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H. L. CUDDEBACK
BEADED FASTENER DEVICE
Filed April 9, 1965

3,302,260

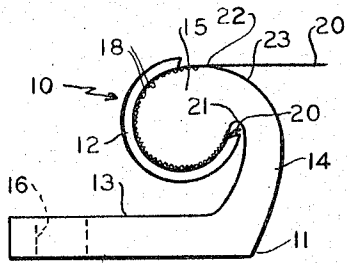


Fig. 1

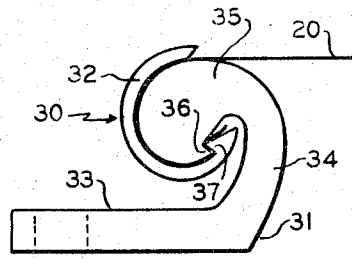


Fig. 3

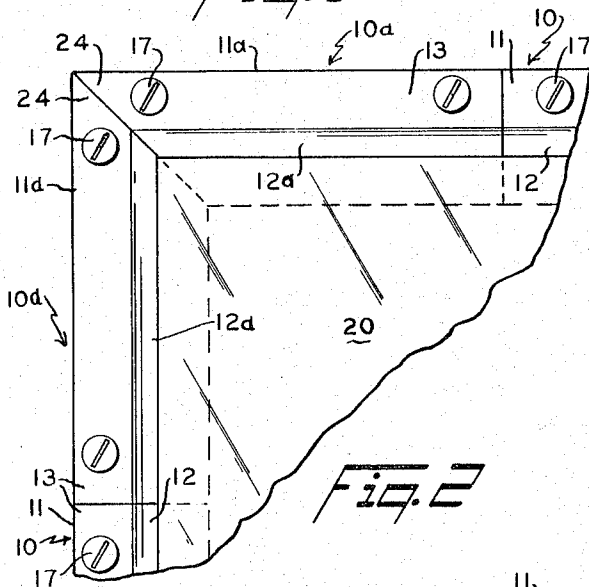


Fig. 2

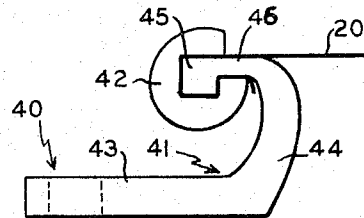


Fig. 4

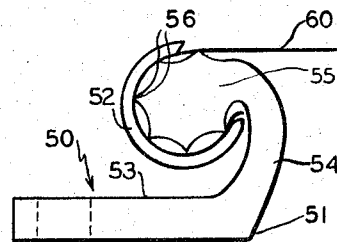


Fig. 5

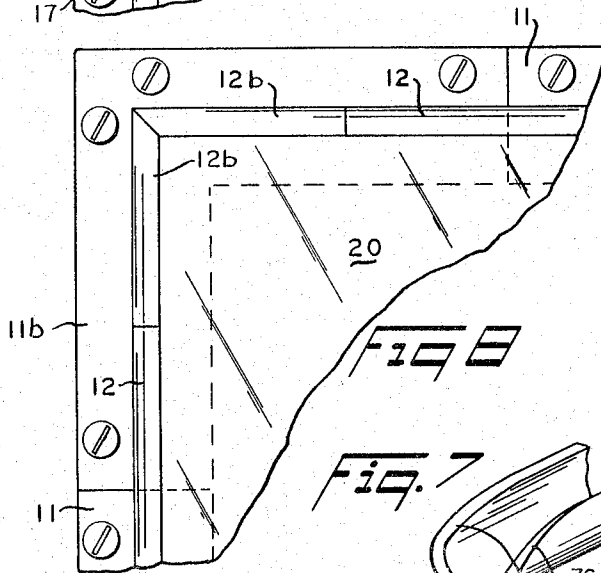


Fig. 7

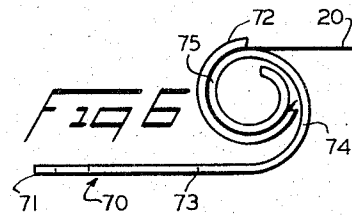
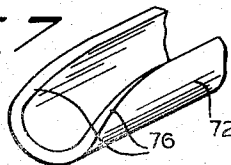


Fig. 6



INVENTOR.
HOWARD L. CUDDEBACK
BY *Bruns and Jenney*
Att'ys.

