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GUARD FOR MULTIPLE SECTIONED DOORS

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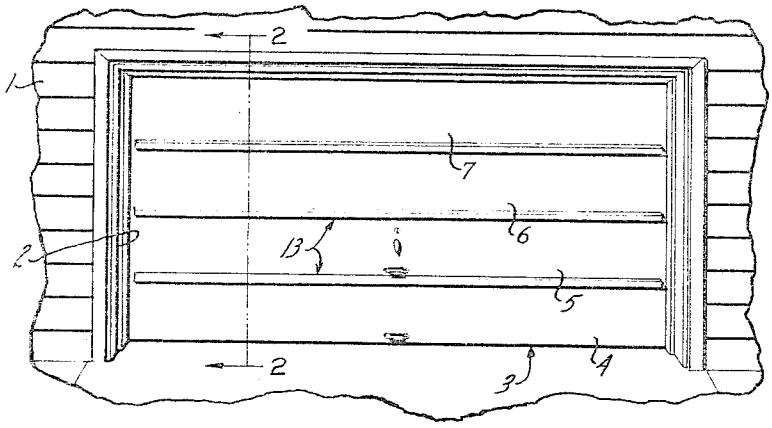


FIG. 1.

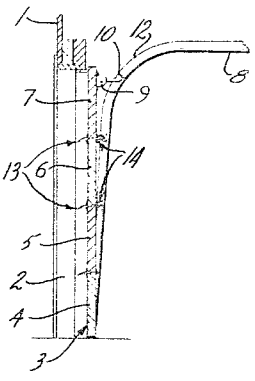


FIG. 2.

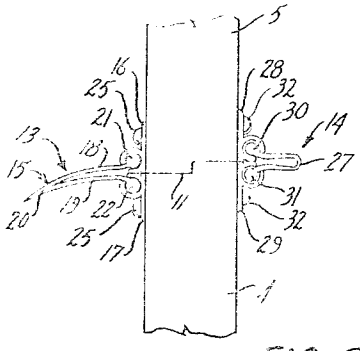


FIG. 3.

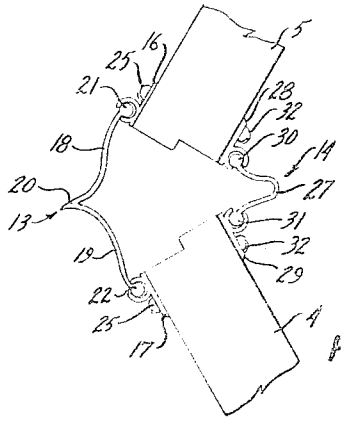


FIG. 4.

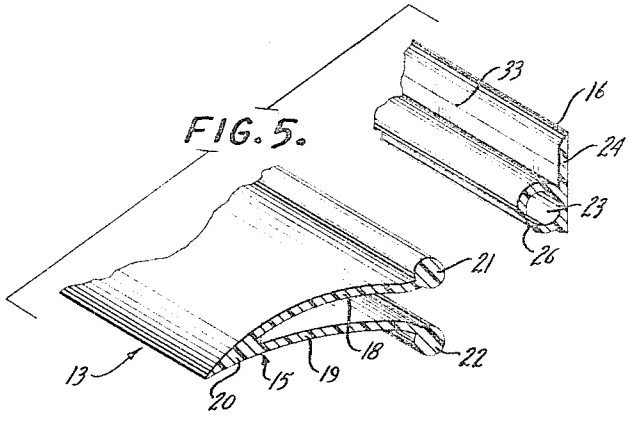


FIG. 5.

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GUARD FOR MULTIPLE SECTIONED DOORS

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This invention relates to a guard for multiple sectioned garage doors and particularly to a finger guard for covering the joints between a plurality of interconnected horizontal sections forming the garage door.

Garage doors are often formed of a plurality of horizontal sections which are hinged together on a horizontal axis and mounted for movement between a vertical closure position or a raised horizontal open position. The garage door is movably mounted by suitable roller units in L-shaped tracks mounted to opposite sides of a garage door opening and having a vertical portion and an upper horizontal portion joined by an integral curved portion. Roller units are connected to the door edge and ride in the tracks for guiding of the interconnected sections between the vertical and the horizontal position. As the door moves between the vertical closure position and the raised horizontal open position, the individual sections move about the curved upper portion of the track. In so moving a gap is formed between the sections as the door opens. Similarly, when the door is lowered, the gaps are formed between the sections during the downward movement and then closed together to form a firm and tight junction at the adjacent sections in the totally closed position. The formation and closure of the gap between adjacent sections constitutes a source of substantial danger to surrounding objects and particularly the fingers of the operator as well as other personnel in the area. The gap between adjacent sections is of a sufficient size to readily accommodate an object the size of a person's finger. Further, when the gap is closed, the weight of a door or the like is such that it can not only cause painful and injurious crushing of the fingers but can actually cause a severing of a finger or fingers caught therein. As the garage door is closed, the weight and inertia of the door make it extremely difficult and impractical to instantaneously stop the movement thereof or reverse its direction. Consequently, the danger is unusually substantial in connection with a garage door employing horizontal sections.

