United States Patent

[11] 3,616,026

[72] Inventor **Walter C. Larsen**
Edina, Minn.

[21] Appl. No. **765,831**
[22] Filed **Oct. 8, 1968**
[45] Patented **Oct. 26, 1971**

[73] Assignee **Minnesota Mining and Manufacturing Company**
St. Paul, Minn.

[54] **METHOD OF APPLYING AN ADHESIVE MOUNTING MATERIAL**
9 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **156/261,** 156/230, 156/234, 161/406, 161/413
[51] **Int. Cl.** **B32b 31/00,** B44c 1/18
[50] **Field of Search** 156/230, 234, 247, 261; 161/39, 67, 413, 406; 15/405

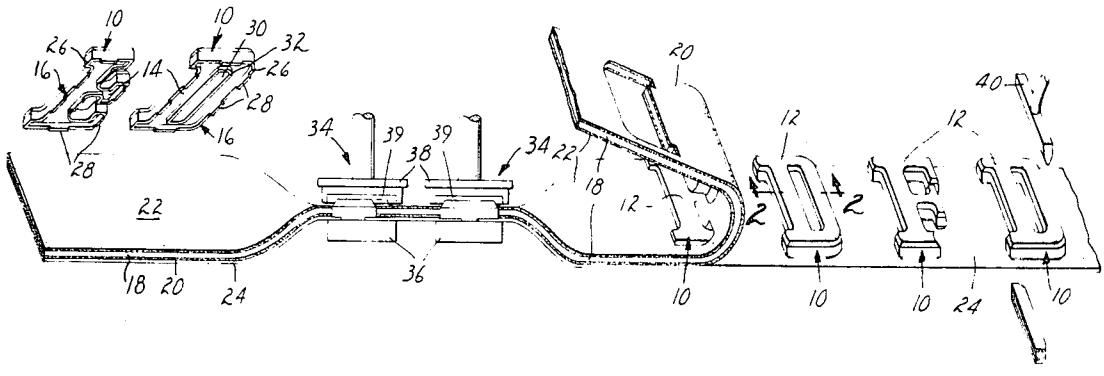
[56] **References Cited**

UNITED STATES PATENTS

2,647,852	8/1953	Franklin	154/118
3,117,726	1/1964	Schoberg	239/291
3,117,045	1/1964	Schwickert	156/278
3,484,972	12/1969	Christman	40/125

Primary Examiner—Carl D. Quarforth
Assistant Examiner—R. L. Tate
Attorney—Kinney, Alexander, Sell, Steldt & Delahunt

ABSTRACT: A method of applying a mounting material having pressure-sensitive adhesive on two opposed faces to a preformed emblem having a mounting surface and at least one rib which protrudes from the border of the mounting surface. The method comprises the steps of placing a preformed emblem formed with ribs on one of the pressure-sensitive adhesive-coated faces of a strip of mounting material and applying pressure to the emblem sufficient to force the ribs through the mounting material and adhere the coated face of the severed mounting material on which the ribs of the article are placed to the mounting surface of the emblem.