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BEADED FASTENER DEVICE
Howard L. Cuddeback, Geneva Turnpike, R.D. 1,
Canandaigua, N.Y. 14424
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This invention relates to a beaded fastener device for securing the edges of sheets of thin flexible material stretched over a surface area.

Thin flexible material, such as translucent plastic film or foam material, is often used for covering an opening in a building wall, such as a window opening, during the erection of the building or for providing a storm window after the building is erected. Other thin flexible material may be used to protect any exposed area from the elements, temporarily or permanently. Such thin material is usually tacked or nailed at the edges of the area being covered to the surface adjacent the covered area. Usually strips of wood or paper are used to prevent tearing of the material. Such temporary attachment means is usually unsightly due to the protruding edges of the material and the nail or tack holes weaken the material even though strips are used.

The primary object of the invention is to provide a fastening device for securing the edges of sheets of thin flexible material stretched over a surface area in a secure and neat-appearing manner.

Another important object is to provide a fastening device for quickly and firmly securing the edges of sheets of thin flexible material over a wall opening.

A further object is to provide a fastening device for removably securing the edges of sheets of thin flexible material to a surface so that the edges are not damaged and the sheet material may be easily removed and secured again to the surface.

Other objects and advantages will be apparent from the following description in conjunction with the appended drawing, in which:

FIGURE 1 is an end elevational view of one embodiment of the fastener device of the present invention;

FIGURE 2 is a fragmentary view of one corner of a rectangular sheet of thin flexible material secured at its edges over an area such as a window opening and employing the fastener shown in FIGURE 1;

FIGURES 3, 4, 5 and 6 are end elevational views, respectively, of other embodiments of the fastener device;

FIGURE 7 is a fragmentary perspective view of a retainer member used in the fastening device of FIGURE 6; and

FIGURE 8 is a view of a modified corner employing the fastener shown in FIGURE 1.

Referring to FIGURES 1 and 2, the fastener 10 comprises an elongated beaded strip 11 and an elongated semi-tubular retainer member 12 of C-shaped cross-section.

Each strip 11 is of rigid or semi-rigid material and has a foot portion 13, a curved neck portion 14 and a bead portion 15.

The foot portion 13 is a flat strip of extended length provided with holes 16 therealong through which nails or screws 17 may extend for securing the strip to the surface adjacent the area to be covered. At the inner side of the foot portion 13, adjacent the area to be covered, neck 14 extends upwards and, at its end, joins the bead portion 15 which is offset above the inner end the foot portion 13, thereby providing access to the nails or screws 17.

The bead portion 15 is circular in cross-section and can be provided with longitudinally extending serrations 18 for increasing the grip of the bead on the sheet material in contact therewith. Alternatively, the bead portion

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15 may be coated with a substance, such as a rubbery material, for increasing the frictional engagement between the bead and the flexible sheet material.

A strip of plastic film material 20 stretched over an area, such as a wall opening, not shown, is indicated in FIGURES 1 and 2. The edge portion of the material is wrapped around the bead portion 15 extending to the constricted portion 21 of neck portion 14 where it joins the bead portion 15.

The elongated semi-tubular retainer 12 secures the edge portion of the sheet material 20 against the bead portion 15. Retainer 12 is of resilient material such as extruded plastic material having strong memory characteristics so as to be temporarily deformable and can be applied to the bead by pressing the open portion of the retainer progressively therealong against the bead.

It will be noted that the stretched sheet of plastic 20 first meets the bead 15 along a line, denoted 22 in FIGURE 1, and the sheet 20 is tangent to the bead at this line. The upper and outer portion 23 of neck 14 is curved so as to join the bead 15 along line 22 smoothly without a sharp edge, that is, tangentially of the sheet 20.