Additionally, the joints at interconnecting sections are openings through which dust and other fine dirt and the like can pass.

The present invention is particularly directed to a guard which can be applied to the outer and, if desired, to the inner portions of the sectionalized garage door to cover the adjacent joints or connections in a manner positively preventing the introduction of foreign objects within the gap which occurs during the movement of a door and the like. The guard of the present invention can be installed with a minimum amount of effort and skill and can be readily fabricated of a plastic or other suitable material. Additionally, the present guard is very inconspicuous and aesthetically pleasing such as to be adapted for application to home garages and the like where a pleasing appearance is, of course, practically essential.

In accordance with the present invention, a generally V-shaped outer door section joint cover is provided interconnected to the door preferably through a socket and circular bead construction which permits the opposite edges to pivot therein. The front cover projects laterally from the door and includes a curved top wall which extends laterally forwardly and curves downwardly to provide a deflecting top surface. The curved construction also covers the bottom wall as when viewed from the front. The bottom wall of the front cover is also

curved with a convex cross-section generally extending from the door to the front cover edge where it is integrally formed with the top wall by a relatively thickened and pointed portion. This has been found to provide an unusually satisfactory door guard which will deflect rain and other foreign matter. Additionally, it will readily accommodate the wide gap formed on the front edge of the door sections as it moves between the vertical and the horizontal raised position.

Preferably, a small cover guard is also provided at each of the joints on the inner surface of the door. As the gap formed thereat is relatively small, the inner door guard cover is preferably a small U-shaped member interconnected by corresponding mounting strips on the opposite edges of the adjacent door sections.

The present invention thus provides a simple and readily constructed and installed joint cover for horizontal sectionalized doors and the like which can be mounted without detracting from the appearance of the garage structure.

The drawing furnished herewith illustrates a preferred construction for carrying out the present invention and clearly illustrates the previously discussed features and advantages as well as others which will be clear to those skilled in the art.

In the drawing:

FIG. 1 is a front elevational view of a garage door structure and a fragmentary portion of the adjacent garage;

FIG. 2 is a vertical section taken on line 2—2 of FIG. 1;

FIG. 3 is an enlarged fragmentary end view of a single joint between adjacent garage door sections shown in FIGS. 1 and 2 showing the construction of the present invention;

FIG. 4 is a view similar to FIG. 3 showing the position of the sections and the door guards with the garage door in the raised or partially raised position and showing the gap between the adjacent sections; and

FIG. 5 is an enlarged exploded fragmentary view of portions of the outer guard door unit shown in FIGS. 1–4, inclusive.

Referring to the drawing and particularly to FIG. 1, a front wall 1 of a garage or the like is shown having a double car opening 2. A sectionalized garage door 3 is mounted within the opening 2 and includes four individual horizontal sections 4–7, inclusive, with the lower section numbered 4 and the top section numbered 7. As shown diagrammatically in FIG. 2, the garage door is mounted in the conventional or well known manner by suitable tracks 8 which will be secured to the opposite sides of the opening 2 within the garage. Coupling units 9 interconnect guide wheels 10 which ride in the track 8 to the side edges of the sectionalized door 3 for guiding the door between a raised horizontal position and the lowered vertical position shown in FIGS. 1 and 2. Hinge units, not shown, may form a part of the coupling units 9 for interconnecting of the door sections 4–7, inclusive, at the respective joints 11 to permit the separating of the sections 4–7, as shown in FIG. 4, as they move within the track and particularly about the curved track junction 12. Additional hinges, not shown, may also be provided along the back edge to more adequately support the door.

In accordance with the present invention, a front or outer guard unit 13 covers the seam or joint 11 adjacent each of the connections of the door sections 4–7, inclusive, to positively prevent entrance of foreign matter therebetween during the opening and closing of the door. Additionally, a rear or inner door guard unit 14 is preferably provided at corresponding positions on the inner surface of the door to thereby prevent entrance of foreign

matter or a person's fingers from the inside. Each of the guard units 13 and 14 extends substantially for the width of the door 3 except that the inner guard 14 will of course be broken in the area of the hinges, not shown.

