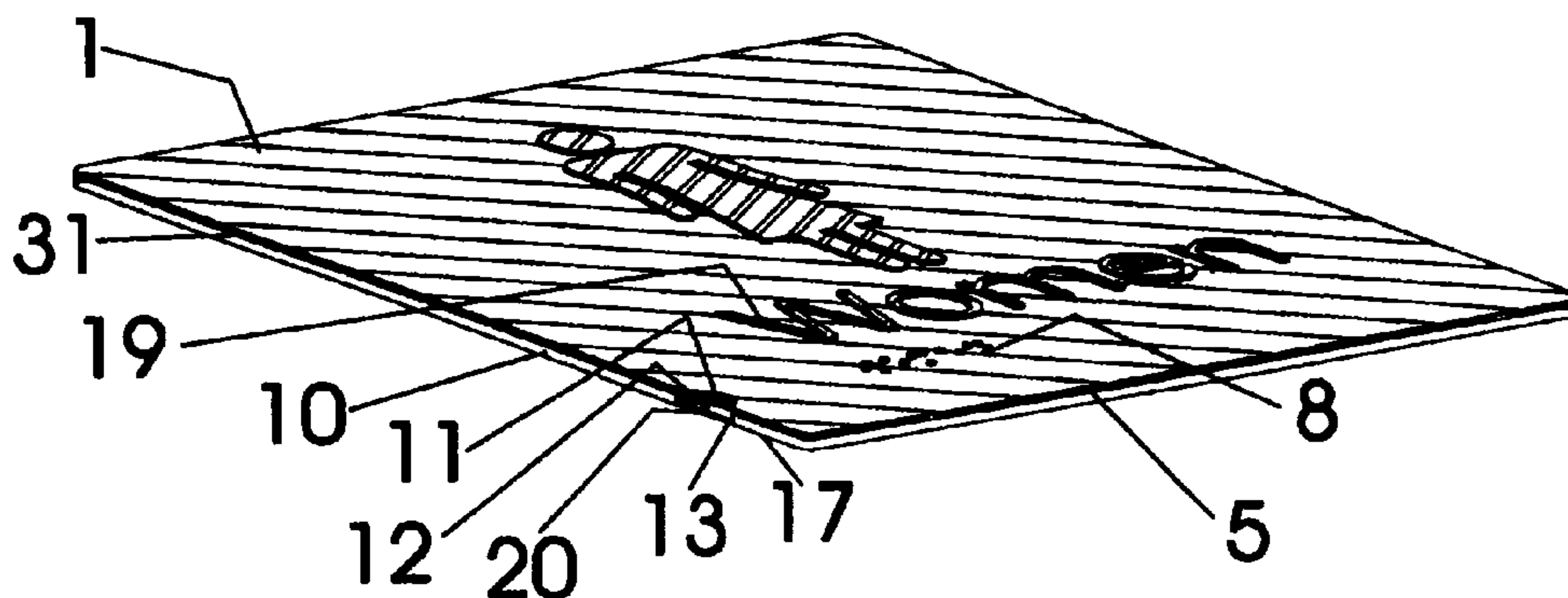




(72) JEHA, GEORGE, CA
(71) JEHA, GEORGE, CA
(51) Int.Cl.⁷ G09B 21/00, B44C 1/16
(30) 1997/09/06 (U.K. 9718895.7) GB
(54) **SIGNALISATION TRIDIMENSIONNELLE**
(54) **THREE DIMENSIONAL SIGNAGE**



(57) L'invention concerne un panneau de surface surélevée avec une partie en braille (8) qui comporte une encoche de référence (13) ou une surélévation le long de sa bordure extérieure pour servir de localisateur de braille. La présence visuelle de l'encoche ou de la surélévation est masquée par une couche de couleur sous-jacente (12) qui recouvre le localisateur de braille et est de la même couleur que les zones adjacentes du panneau.

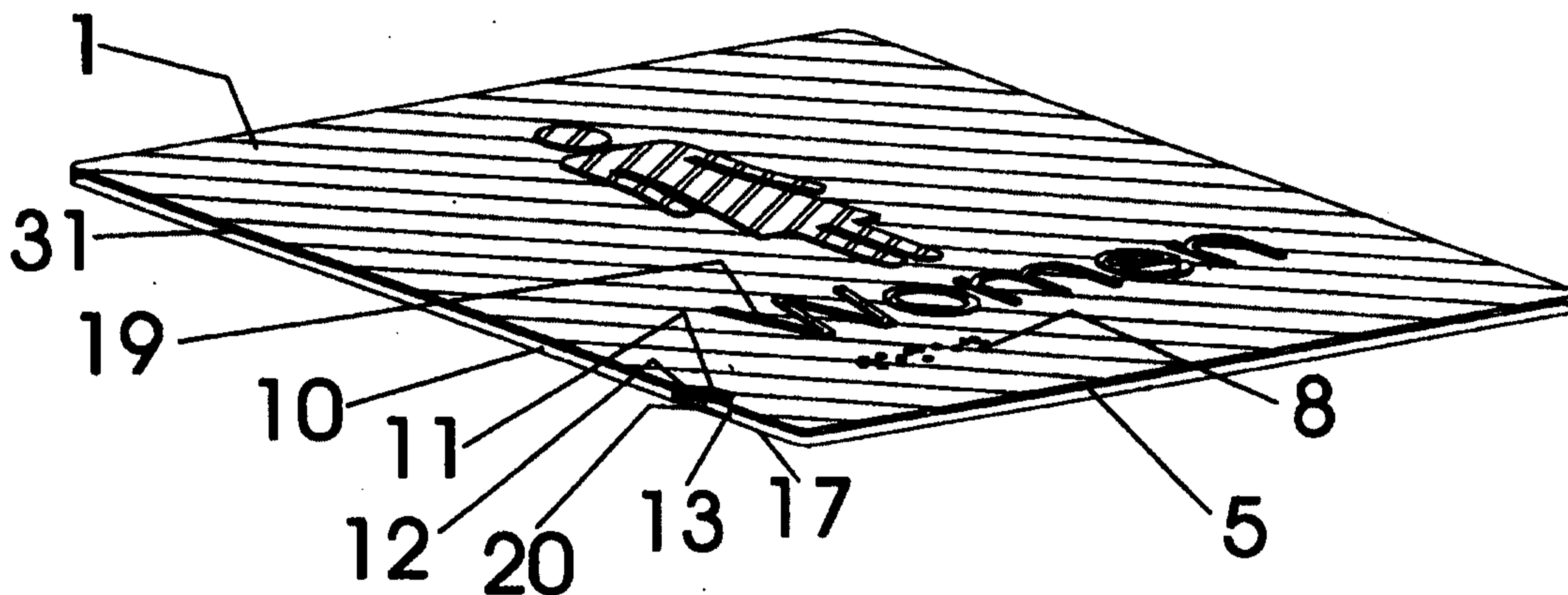
(57) A raised surface sign with a Braille portion (8) has a reference notch (13) or elevation along its outside border to serve as a Braille locator. The visual presence of the notch or elevation is masked by an underlying coloured layer (12) that spans the Braille locator and is of the same colour as adjacent areas of the sign.