The retainer 12 extends around the bead 15, over the edge portion of the sheet material 20, from the constriction 21 in the neck to a line along the bead short of the line 22 so that it will not be lifted away from the bead by the sheet material 20 which is under tension. Moreover, the bead 15 is so shaped by reason of the constriction at 21 that the retainer 12 extends more than 180° around the bead. Retainer 12 is therefore secured around the bead by its resilience.

In FIGURE 2 the flexible sheet material 20 is shown stretched over a rectangular area and, in addition to the elongated beaded strips 11, short beaded strips 11a are provided at the corner. The short strips 11a are, in every respect, like the longer strips 11, except that they are each provided with cooperating mitred ends 24 at the corner. The short strips 11a are provided with cooperating retainers 12a also having mating mitred ends.

In applying the fasteners, around a rectangular opening, for example, the corner strips 11a are first secured outward of the opening at the corners and then strips 11 cut to the appropriate length may be aligned with and secured between the strips 11a.

The sheet of flexible material 20 then may be cut to approximate size and secured by the retainers 12 and 12a to the strips. One edge of the material 20 may first be secured along one edge, then stretched and secured along the opposite edge. The flexible material may then be stretched in the other direction and similarly secured first along one edge and then along the opposite edge. Excess material 20 at the edges may then be trimmed away so that the ends of the material are concealed under and behind the bead portions 15 of the strips.

It will be apparent that, for small window openings, for example, a rectangular frame, whose cross-sectional shape is that of the strip 11, may be cast integrally and secured around the window opening. Precut lengths of retainer member 12 may also be provided having mitred ends at each end for securing a precut sheet of plastic film material 20 to the bead portion 15 which extends around the frame.

A modified form of fastener 30 is shown in FIGURE 3. The fastener 30 comprises an elongated rigid beaded strip 31 and a semi-tubular retainer 32 of resilient material having a generally C-shaped cross-section.

The strip 31 has a flat foot portion 33 provided with appropriate nail or screw holes, and a curved neck portion 34 projects from the inner side thereof. Neck 34 terminates, like that in the fastener 10, in a bead portion 35. The bead 35 is generally circular in cross-section but is provided with a single hook shaped serration 36 at the

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bottom of the bead with the hook on the bead facing toward neck 34.

The retainer 32 is generally C-shaped in cross-section but is provided with a hook-shaped projection 37 oppositely faced to the hook at 36 so as to lock therewith after the sheet material 20 is wrapped around the bead.

The retainer 32 is resilient and may be applied to the bead by pressing it against the bead progressively therealong. Like the retainer 12 of FIGURE 1, it may be removed from the bead by pulling the upper or outer end edge away from the stretched portion of the sheet material. Because of the interlocking hooks 36 and 37, the fastener 30 is peculiarly adapted for securing very thin flexible sheet material having poor frictional engagement qualities with the material of bead 35.

In FIGURE 4 another modified form of fastener 40 is shown having a bead portion which is square and in combination with a retainer 42 of the same interior conformation.

Strip 41 has a foot portion 43 and a neck portion 44 terminating in bead portion 45 which is square in cross-sectional configuration. Neck portion 44 at its outer end terminates tangentially to the stretched sheet 20 in a flat surface in the plane of the outer side of the square bead portion and has a comparatively long constricted portion 46 adjacent the bead portion 45.

The retainer 42 is comparatively thick with reference to bead 45 and has a square interior cross-sectional configuration. The retainer extends completely around three sides of the square bead 45 and partially around the fourth side of the bead, terminating in a surface substantially flush with the constricted neck portion 46. For this reason it is preferably made from a soft rubbery material which is comparatively easily deformed.

It will now be apparent that although the bead 45 is shown as square, the bead may have other polygonal cross-sectional conformations, the retainer 42 having the same conformation interiorly.

FIGURE 5 shows another modification having a fluted bead portion suitable for use with comparatively soft and thick flexible sheet material such as textiles.

The fastener 50 comprises an elongated strip 51 of rigid material and a semi-tubular retainer 52 of resilient material. Strip 51 comprises a foot portion 53, a curved neck portion 54 and a beaded portion 55 having a fluted perimeter providing a plurality of longitudinally extending projections 56 on the bead portion against which the edge portion of the stretched textile material 60 is secured by the resilient retainer 52 which is C-shaped in cross-section.