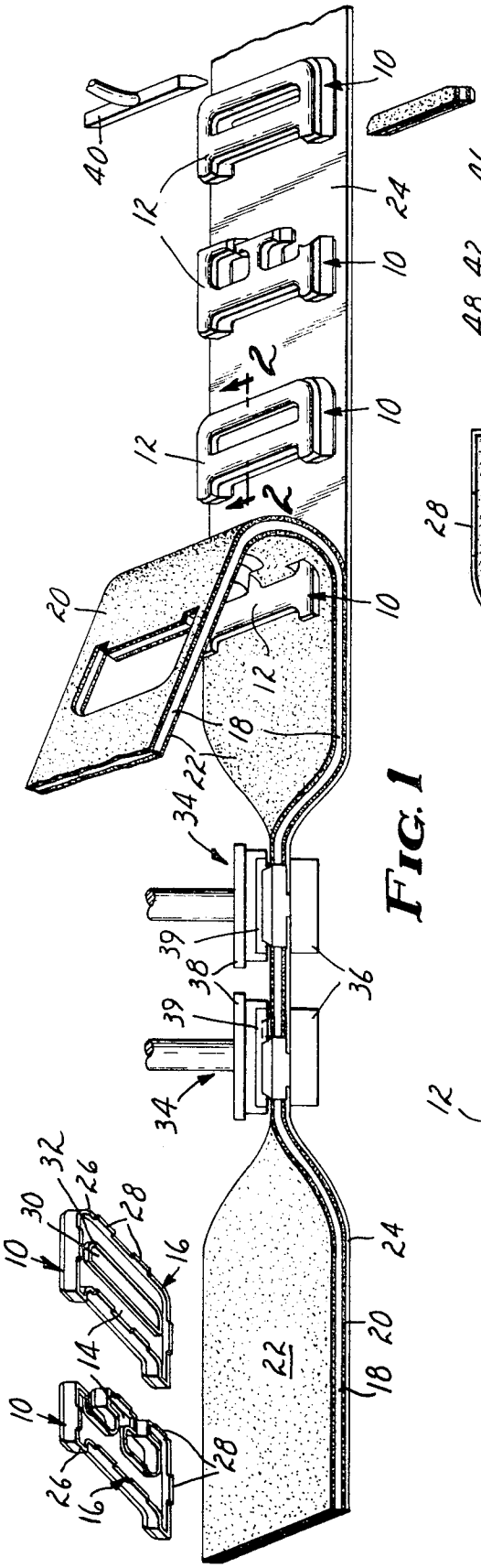


FIG. 1

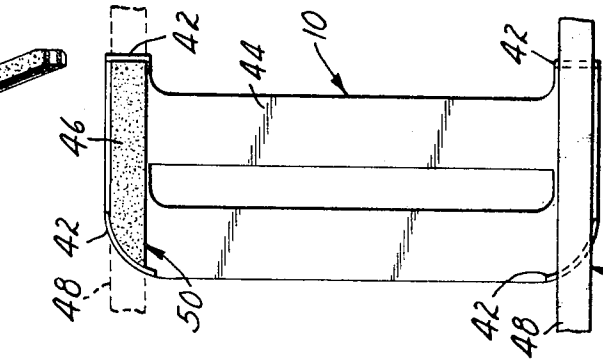


FIG. 6

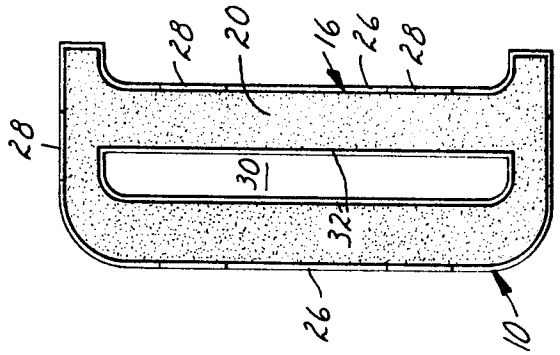


FIG. 3

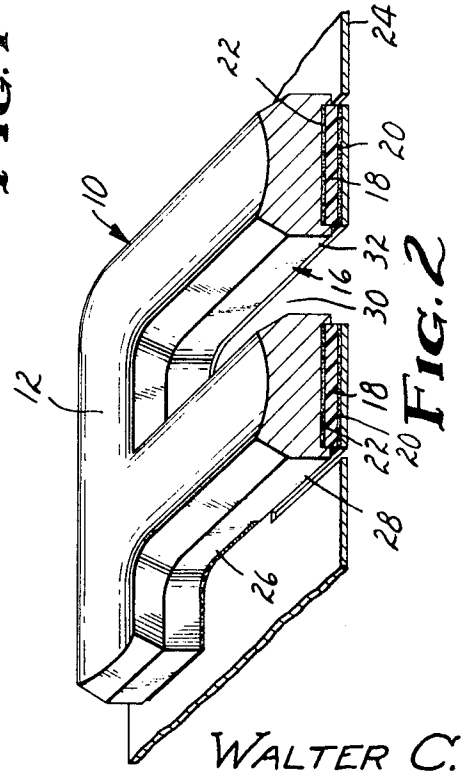


FIG. 2

INVENTOR.
WALTER C. LARSEN
BY Kinney, Alexander, Sell, Steldt & De La Hunt
ATTORNEYS