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(21) International Application Number: PCT/CA98/00837 (22) International Filing Date: 4 September 1998 (04.09.98) (30) Priority Data: 9718895.7 6 September 1997 (06.09.97) GB (71)(72) Applicant and Inventor: JEHA, George [CA/CA]; 2482 Maynard Street, Halifax, Nova Scotia B3K 3V4 (CA). (74) Agent: FRENCH, David, J.; Station D, P.O. Box 2486, Ottawa, Ontario K1P 5W6 (CA).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>	

(54) Title: THREE DIMENSIONAL SIGNAGE**(57) Abstract**

A raised surface sign with a Braille portion (8) has a reference notch (13) or elevation along its outside border to serve as a Braille locator. The visual presence of the notch or elevation is masked by an underlying coloured layer (12) that spans the Braille locator and is of the same colour as adjacent areas of the sign.

TITLE: THREE DIMENSIONAL SIGNAGE

FIELD OF THE INVENTION

This invention relates to signs and indicators that have raised surfaces to permit reading by the blind.

5 BACKGROUND TO THE INVENTION

Raised letter signage has become increasingly employed in order to assist persons who are visually impaired. Besides having normal alphabetic letters that are raised, such signs may also include information written in Braille.

10 When a sign has Braille lettering, a person who is blind must tactically search over the surface of the sign to locate the Braille lettering. This is time consuming and frustrating.

It is known to provide a key locator at a standard
15 position on a sign carrying Braille which serves to guide a blind person in locating the Braille text. An example is a notch formed in the periphery of the sign along its left, vertical edge. The Braille text may then be positioned horizontally to the right of the notch, and is thereby readily
20 locatable. U.K. Patent Application GB 2 263 354A addresses a similar objective.

It is known to produce raised-surface signage by a lamination procedure that provides a sign composed of multiple layers. These layers may be of differing colours, enhancing
25 the ease with which sighted persons may see the lettering on

the sign. Examples of patents addressing this technology are U.S. patents Nos. 5,246,757, 5,346,571 and 5,389,413 to R.R. Condon et al.

The lamination techniques of the foregoing patents
5 produce 3-D sign face constructions comprising in sequence:

(a) a conformed laminate comprising in sequence:

- (1) a sign face layer, wherein the sign face layer is a semi-rigid or rigid conformable thermoplastic sheeting;
- 10 (2) a first adhesive layer;
- (3) one or more foreground visual characters, wherein the visual characters are cut from a cuttable conformable material having a thickness in the range of 1-5 mils;
- 15 (4) a second adhesive layer;
- (5) a background colour layer, wherein the background colour layer is conformable material;
- (6) a third adhesive layer;

20 (b) one or more 3-D characters positioned in register with the visual characters, wherein the 3-D characters are cut from a cuttable material having a thickness in the range of 10-50 mils;

(c) raised braille characters that protrude above the
25 normal surface of the sign face layer.

Further, a substrate layer in the form of a rigid backing such as plastic may, in practice underlie the 3-D layer and extend to the edge of the sign.

The adhesive layers in the prior patent reference
5 need not be physically separated from the cuttable, conformable material or the 3-D cuttable material during assembly. These materials may be manufactured so that they carry a self-adhesive coating, like a peel and stick label.

In the past it has been customary to cut a reference
10 notch as a Braille locator in the edge of such a sign in a manner that removes a portion of the background colour layer and substrate, if present. This results in a sign wherein the reference notch is clearly visible against environmental
background surfaces that are typically of a colour which
15 contrasts with the background colour layer of the sign. This is aesthetically unattractive. Usually the background colour of the sign does contrast with the environmental background surface because a good contrast enables low-vision persons to locate the sign easily and this feature is usually required by
20 specifiers and customers.

It is an objective of this patent to provide along an outer edge or within the sign (when there is a surrounding border) raised surface signage having a reference indicator that is elevated or depressed below the level of the adjacent

surface to provide a guide to locating the Braille characters which is not readily apparent to sighted persons.

The invention in its general form will first be described, and then its implementation in terms of specific
5 embodiments will be detailed with reference to the drawings following hereafter. These embodiments are intended to demonstrate the principle of the invention, and the manner of its implementation. The invention in its broadest and more
10 each of the individual claims which conclude this Specification.

SUMMARY OF THE INVENTION

According to a broad feature of the invention, in a raised surface sign with a Braille portion that has a Braille
15 reference indicator or Braille locator positioned along its outside border in the form of a region that is elevated above or depressed below the surface area adjacent thereto, the visual presence of the Braille locator is masked by a coloured layer that spans the Braille locator and is of the same colour
20 as adjacent areas of the sign.

According to a further aspect of the invention, a 3-D sign construction is provided which comprises:

- (1) a sign face layer, wherein the sign face layer comprises a substantially transparent,

conformable, thermoplastic sheeting having an exposed face surface with Braille characters raised thereon;

- 5
- (2) one or more visual characters underlying the sign face layer;
- (3) one or more raised, 3-D characters in the form of a 3-D layer positioned beneath and in register with the visual characters;
- 10 (4) a principal background colour layer, underlying either the visual characters or both the visual characters and the 3-D characters and having an outer colour layer border; and
- 15 (5) a substrate layer underlying the principal background colour layer and having a substrate underside surface and a substrate border with a region that is elevated above or depressed below the adjacent surface area to form a Braille locator reference region,

20 wherein the Braille reference region is spanned by a coloured reference region spanning surface that is part of the principal background colour layer or is of the same colour as the principal background colour layer to minimize visual

contrast along the substrate border between the reference region and the colour background layer.

Adhesive layers, where required, may be interposed between the layers as listed above.

5 The coloured reference region spanning surface may be provided by a portion of the principal background colour layer. Or, optionally, the sign construction of the invention may comprise a secondary background layer that spans the reference region in the plane of said substrate underside
10 surface. Such secondary background layer may be coloured over such region to provide said reference region spanning surface. In either case, it is preferable for the sign face layer to span the reference region as well.

A principal distinction over the prior art is that
15 a coloured surface spans the underside plane of the reference region to minimize the contrast between the reference region and the principal background colour layer. This is true even when the sign includes an extended outer border that protrudes beyond the substrate border. Such extended border may be
20 provided by a backing of a colour that differs from the colour of the background colour layer. When such backing is present the secondary background colour layer may merely underlie the reference region or may be spanned by a coloured surface that does not contrast with the principal background layer.