Referring particularly to FIGS. 3–5, inclusive, of the drawings, the inner and outer guard units are more fully shown and are described as follows: The guard units are shown and described in FIGS. 3 and 4 as interconnecting door section panels 4 and 5. The other units 13 and 14 which are adjacent the connection of door sections 5 and 6 and sections 6 and 7 are similarly constructed.

Generally, the outer guard unit 13 includes a V-shaped cover 15 having the inner edges secured to the corresponding sections 4 and 5 by mounting strips 16 and 17. The cover 15 includes a top wall 18 and an integrally connected bottom wall 19 which extend laterally from the mounting strips 16 and 17 and which are integrally connected at the outermost edge by a triangular pointed construction 20. Similar mounting beads 21 and 22 are integrally formed on the inner edges of the walls 18 and 19, respectively. The walls 18 and 19 are of a similar substantially constant thickness interconnected by the enlarged or thickened point 20 to provide a strong firm junction which will permit flexing of the walls 18 and 19 without disruption of the connection therebetween.

The mounting beads 21 and 22 are integrally formed on walls 18 and 19 and are somewhat larger than the thickness of the adjacent walls. The beads 21 and 22 are similarly disposed to the mounting strips 16 and 17, as follows:

The strips 16 and 17 are substantially identical except being reversely mounted with respect to the adjacent panels 4 and 5 and consequently strip 16 will be hereinafter described with detail with the corresponding elements of strip 17 similarly numbered for purposes of simplicity and clarity of explanation.

The mounting strip 16 includes a socket 23 having a generally circular configuration and corresponding to but being somewhat larger than the cross-section of the related bead 21. The socket 23 is integrally formed on the outer surface of a mounting base or flange 24 which extends laterally of the socket. Strip 16 which is secured to the panel 5 has its base or flange 24 projecting upwardly from the socket 23 and is interconnected to the door section 5 by a plurality of attachment screws 25 at suitably spaced positions along the length of the door section. The socket 23 includes a socket opening 26 somewhat smaller than the size of the related connecting bead 21 and extending at an angle of approximately 45° with respect to the horizontal and vertical axes or planes.

The mounting strip 17 is similarly mounted with flange 24 projecting downwardly along the lower panel or garage door section 4.

The mounting beads 21 and 22 of the related top wall 18 and bottom wall 19 mesh or mate with the corresponding sockets 23 of strips 16 and 17 to provide a pivotal interconnection between the mounting strips 16 and the V-shaped cover 15. The respective beads 21 and 22 are preferably formed into the adjacent walls with a slight angular attachment generally in accordance with the angular offset of the socket openings 26 such that they will project generally horizontally from the sockets 23 in the closed door position, as shown most clearly in FIG. 3. The top wall 18 then extends outwardly from the upper edge of the socket opening 26 of strip 16 and curves downwardly with the lower edge generally overlying the socket 23 of the lower mounting strip 17. The bottom wall 19 then extends upwardly over the outer edge of the socket opening 26 of strip 17 beneath the top wall 18 with a slight convex cross-section to the outer integral triangular connecting point 20. The assembled cover 15 thereby provides a downwardly inclined top surface on the exterior portion which will deflect rain and other foreign matter therefrom onto the adjacent ground area.

The operation of the outer guard unit 13 is clearly shown in the comparison of FIGS. 3 and 4. In FIG. 3, the adjacent sections 4 and 5 are shown in a totally closed vertical position. At this time, the guard cover 15 extends laterally outwardly as just described. When the garage door 3 is moved upwardly to the horizontal position, or downwardly therefrom to the vertical position of FIG. 3, the adjacent sections will spread as shown in FIG. 4. The front or V-shaped cover 15 has the top wall 18 and the bottom wall 19 spread in a vertical direction with the point 20 moving inwardly to accommodate the opposite movement of the edges and beads 21 and 22 of the cover. The socket 23 and opening 26 readily permit the cover edges and beads to pivot or turn during the movement, with the cover moving from engagement with the outer edge of the socket opening 26, as shown in FIG. 3, to the inner edge of the socket opening, as shown in FIG. 4. This action minimizes the actual flexure of the member at the point of the connection to insure a long life operation. At all times, the V-shaped cover 15 positively encloses the gap formed between the adjacent sections 4 and 5. Additionally, in the closed position, it prevents the entrance of dirt, water or other foreign matter through the crack or junction of the adjacent sections.