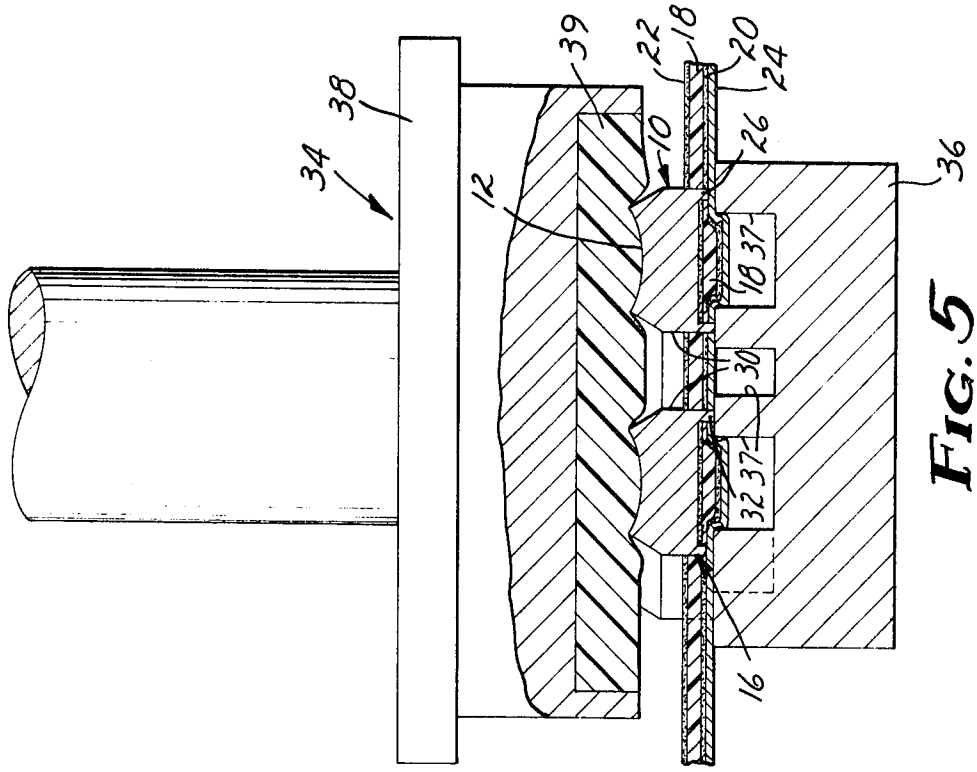


FIG. 5

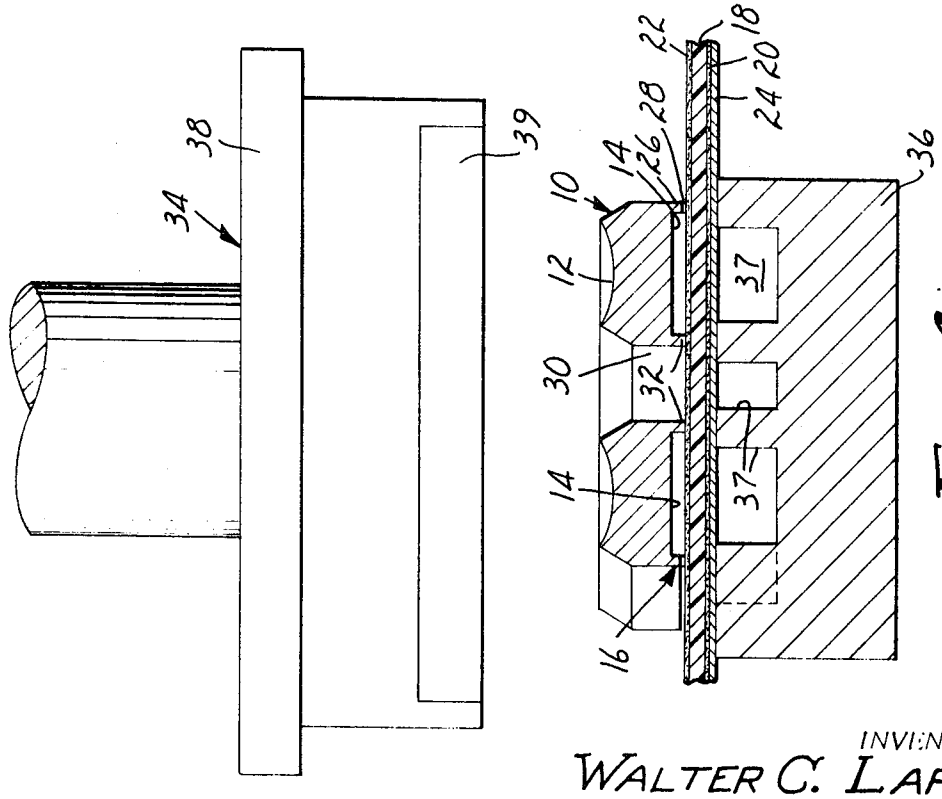


FIG. 4

INVENTOR.
WALTER C. LARSEN
BY Kinney, Alexander, Sell, Steldt & DeLa Hunt
ATTORNEYS

METHOD OF APPLYING AN ADHESIVE MOUNTING MATERIAL

This invention relates to an improved method of applying a mounting material to an article or emblem having ribs protruding from its back face bordering the mounting surface or surfaces.

Mounting materials having two opposed faces coated with a pressure-sensitive adhesive have long been used for mounting articles on generally planar surfaces. The mounting material is normally made in sheets with a protective release liner covering one of the pressure-sensitive adhesive-coated faces. To mount an article the exposed adhesive face of the mounting material is contacted against the back or mounting surface of the article. The release liner is then removed and the article is grasped and maneuvered to contact the exposed adhesive face against the surface on which it is desired to mount the article.

In many applications, such as the installation of emblems on automobiles, it is more desirable to adhere an article to the surface on which it is mounted than to use conventional spring clips, rivets or bolts and speed nuts. This avoids forming holes in the metal which can rust in time and destroy the appearance of the emblem. The holding force of the pressure-sensitive adhesive on the mounting material is increased as the area covered by the mounting material adhering to the mounting surface of the article is increased. Thus, it is desirable to have the mounting material adhere to a portion of the mounting surface sufficient to securely mount the article. If the maximum holding force is desired for a given tape on an emblem the mounting surface should be as large as possible.

One method of producing an article with mounting material adhering to as large a mounting surface as possible has been to cut the mounting material to the shape of the mounting surface and then to align and contact the mounting material and mounting surface. Since the size of the articles may vary in production and it is faster to place a larger emblem on a smaller piece of mounting material the mounting material has consistently been cut smaller than the mounting surfaces to prevent the esthetically undesirable result of having mounting material extending beyond the periphery of some of the articles. Further, especially with complexly shaped articles it is difficult and time consuming to align the cut mounting material and the mounting surface of the article before bringing their surfaces into contact.