The order of the layers may allow the principal background colour layer to either underlie both the visual characters and 3-D layer, or be positioned intermediate the visual characters and 3-D layer, as described in the prior art patents. The sign face surface may span not only the reference region and the vertical sides of the reference region and substrate boundary, but may also span the extended border, if present.

Preferably, the visual characters are cut from a cuttable material having a thickness in the range of 1-5 mils and the 3-D characters are cut from a cuttable material having a thickness in the range of 10-50 mils.

Preferably, the Braille characters raised from the face surface of the sign face layer, and optionally through the background colour layer, are filled with a filler, such as a chemically activated 2-part epoxy. This is to prevent the Braille from collapsing, and to deter vandalism.

The foregoing summarizes the principal features of the invention and some of its optional aspects. The invention may be further understood by the description of the preferred embodiments, in conjunction with the drawings, which now follow.

SUMMARY OF THE FIGURES

Figure 1A depicts a vertical, cross-section of the composite layers of a prior art sign having raised visual graphics and Braille and a fully notched Braille indicator.

5 Figure 1B depicts a second vertical cross-section of the composite layers of the prior art sign of Figure 1A taken through the notch in one plane.

Figure 1C depicts a third vertical cross-section through the sign of Figures 1A and 1B, taken through the notch
10 in a second plane.

Figure 2A depicts a plan view of the sign of Figures 1A through 1C.

Figure 2B depicts an isometric view of the sign of Figures 1A through 1C.

15 Figure 3A is a first vertical cross-sectional view through a notched sign according to the invention, having raised visual graphics and Braille.

Figure 3B is a second vertical cross-sectional through a notched sign as in Figure 3A taken through the notch
20 in one plane wherein the background colour layer spans the notched region.

Figure 3C is a third vertical cross-section of the sign of Figure 3B taken through the notch in a second plane.

Figure 4A is a plan view of the sign of Figures 3A,
25 3B and 3C.

Figure 4B is an isometric view of the sign of Figures 3A, 3B and 3C.

Figure 5A depicts a first vertical cross-section through a notched sign according to a different variant of the invention having raised visual graphics and Braille and a perimeter border differing in colour from the background colour layer.

Figure 5B depicts a second vertical cross-section through the notch of the notched sign of Figure 5A, where a coloured surface of the same colour as the background colour layer spans the notched region as in Figure 3B.

Figure 5C depicts a third, vertical cross-section through the notch of the sign of Figures 5A and 5B.

Figure 6A is a plan view of the sign of Figures 5A through 5C.

Figure 6B is an isometric view of the sign of Figure 6A.

Figure 7 is a vertical cross-sectional view of a variant on the sign of Figure 3C wherein the sign face layer wraps around to cover the vertical edges of the sign.

Figures 8A and 10A are first vertical cross-section views through a raised region according to the variant of the invention having raised visual graphics and a raised Braille locator.

Figures 8B and 10B are second vertical cross-sections through a raised region sign as in Figure 8A, taken through the raised region in one plane.

Figures 8C and 10C are third vertical cross-sections of the sign in Figures 8B and 10B taken through the raised region in a second plane.

Figures 9A and 11A are plane views of the sign of Figures 8A, B and C and 10A, B and C.

Figures 9B and 11B are isometric views of the sign of Figures 8A, B and C and 10A, B and C.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Figures 1A to 1C and 2A and 2B depict a prior art sign in which the layers of the sign commence, proceeding from the visible face, with:

- 15 a) a sign face layer 1 having a visual character 3 adhesively laminated to layer 1 by adhesive layer 4 with Braille characters 8 embossed through layer 1;
- b) a 3-D character 7 adhesively fastened by adhesive layer 6 to the layer 3 of visual character;
- 20 c) a first background colour layer 5 adhesively fastened by adhesive layer 2 to and beneath layers 7, 3 and 1;
- d) a substrate carrier layer 10 adhesively fastened to layer 5 by adhesive layer 9;

- e) a Braille locator notch 11 formed on the vertical peripheral edge of the sign and located in alignment with Braille characters 8.

Along the border in prior art signs, a front-to-back notch 11 has been previously cut in the edge of the sign as a reference for locating the Braille lettering 8. The edges of such notch 11 have previously exposed the sides of the various layers. The signs made in accordance with this invention provide a modified treatment for this notch and for the edges of the various layers.

The prior art sign of Figures 1A through 1C and 2A, 2B differs from the arrangements of U.S. Patents 5,246,757; 5,346,571 and 5,389 413 (referenced above) in the order of assembly of the layers. The sequence is changed in the depicted signage by the feature that the visual character and the 3-D layers are assembled by first laminating them together and then cutting both to form the shape of characters as a unit. This eliminates the very awkward and time consuming task of registering the two layers after the visual characters have been covered by the intervening background coloured layer. In the prior art method, the background colour layer is located between the visual character layer and the 3-D layer, which makes registering the two character elements more difficult. The present invention applies irrespective whether this earlier method is employed or whether the background

colour layer is applied below both the laminated character and 3-D layer, so that the former alignment procedure is no longer necessary.

In Figures 3A through 3B a sign in accordance with
5 the invention using a notch as the Braille reference region is constructed as follows. The layers of the sign commence, proceeding from the visible face, with:

- 10 a) a transparent or translucent sign face layer 1 with Braille characters 8 embossed through layer 1 and having a visual character 3 adhesively laminated to layer 1 by adhesive layer 4;
- b) a 3-D character 7 adhesively fastened by adhesive layer 6 to visual character layer 3;
- 15 c) a first background colour layer 5 of a different colour from the visual characters 3 adhesively fastened by adhesive layer 2 to 3-D and sign face layers 7 and 1;
- 20 d) a notched substrate layer 10 adhesively fastened to background colour layer 5 by adhesive layer 9, such notched substrate layer 10 having a notch 13 formed in the border 31 of the substrate layer 10 to serve as a Braille locator 11; and
- e) a second background colour layer 12 having the same colour as layer 5, adhesively fastened to notched

substrate layer 10 by adhesive layer 14 to span Braille locator 11.

In Figures 3B,3C both the substrate 10 and first colour background layer 12 have been notched prior to being bonded to the face layer 1. The second colour background layer 12 has a border 32 that is virtually aligned with the border 31 of the substrate 10, except that it spans the region of the notch 13.

The result, shown in Figure 4, is that the presence of the notch 13 in the substrate 10 is not readily apparent, as the second colour background layer 12 masks any contrast that would otherwise arise.

Optionally, and preferably, the sign face layer 1 envelopes the vertical faces of the edges of the respective layers as at the location 30 identified in Figure 3C and along the border of the notched region. This precludes finger contact with the ends of the layers which could lead to delamination.