FIGURE 6 shows still another modification having a hollow bead formed in a spiral coil.

The fastener 70 comprises an elongated strip 71 and a semi-tubular retainer 72. Strip 71 is formed from a strip of comparatively thin sheet metal having considerable resiliency and is shaped to have a flat foot portion 73 provided with suitable fastener holes. From the inner side of the foot portion 73 the strip is curved upward to form a curved neck portion 74 terminating in a spirally wound coiled bead portion 75, as shown.

The retainer 72 is C-shaped in cross-section and may be formed of resilient material so as to be applied by pressing the open portion of the retainer progressively therealong against the bead 75. However, the spirally coiled bead 75 has resiliency and a retainer 72, as shown in FIGURE 7, is preferred, being formed of comparatively rigid material such as steel or aluminum.

The retainer 72 has one end which is cut at an angle, as shown at 76, so that this end of the retainer can be applied at one end of the strip 71 to the bead 75 thereof and then slid endwise along and around the bead and the marginal portion of the plastic sheet 20 wrapped therearound. The cut end 76 is smoothly rounded so that no sharp edges can cut the sheet 20.

This modified form of fastener is adapted for use with

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heavy plastic sheet material such as might be applied over the roof of a building.

FIGURE 8 shows modified corner for securing a flexible sheet of material 20 stretched over a rectangular area. Besides the elongated strips 11, secured adjacent the area as described in connection with FIGURE 2, and the elongated retainers 12, a single corner strip 11b is provided for each corner.

The corner strip 11b has the same cross-sectional configuration as strip 11, but is formed by joining together two strips 11a as shown in FIGURE 2 to form a corner or is molded integrally in the same corner shape.

The comparatively short-lengthed retainers 12b have the same cross-sectional configuration as retainers 12 but are provided with mating mitred ends, and may be shorter than the beaded portions of the corner strip 11b.

The elongated retainers 12 may be thus cut longer than the associated bead portions 15 of their respective strips 11 so that the retainers 12 overlap with beaded portions of the corner strips 11b, and may be utilized in the initial alignment of the strips 11 with the corner strips 11b.

As will be apparent to those familiar with the art, the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiments disclosed are therefore to be considered in all respects as illustrative rather than restrictive, the scope of the invention being indicated by the appended claims.

What is claimed is:

1. A beaded fastening device for securing a marginal portion of a sheet of thin flexible material to a flat surface adjacent an area to be covered by the sheet material stretched thereover, comprising: an elongated beaded strip adapted to extend along at least one edge of the area, the strip having a foot portion therealong adapted to be secured to the surface along the said one edge, having a bead portion of generally spiral external configuration therealong supported in spaced overlying relation to the foot portion, and having a neck portion therealong connecting the bead and foot portions; and a semi-tubular retainer member having an internal cross-sectional shape conforming to the external cross-sectional shape of the bead portion and adapted to be positioned partially around the bead portion and to extend continuously therealong; the bead portion and the retainer member being adapted to have a sheet material marginal portion wrapped partially around the bead portion so that the sheet material is resiliently gripped between the retainer member and the bead portion and extending substantially tangentially from the bead portion, and the retainer member extending more than 180° around the bead portion when the device is in use with a stretched sheet of the flexible material.

2. A beaded fastening device for securing a marginal portion of a sheet of thin flexible material to a flat surface adjacent an area to be covered by the sheet material stretched thereover, comprising: an elongated beaded strip adapted to extend along at least one edge of the area, the strip having a foot portion therealong adapted to be secured to the surface along the said one edge, having a bead portion of generally spiral external configuration therealong supported in spaced overlying relation to the foot portion, and having a neck portion therealong connecting the bead and foot portions; and an elongated retainer member of resiliently deformable material, the retainer member having generally C-shaped cross-sectional configuration conforming internally to the external cross-sectional configuration of the bead portion and adapted to be interengaged around the head and a marginal portion of sheet material wrapped therearound so as to extend substantially tangentially therefrom by pressing the retainer member progressively therealong; and the retainer member extending more than 180° around the bead portion when the device is in use with a stretched sheet of the flexible material.

