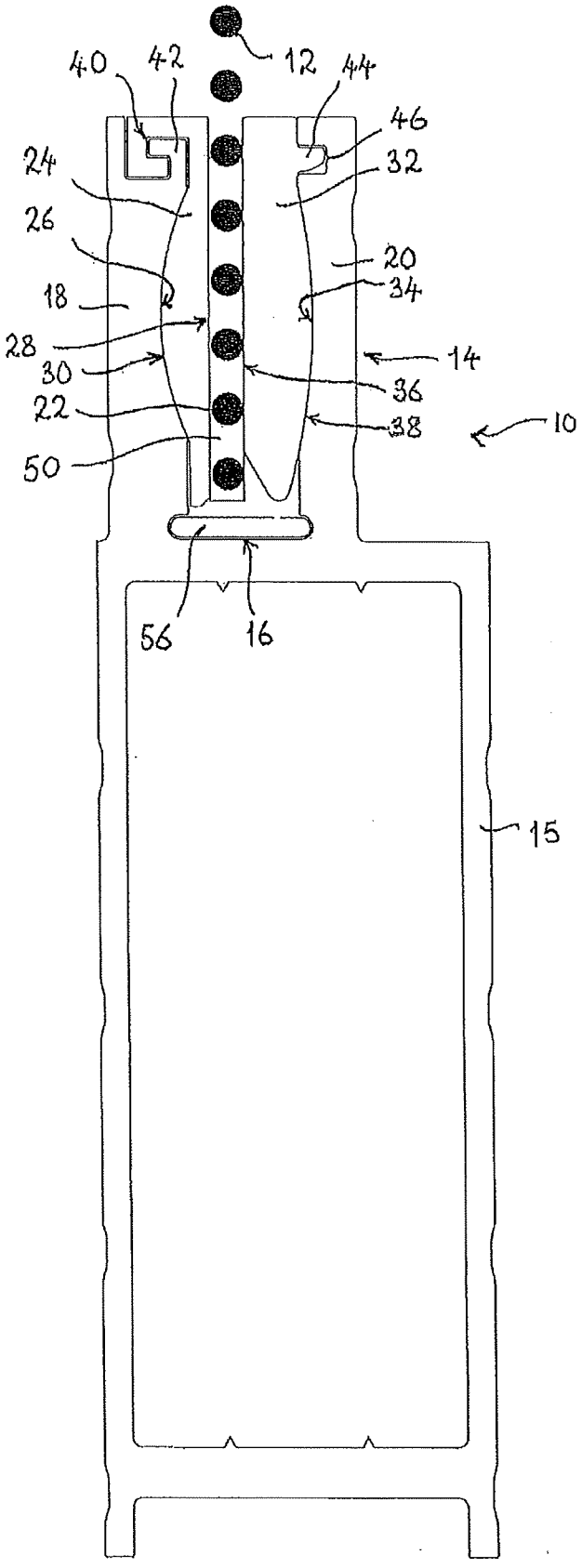

FIG. 1.