In Figures 5A, 5B and 5C the layers of the sign commence, proceeding from the visible face, with:

- (a) a transparent or translucent sign face layer 1 having Braille characters 8 embossed therethrough (optionally filled with two-part catalytic filler 18) the sign face layer 1 being bonded to a

coloured (or white or black) visual character 3 by adhesive layer 4;

- (b) a 3-D character layer 7 adhesively fastened by adhesive layer 6 to visual character layer 3;
- 5 (c) a first background colour layer 5 of a differing colour from the character layer 3 adhesively fastened by adhesive layer 2 to layers 7 and 1;
- (d) a notched substrate layer 10 adhesively fastened to first background colour layer 5 by adhesive layer 9, such substrate layer 10 having a notch 13 in the substrate border 17, aligned with the Braille characters to serve as a Braille locator 11;
- 10 (e) a second background colour layer 12 preferably but not necessarily having the same colour as the first colour layer 5, adhesively fastened to substrate layer 10 by adhesive layer 14, to span the notch 13; and a second substrate layer 15 that serves as a backing having an extended perimeter adhesively fastened to layers 12, 10 and 1 by adhesive layer 16. This creates a perimeter border 21 which may, optionally, be different in colour from the colour of background colour layer 12 in order to "frame" the sign.
- 15
- 20

In Figures 5A, 5B and 5C, the second background colour layer 12 need only span the notch 13 rather than

25

coincide entirely with the substrate 10. The second background colour layer 12 retains a border 20 that is aligned with the border 31 of the substrate 10, spanning the region of the notch 13. The result, shown in Figures 6A and 6B, is that the presence of the notch 13 in the substrate 10, is not readily apparent, as the second coloured background layer 12 masks any contrast that would otherwise arise.

In Figure 7 the first background colour layer 5 extends downwardly beneath and with the face layer 1 along the outside border 17 of the substrate 10. In the region of the notch 13, the first background colour layer 5 then spans the notch 13 in its lower plane. This dispenses with the need to provide a second background colour layer.

Both the face layer 1 and first background colour layer 5 are preferably made of a polymeric plastic sheeting material that may be heat and/or pressure deformed to conform to the shape of the substrate 10 which they overlie.

In Figures 8A through 8C and 10A through 10C a sign in accordance with the invention relying on a raised surface as the Braille locator is constructed as follows. The layers of the sign commence, proceeding from the visible face with:

- a) a transparent or translucent sign face layer 1 with Braille characters 8 embossed through layer 1 and having a visual character 3 adhesively laminated to layer 1 by adhesive layer 4;

- b) a 3-D character 7 adhesively fastened by adhesive layer 6 to visual character layer 3;
- c) a first background colour layer 5 of a different colour from the visual characters 3 adhesively fastened by adhesive layer 2 to 3-D and sign face layers 7 and 1;
- d) a 3-D reference shape 40 adhesively fastened to background colour layer 5 by adhesive layer 41, creating a raised Braille locator 42.

10 The results, as shown in Figures 9 and 10, is that the presence of the raised Braille locator 42 in the background colour layer is not readily apparent, as the raised Braille locator 42 is projecting from a back-ground colour layer 5 of the same colour, and therefore does not contrast
15 with it.

The raised Braille indicator is convenient as it may be less costly to install in a sign. It has the same advantages as the recessed indicator, i.e.: it is unobtrusive and directs the blind reader to the Braille. However, it is
20 really another raised character and can be produced at the same time as the other raised characters. This speeds-up the fabrication process. Further advantages are that the laminating adhesive layer 14 and the substrate layer 12 are eliminated. The substrate layer 10 may also be eliminated.
25 Where the sign has a border, the adhesive layer 14 and

coloured layer 12 which would otherwise span the notch (Figure 5B) may also be eliminated.

In all the figures, the Braille characters 8 are raised-up out of the face layer 1. The Braille pattern is created by embossing the face layer 1 to raise its upper surface. Optionally, a filling 18 may be placed in the dimple formed by embossing to give the Braille characters 8 durability.

When reference has been made to "colour" this expression is intended to include surfaces that are black, grey or white.

The foregoing has constituted a description of specific embodiments showing how the invention may be applied and put into use.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY ARE CLAIMED AS FOLLOWS:

1. A raised surface sign with a Braille portion that has a Braille reference indicator region along its outside
5 border, said Braille reference indicator region being elevated above or depressed below the surface area adjacent thereto characterized in that the visual presence of the Braille reference indicator region is masked by a coloured layer that spans the reference region and is of the same colour as
10 adjacent visible areas of the sign and wherein the Braille reference indicator region is covered by a sign face layer comprising a conformed thermoplastic sheeting that spans said adjacent visible areas of the sign.

2. A raised surface sign comprising:

- 15 (1) a sign face layer, wherein the sign face layer comprises a substantially transparent, conformable, thermoplastic sheeting having an exposed face surface with Braille characters raised thereon;
- 20 (2) one or more visual characters underlying the sign face layer;
- (3) one or more raised, 3-D characters in the form of a 3-D layer positioned beneath and in register with the visual characters;
- 25 (4) a principal background colour layer, underlying either the visual characters or

both the visual characters and the 3-D characters and having an outer colour layer border;

5 (5) a substrate layer underlying the principal background colour layer and having a substrate underside surface and a region of the substrate border that is displaced from the level of the adjacent surface to form a Braille locator region; and

10 (6) adhesive layers between all or part of the aforesaid layers

characterized in that the Braille locator region is spanned by a coloured Braille locator spanning surface that is of the same colour as the principal background colour layer to
15 minimize visual contrast along the substrate border between the Braille locator region and the principal background colour layer.

3. A sign as in claim 2 characterized in that the principal background colour layer spans the Braille locator
20 region to provide the coloured Braille locator spanning surface.

4. A sign as claimed in claim 2 characterized by a secondary background layer that spans the Braille locator region in the plane of said substrate underside surface, said

secondary background layer being coloured over such region to provide said Braille locator spanning surface that is the same colour as the principal background colour layer.

5. A sign as in claim 4 characterized by a backing that
5 provides an outer border extending beyond the substrate border, said outer border being of a colour differing from the colour of the principal background colour layer, and wherein said backing carries said secondary background colour layer.

6. A sign as in claim 2 characterized by a backing that
10 provides an outer border extending beyond the substrate border, said outer border being of a colour differing from the colour of the principal background colour layer, and wherein the principal background colour layer spans the Braille locator region and outer border to provide the coloured
15 Braille locator spanning surface.

7. A sign as in claims 2, 3, 4, 5 or 6 characterized in that the sign face layer spans the Braille locator region.

8. A sign as in claims 2, 3, 4, 5, 6 or 7 wherein the Braille locator region and substrate border have a vertical
20 face surface and the sign face layer covers said vertical face surfaces.

9. A sign as in claims 1, 2, 3, 4, 5, 6, 7 or 8 characterized in that the Braille locator region is elevated above the adjacent surface.

10. A sign as in claims 2, 3, 4, 5, 6, 7 or 8
5 characterized in that the Braille locator region is depressed below the adjacent surface to provide a notch.