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3. A beaded fastening device for securing the edge portions of a sheet of thin flexible material about a surface area, comprising: an elongated beaded strip of substantially rigid material having a foot portion therealong adapted to be secured along the outside edge of the area, the strip having a bead portion of generally spiral external configuration overlying the inner side of the foot portion, the bead portion being adapted to have the edge portion of the sheet material wrapped therearound so as to extend substantially tangentially therefrom, and the strip having a neck portion connecting the bead and foot portions, and an elongated semi-tubular retainer of resilient material normally conforming interiorly to the exterior cross-sectional shape of the bead portion, the retainer being adapted to be snapped over the bead portion and thereby clamping the edge portion of the sheet material against the bead portion, the retainer extending more than 180° around the bead portion.

4. A beaded fastening device for securing a sheet of thin flexible material stretched over a surface area, comprising: elongated strips of substantially rigid material, each strip having a flat foot portion therealong adapted to be secured outside and along an edge of the area, each strip having a curved offsetting neck portion therealong extending from the inner side of the foot portion, and each strip having an enlarged bead portion at the end of the neck portion overlying the inner side of the foot portion, each of the bead portions being adapted to have an edge portion of the sheet material wrapped therearound for frictional engagement therewith, each of the neck portions having a restricted offset portion joined to the bead portion substantially tangentially at the line of first contact between the stretched sheet material and the bead portion, and a cooperating elongated retainer of resilient material of substantially C-shaped cross-section for each strip, the retainer normally conforming interiorly to the external cross-sectional conformation of the bead portion and adapted to be interengaged around the bead portion and the wrapped sheet portion by pressing the retainer progressively therealong, the engaged retainer extending more than 180° around the bead portion of the strip.

5. A beaded fastening device as defined in claim 4 having the bead portion of each strip of circular cross-sectional shape.

6. A beaded fastening device as defined in claim 4 having longitudinally extending serrations along the bead portion of each strip for providing frictional engagement with the edge portions of the sheet material.

7. A beaded fastening device as defined in claim 4 having at least one hook-shaped longitudinally extending serration along the bead portion of each strip and a cooperating oppositely facing hook-shaped serration along each cooperating retainer.

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8. A beaded fastening device as defined in claim 4 having the bead portion of each strip of polygonal cross-sectional shape and the cooperating retainer having an interior conformation of the same cross-sectional shape.

9. A beaded fastening arrangement for securing thin flexible sheet material stretched over a rectangular wall opening, comprising: a plurality of elongated strips of rigid material, each strip having a flat foot portion therealong adapted to be secured along outside each edge of the opening, and two comparatively short strips of rigid material having a flat foot portion therealong adapted to be secured at each corner of the opening along the adjacent edges of the opening, each strip having a curved offsetting neck portion therealong extending from the inner side of the foot portion adjacent the opening, and each strip having an enlarged bead portion at the end of the neck portion overlying the inner side of the foot portion, the bead portion being adapted to have an edge portion of the sheet material wrapped therearound for frictional engagement therewith, the neck portion having a restricted offset portion joined to the bead portion substantially tangentially at the line of first contact between the stretched sheet material and the bead portion, and a cooperating retainer of resilient material of substantially C-shaped cross-section for each elongated strip and each comparatively short strip, the retainer normally conforming interiorly to the external cross-sectional conformation of the bead portion and adapted to be interengaged around the bead portion and the wrapped sheet portion by pressing the retainer progressively therealong, the engaged retainer extending more than 180° around the bead portion of the strip, each comparatively short strip and its cooperating retainer at each corner having a mitred end cooperating with the other strip and retainer at the corner for forming an enclosed corner.

10. A beaded fastening arrangement as defined in claim 9 wherein the two comparatively short strips at each corner have their mitred ends joined at the corner.

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WILLIAM FELDMAN, *Primary Examiner*.

DONALD A. GRIFFIN, *Examiner*.