Furthermore, in the above method the release liner is cut in the same shape as the mounting material. Thus, the release liner does not extend beyond the edges of the mounting material and when it is desired to mount the article or emblem it is often difficult to raise an edge of the release liner to remove it. Thus, production time, mounting time and/or some of the emblems are lost.

It is therefore an object of the present invention to provide a method of applying a mounting material having pressure-sensitive adhesive on two opposed faces to the mounting surface of an article having ribs protruding from at least part of the border of its mounting surface. A still further object is to provide a method of applying a mounting material to an article, in which a release liner extends beyond at least one edge of the mounting material in the finished product.

Further objects and advantages of the present invention will become apparent after reading the following description which refers to the accompanying drawings wherein:

FIG. 1 is a schematic view showing the steps of a method of applying mounting material to articles in accordance with the present invention;

FIG. 2 is an enlarged cross-sectional view taken along line 2—2 of FIG. 1 and illustrating a mountable emblem made in accordance with the present invention;

FIG. 3 is an enlarged rear elevational view of an emblem with the release liner removed;

FIGS. 4 and 5 are enlarged sectional views illustrating steps in a method of applying mounting material to an article in accordance with the present invention; and

FIG. 6 is an enlarged rear elevational view of a second embodiment of an emblem made in accordance with the present invention with one release liner removed.

The mountable emblem consists of an emblem **10** having an esthetic surface **12** and an opposed mounting surface **14** at least in part bordered by protruding ribs **16**, a mounting material **18** having one face bonded to the mounting material **14** and its opposed face coated with a pressure-sensitive adhesive **20**, and a release liner **24** protectively covering the pressure-sensitive adhesive coating **20**.