PRIOR ART

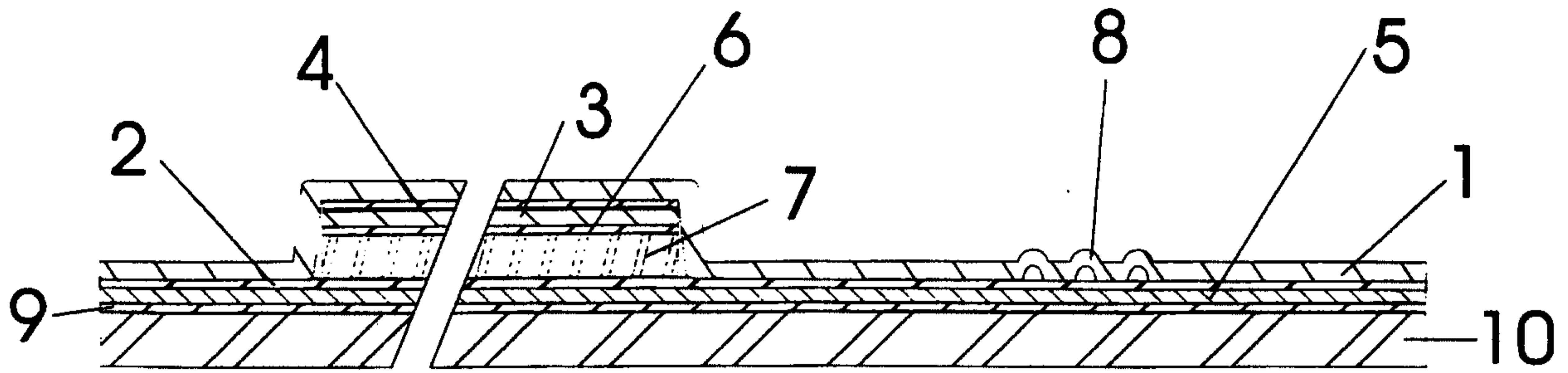


FIGURE 1A
CROSS SECTION AA

PRIOR ART

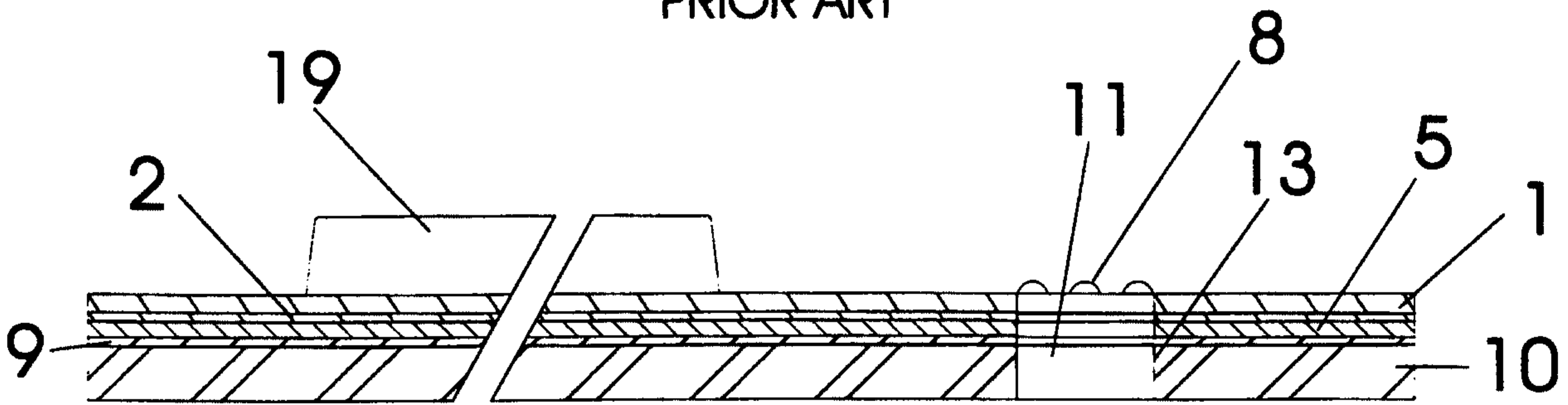


FIGURE 1B
CROSS SECTION BB

PRIOR ART