The guard units 14 at the adjacent sections on the inner surface of the door 3 are similarly constructed and the unit 14 covering the connection or junction of sections 4 and 5 is shown and described.

Generally, the unit 14 includes a U-shaped cover 27 interconnected to the door sections 4 and 5 by similar mounting strips 28 and 29.

The mounting strips 28 and 29 correspond in structure and connection to the front strips 16 and 17 and consequently no further description thereof is given.

The U-shaped cover 27 includes top and bottom walls joined by a continuous curved portion of the same thickness. Mounting beads 30 and 31 are integrally formed on the free edges and mate with the sockets of the mounting strips 28 and 29 to interconnect the adjacent sections.

As most clearly shown in FIG. 4, the gap formed at the inner edge of the garage door sections 4 and 5 is substantially less than at the outer edge and the flexure problem is substantially less. Consequently, the length or depth of the U-shaped cover 27 can be substantially less than that of the outer unit 13, and in some instances the inner guard can be eliminated because the opening is not sufficiently large to be a source of danger.

The door guard units 13 and 14 of this invention are preferably formed of a suitable plastic with the covers 15 and 27 formed of a suitable pliable plastic which remains pliable at widely varying temperatures and the several mounting strips formed of a suitable rigid plastic. The door guards may be mounted by assembling the mounting strips with the respective cover units and then attaching the mounting strips to the adjacent sections by the attachment screws 32. Alternatively, the mounting strips can be first attached to the garage door sections with the cover section then applied thereto by insertion of the beaded portions into the socket portions.

In the attachment of the mounting strips, a scribe line 33, as shown in FIG. 5, provides a convenient means of aligning the attachment means such as the attachment screws 32. The mounting strips may be connected in any other suitable manner such as by staples or the like. However, in order to apply staples or the like, the material of the mounting strip must be such that it will not be split by the driving of a staple therethrough.

In operation, the present invention provides a joint guard for a horizontal sectionalized door which positively prevents the insertion of foreign elements therebetween. In particular, the present invention prevents the accidental introduction of a person's fingers or hand into the gap during the opening and closing of the door.

The guard serves as a warning indicator if the fingers engage it and further supports and deflects the finger and hand from the gap area in the event the person falls against the door with any substantial force. Additionally, it will cover the joint therebetween to eliminate drafts and introduction of dirt and other foreign matter when the door is closed. The outer curved construction of the outer unit particularly provides a very pleasing appearance which is of substantial significance in connection with commercial application in connection with homes and other similar locations where the aesthetic consideration is important.

Although the guard units of this invention may be formed of any desired materials which permit the above functioning, the cover and mounting strips may be readily and advantageously formed of suitable plastics by extrusion processes. The covers would of course be formed of a suitable pliable plastic and the mounting strips of a rigid plastic. In the extrusion of the mounting strips, the scribe line 33 may be formed directly by suitable construction of the die. The mounting strips may also be secured to the door by an adhesive such as an epoxy resin or other suitable material.

The guard of the present invention can be readily and simply constructed to provide a long life door joint cover. Further, the guard can be installed with a minimum amount of skill and with tools usually readily available. The exposed edge of each mounting strip also provides a sharp and distinct edge on the door for painting of the door up to the corresponding guard units.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A protective cover assembly for horizontally sectionalized garage doors and the like, comprising

a generally V-shaped member of flexible material defining a pair of panels of a substantially constant thickness interconnected by an integral thickened point at the outer proximal edges with the outer surfaces of the panels and the point being in alignment to define a generally triangular cross-section, said thickened point establishing a strong firm junction whereby said panels flex during the opening and closing of the door, the inner free edges of each panel having enlarged beads integrally secured thereto, and

anchor strips one each for mounting of the free edges to the proximal edges of adjacent garage door sections, each anchor strip having a mounting base and a socket extending longitudinally thereof to receive the corresponding bead with an entrance to the socket smaller than the bead but larger than the thickness of the panel to permit pivotal movement of the panel relative to the anchor strips.

2. The cover assembly of claim 1 wherein said pair of panels constitutes a curved top wall and a curved bottom wall meeting at the integral thickened point.

3. The protective cover assembly of claim 1 in combination with flexible material having a generally U-shaped cross-section and a substantially constant thickness with enlarged beads integrally secured to the free edges, and

inner anchor strips one for each of the free edges of the inner covers, each of said inner anchor strips having a mounting base and a socket extending longitudinally thereof to receive the corresponding bead with an entrance to the socket smaller than the bead but larger than the thickness of the panel to permit pivotal movement of the panel relative to the anchor strips.

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