As used herein emblem refers to any object designed to have an esthetically pleasing surface. This esthetic surface may also be useful, such as the possible informational use of esthetic surface **12** of the illustrated letters. The emblem is preferably formed of a metal, such as zinc, and may be made by die casting, molding or any other suitable forming method. It may also have a chromium plating over the molded metal to enhance the appearance of the emblem. Other materials which can withstand the pressure can also be used.

Referring now to FIGS. **1** and **3**, the rear or mounting surface **14** of the emblem is preferably planar and is generally parallel to the plane of the esthetic surface **12**. Ribs **16** protrude from the plane of mounting surface **14** and form a continuous border or frame outlining the mounting surface **14**. The ribs **16** are preferably rectangular, however, they may be of any shape that will cut the mounting material **18** to the shape of mounting surface **14** when sufficient pressure is applied to the opposed faces of the emblem and the mounting material **18**.

The ribs **16** include peripheral rib **26** which extends about the periphery of the mounting surface **14** and protrudes from the plane thereof to define a raised plane. Although not essential to the present invention, in the preferred embodiment a plurality of short ribs **28**, spaced about the periphery, extend from rib **26** a distance generally equal to the thickness of release liner **24**. As most clearly illustrated in FIGS. **2** and **3**, when the emblem **10** has an aperture **30** through it an inner rib **32** borders the mounting surface **14** and the aperture **30**. This rib **32** protrudes from the plane of mounting surface **14** generally to the same extent as the short ribs **28**.

The mounting material **18** is a resilient material preferably having a thickness greater than the distance the ribs **16** protrude from the mounting surface **14** and being compressible to a thickness equal to the distance ribs **16** protrude from the mounting surface **14**. Suitable materials, for example, are neoprene, vinyl, and polyurethane in their flexible states. The mounting material **18** preferably covers substantially all of the mounting surface **14** and has one face bonded thereto. This bond is preferably formed by a pressure-sensitive adhesive coating **22** applied to the mounting material **18** before the mounting material **18** and emblem **10** are bonded together. The opposed face of mounting material **18**, as above described is coated with a pressure-sensitive adhesive **20**.

The release liner **24** protectively covers pressure-sensitive adhesive coating **20** and extends beyond the edges of the bonded mounting material **18** so that it may be easily grasped for removal. It is made of a material, for example, silicone coated paper, which will adhere to and may be easily removed from pressure-sensitive adhesive coating **20** without affecting the adhesive characteristics of that coating.

In the method of the present invention, a mounting material **18** is applied to an article, such as emblem **10**, having ribs bordering its mounting surface. It is not meant by the illustrations to limit use of the method to applying mounting material to emblems and the method may be used to apply mounting material to any article formed with ribs bordering its mounting surface.

In the preferred embodiment illustrated in FIG. **1**, the emblems **10** are placed with their ribs **16**, on a pressure sensitive adhesive coated face **22** of an elongated sheet of mounting material **18**. The opposed face of mounting material **18** is also coated with a pressure-sensitive adhesive **20** which is preferably covered with a protective release liner **24**. Suitable mounting materials and release liners have previously been described.

Sufficient pressure is then applied to opposed faces of the emblem **10** and the mounting material **18** to force the

peripheral rib 26 through the mounting material 18 but not the release liner 24 and to contact adhesive coating 22 against mounting surface 14. To assure that rib 26 will not cut release liner 24, even when excessive pressure is applied, emblems 10 are preferably provided with a plurality of the previously described short ribs 28. Thus, when the pressure is applied, for example by a hydraulic press 34, the short ribs 28 cut release liner 24 against the anvil 36 of the press 34 and contact the anvil 36 thereby restraining rib 26 from cutting release liner 24. When the emblem 10 has an aperture 30 through it the rib 32 bordering that aperture cuts mounting material 18 and release liner 24 at the same time as short ribs 28 cut the release liner to completely sever the liner to correspond with the apertures.