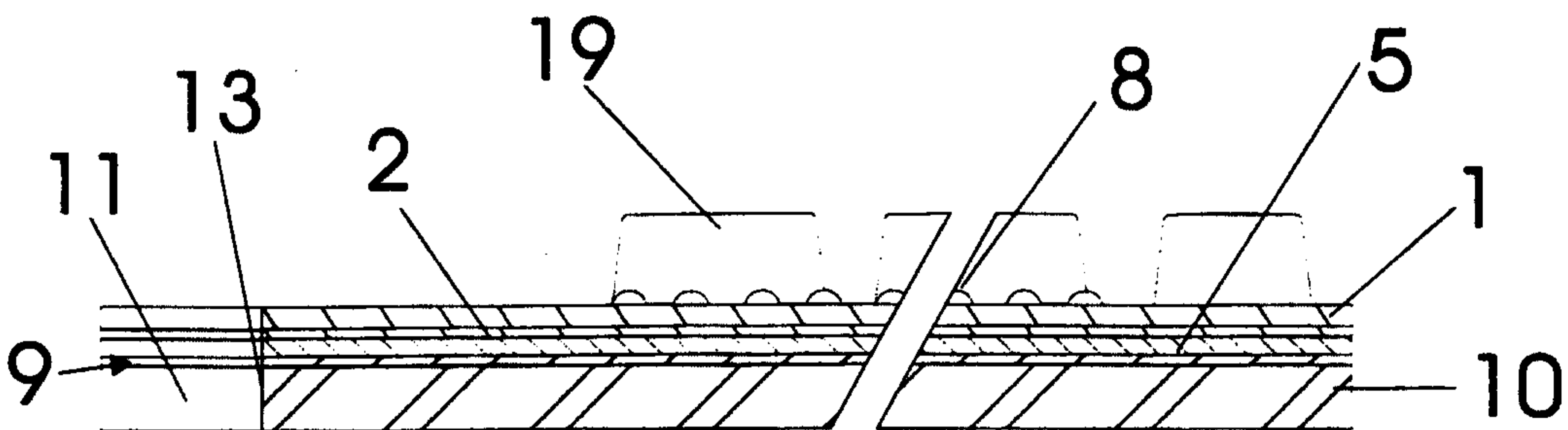


FIGURE 1C
CROSS SECTION CC

2/11

PRIOR ART

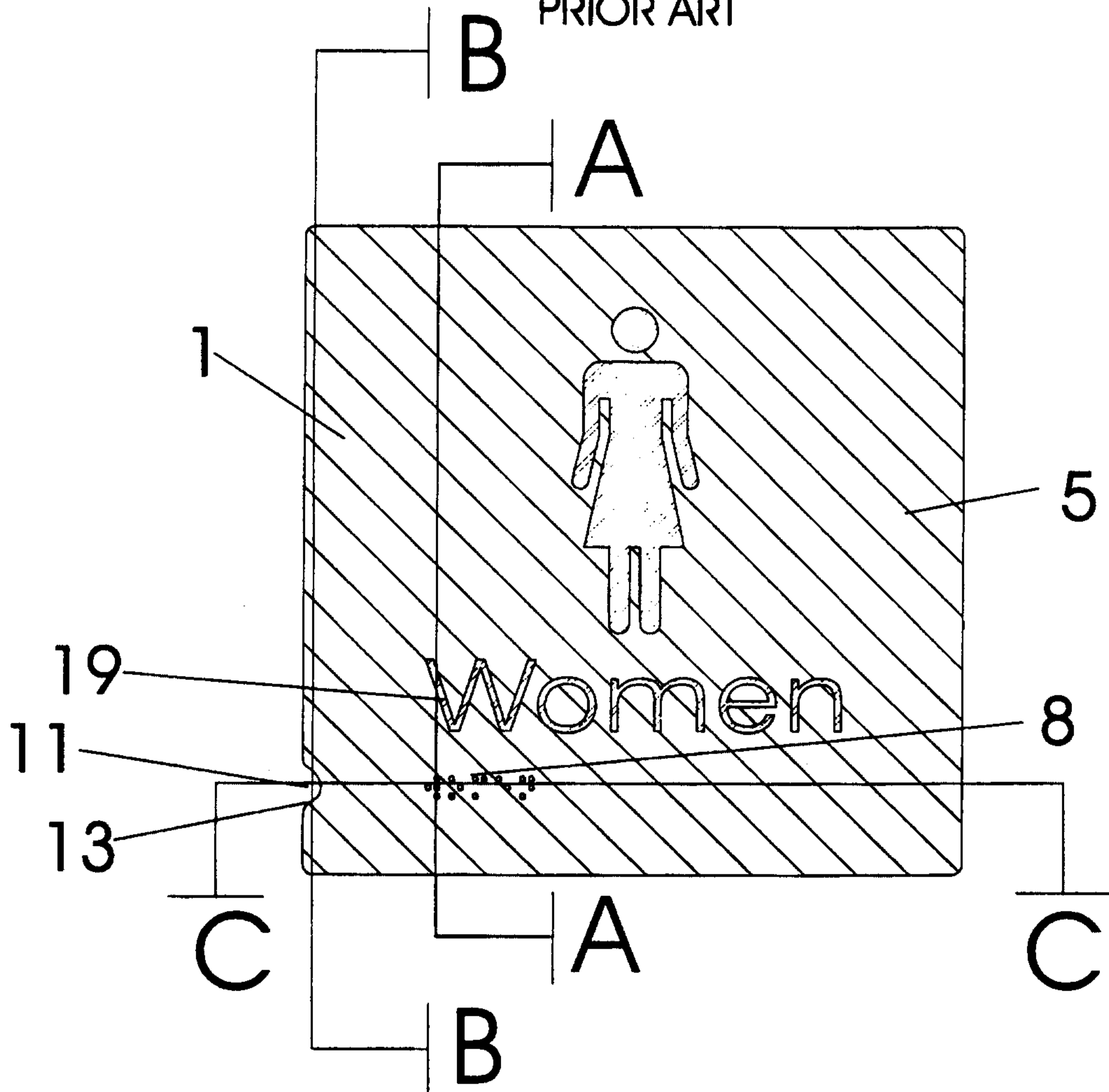


FIGURE 2A

PRIOR ART

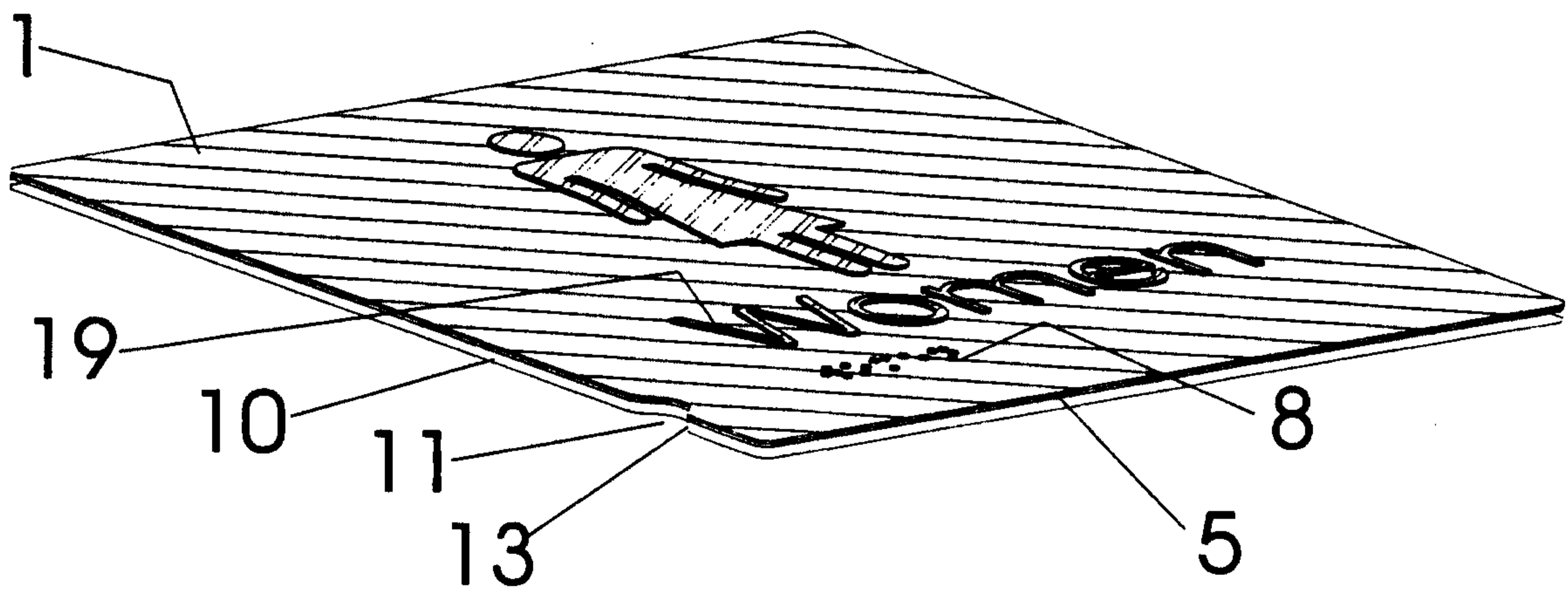