In the illustrated embodiment, as most clearly illustrated in FIGS. 4 and 5, the face of ram 38 which contacts the esthetic surface 12 of the emblem 10 is formed of somewhat resilient material 39, for example, high density urethane foam, to aid in distributing the pressure over the surface 12 of emblem 10 thereby to prevent damage to esthetic surface 12. The anvil 36 is preferably formed with relieved areas 37 which are of the same shape but somewhat smaller than the mounting surface 14 of the emblem 10. As the pressure is applied and the ribs 16 cut mounting material 18 a portion of the mounting material 18 which is not being cut may migrate into relieved areas 37 as illustrated in FIG. 5. A flat-surfaced anvil may also be used, however, since the mounting material 18 must then be compressed between the mounting surface 14 and the surface of the anvil, a larger pressure is required to cut the mounting material 18. In one embodiment the illustrated letter D is formed approximately 1 inch long and ½inch wide with rib 26 being 0.015 inch wide and extending 0.008 inch from mounting surface 14 while ribs 28 and 32 are 0.015 inch wide and extend 0.012 inch from mounting surface 14. The mounting material is 0.030-inch thick neoprene and the release liner is 0.004-inch thick silicone-coated paper. When anvil 36 having relieved areas 37 is used, a pressure of 1,700 pounds will force ribs 26, 28 and 32 through mounting material 18 and ribs 28 and 32 through release liner 24 to cut the same, and contact adhesive coating 22 against mounting surface 14. When a flat-surfaced anvil is used, a pressure of 6,000 pounds is required.

The excess mounting material 18 around the emblems 10 is then stripped from the release liner, for example, by winding it on a reel displaced from the plane of the release liner 24 as the release liner 24 is moved along a horizontal path. The pressure-sensitive adhesive coatings 20 and 22 on the mounting material 18 which has been cut to the shape of the mounting surfaces 14 retains the emblems 10 on the release liner 24 during this step.

The mounting material 18 and release liner 24 are then removed from any aperture 30, for example by passing the strip of mounting material past a high-velocity air jet created by an air knife 40. The severed portions of the mounting material, liner and adhesive are thus separated from the emblems and the release liner 24 and the emblems 10 adhering thereto may be wound onto a reel for shipment.

When it is desired to use an emblem 10, it may be easily grasped by one hand while the release liner 24 is grasped and removed from adhesive coating 20. The emblem may then be maneuvered to its desired mounting position and mounted by contacting the exposed pressure-sensitive adhesive coating 20 against the surface on which the emblem 10 is to be mounted.

Alternatively the emblem 10 may be formed as illustrated in FIG. 6 which has two spaced areas defining spaced mounting surfaces on the backface 44 of the emblem 10. Ribs 42, similar to ribs 26 of the preferred embodiment, are formed on the border of the emblem but protrude only from a portion of the border of the two mounting surfaces. When such an emblem is used in practicing the method of the present invention, the emblem is placed with its ribs 42 on exposed pressure-sensitive adhesive coatings of two spaced narrower strips of mounting material 50, which material is similar to that previously described, disposed along spaced paths so that ribs 42 extend across the strips of mounting material. The strips of mounting material 50 have sufficient width to cover each mounting surface and one or two ribs 42 on the border of each mounting surface can cut the mounting material to a length to cover the mounting surface. As described in the preferred embodiment, the mounting material is cut to length by applying pressure to force ribs 42 through mounting material 50 and to contact the adhesive on one surface against the mounting surface without severing release liner 48. When this has been done the excess mounting material is stripped from the release liners 48 around the emblem 10 to leave the emblem adhering to pieces of the release liners 48. The release liner is removed from the mounting material on one surface to expose the adhesive coating 46 to mount the emblem on an automobile or appliance.

Having thus described the invention with reference to the drawing illustrating a preferred form and another embodiment of an article formed in accordance with the present invention and the method of forming the articles it will be appreciated that other minor changes may be made without departing from the invention as defined by the appended claims.

What is claimed is:

1. A method of applying a mounting material having pressure-sensitive adhesive on two opposed faces to an article having a mounting surface and at least one rib which protrudes from the plane of said mounting surface, which comprises the steps of:

placing the article with its rib on one of the pressure-sensitive adhesive coated faces of a strip of the mounting material, and

applying pressure to the opposed faces of the article and the sheet of mounting material sufficient to force the rib of the article through the mounting material to sever the same and adhere the coated face of the severed length of mounting material to the mounting surface of the article,

whereby the mounting material is cut to cover a portion of the mounting surface of the article and it adheres to the mounting surface of the article.

2. A method of applying a mounting material having pressure-sensitive adhesive on two opposed faces, one of said adhesive coated surfaces being covered by a protective release liner, to an article having a mounting surface bordered by ribs which protrude from said mounting surface, which comprises the steps of:

placing the article with its ribs on the exposed pressure-sensitive adhesive coated face of a sheet of the mounting material, and

applying pressure to the opposed faces of the article and the mounting material sufficient to force the ribs of the article through the mounting material to sever the same and adhere the exposed coated face of the mounting material to the mounting surface of the article without forcing the ribs through the protective liner,

whereby the mounting material is cut in the shape of the border around the mounting surface and the article and mounting material are retained on the sheet of protective liner.

3. The method of claim 2, wherein the mounting material is further characterized by having a thickness greater than and being resiliently compressive to a thickness equal to the distance the ribs bordering the mounting surface of the article protrude from the mounting surface, whereby when said pressure is applied to the opposed faces of the article and the mounting material, the mounting material is compressed and cut and the adhesive coated surface on which the article is placed contacts and adheres to the mounting surface of the article.

4. The method of claim 3, including the step of stripping the excess mounting material from around the article after said pressure is applied to leave the cut mounting material adhering to the article and the sheet of protective liner.

5. A method of applying a resiliently compressive mounting material having pressure-sensitive adhesive on two opposed faces, one of which is covered by a protective release liner, to

an article having a mounting surface bordered by a rib which protrudes from the plane of said mounting surface less than the thickness of said mounting material but at least equal to the thickness to which said mounting material may be compressed, which comprises the steps of:

placing the article with its rib on the exposed pressure-sensitive coating of a sheet of mounting material,

applying pressure to the opposed faces of the article and the mounting material sufficient to force the ribs of the article through the mounting material but insufficient to penetrate the protective liner, and

stripping the excess mounting material around the article from the protective liner,

whereby the mounting material is cut in the shape of the border around the mounting surface, one pressure-sensitive adhesive coated surface of the mounting material adheres to the mounting surface of the article and the other pressure-sensitive adhesive coated surface remains covered by a protective liner from which the article may be easily removed for mounting.

6. The method of claim 5, wherein the article is further characterized by having ribs protruding from its mounting surface bordering any aperture through the mounting surface which extend from the mounting surface beyond the plane of the rib bordering the mounting surface a distance generally equal to the thickness of the remaining protective liner, whereby when said pressure is applied the mounting material and protective liner are cut around any aperture while only the mounting material is cut at the boarder of the mounting surface and including the step of removing the mounting material and protective liner from any aperture in the article after the removal of the excess mounting material around the article from the protective liner.

7. The method of claim 6, wherein the removal of the mounting material and protective liner from any aperture in the article comprises forcing a stream of air through the aperture in the article.

8. The method of claim 7 including after the removal of mounting material and protective liner from any aperture the steps of removing the sheet of protective liner, and contacting the exposed pressure-sensitive adhesive-coated surface of the mounting material to a surface on which it is desired to mount the article.

9. A method of applying a resilient mounting material having pressure-sensitive adhesive on two opposed faces one of which is covered by a removable protective liner to a plurality of articles, each article having a mounting surface bordered by a rectangular rib which protrudes from the plane of the mounting surface less than the thickness of said mounting material and a rectangular rib which extends from the mounting surface beyond the plane of the rib bordering the mounting surface a distance generally equal to the thickness of a protective liner bordering any aperture through the mounting surface, which comprises the steps of:

placing a plurality of articles along the strip with their ribs on the exposed pressure-sensitive coating

applying pressure to the opposed faces of the articles and the mounting material sufficient to force the ribs bordering the mounting surface of any article through the mounting material and the ribs bordering any aperture through the mounting material and protective liner,

removing the excess mounting material around the articles from the protective liner, and

forcing a stream of air through any apertures in the articles to remove the mounting material and protective liner therefrom,

whereby a pressure-sensitive adhesive mounting is applied to a plurality of articles which are retained on a protective liner for ease of shipment and removal for mounting.