FIGURE 2B

3/11

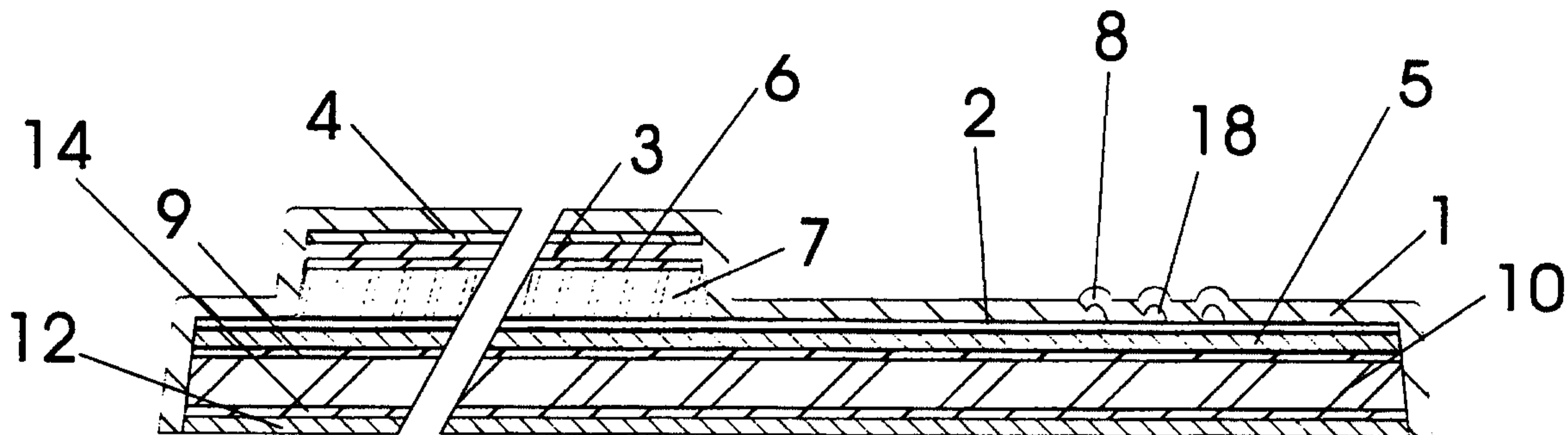


FIGURE 3A
CROSS SECTION EE

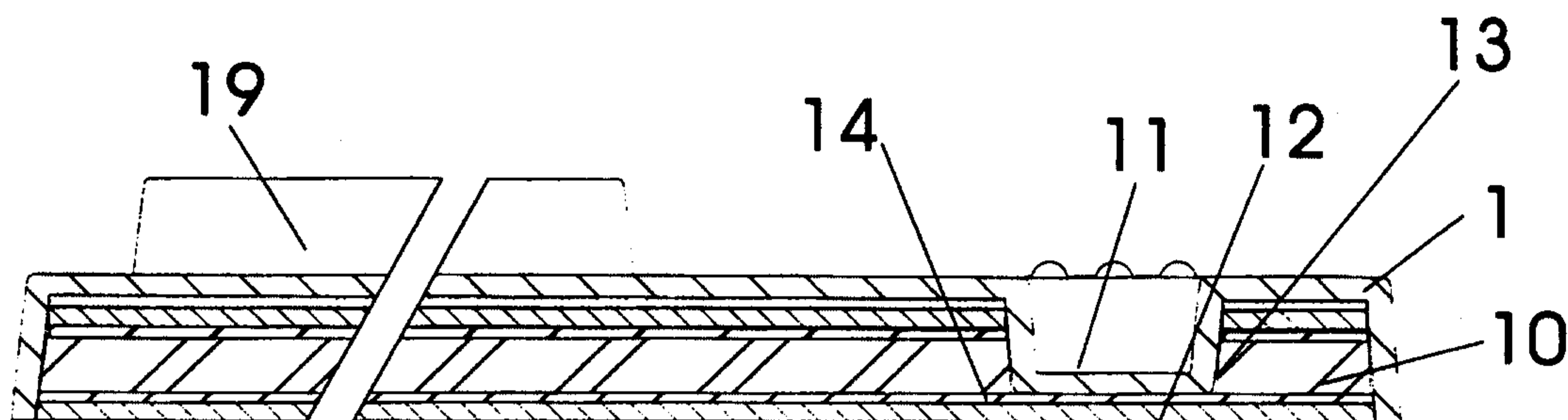


FIGURE 3B
CROSS SECTION DD

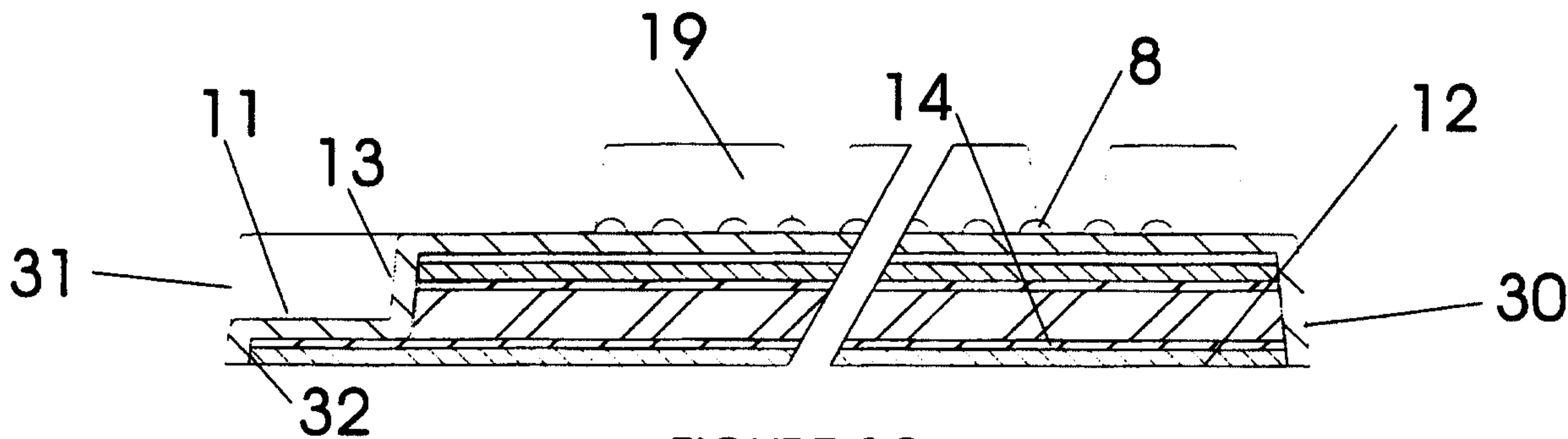


FIGURE 3C
CROSS SECTION FF

4/11

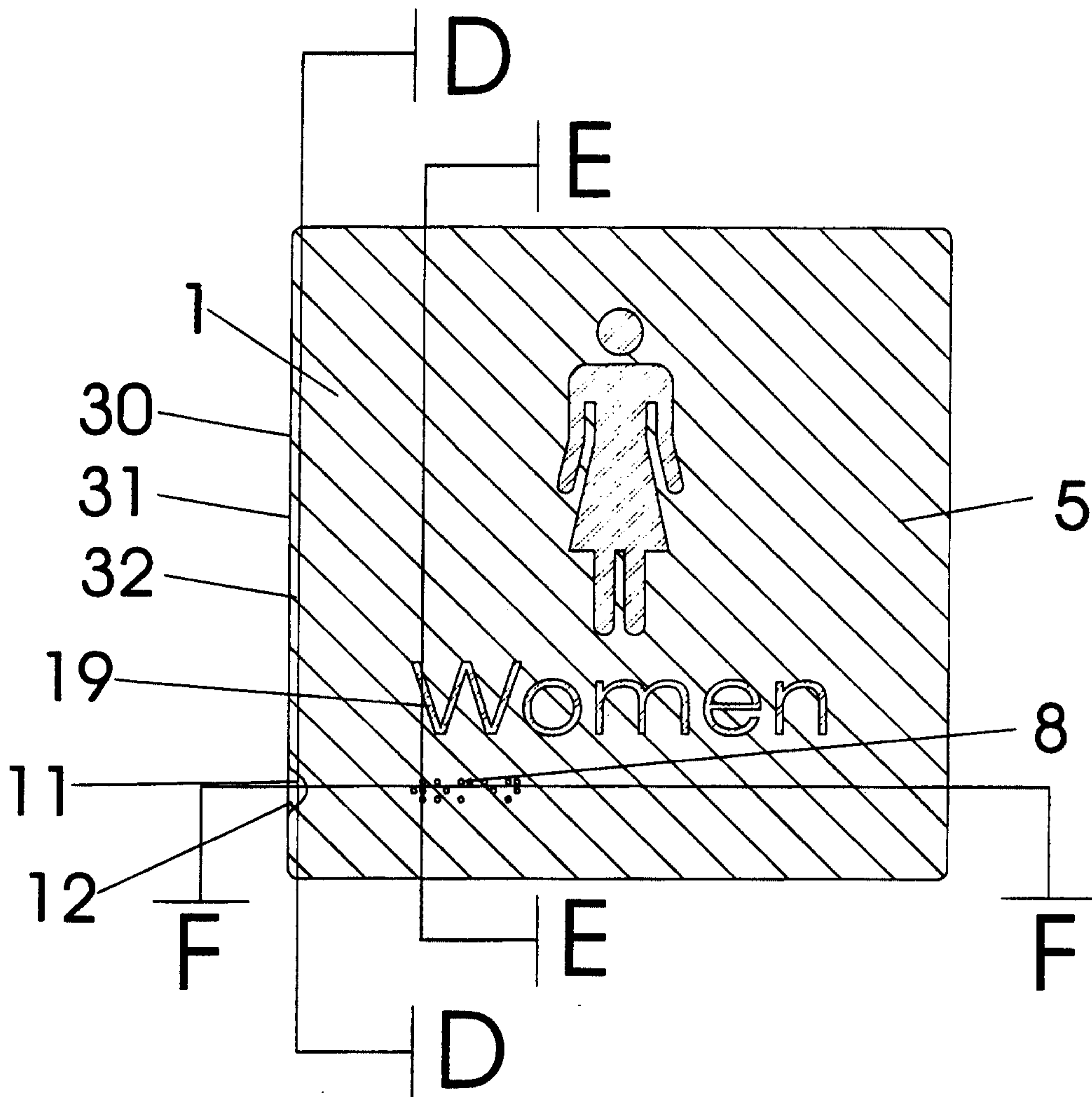


FIGURE 4A

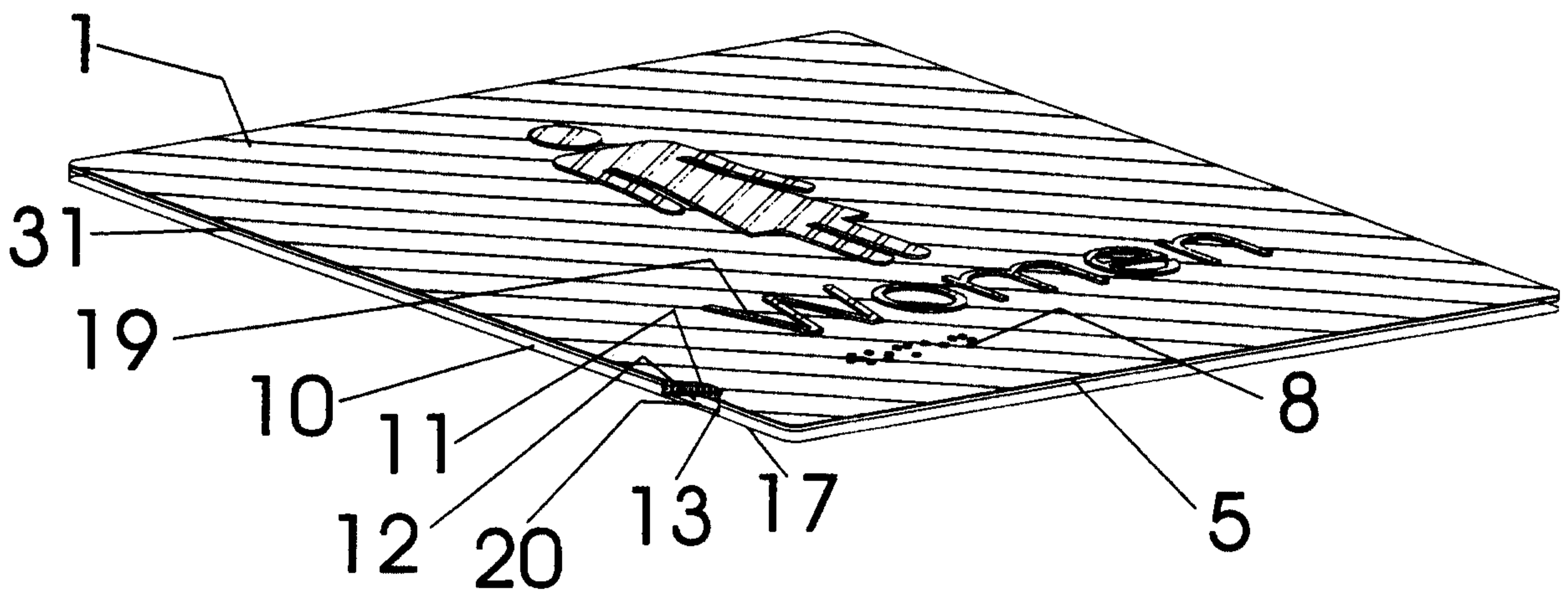


FIGURE 4B

5/11

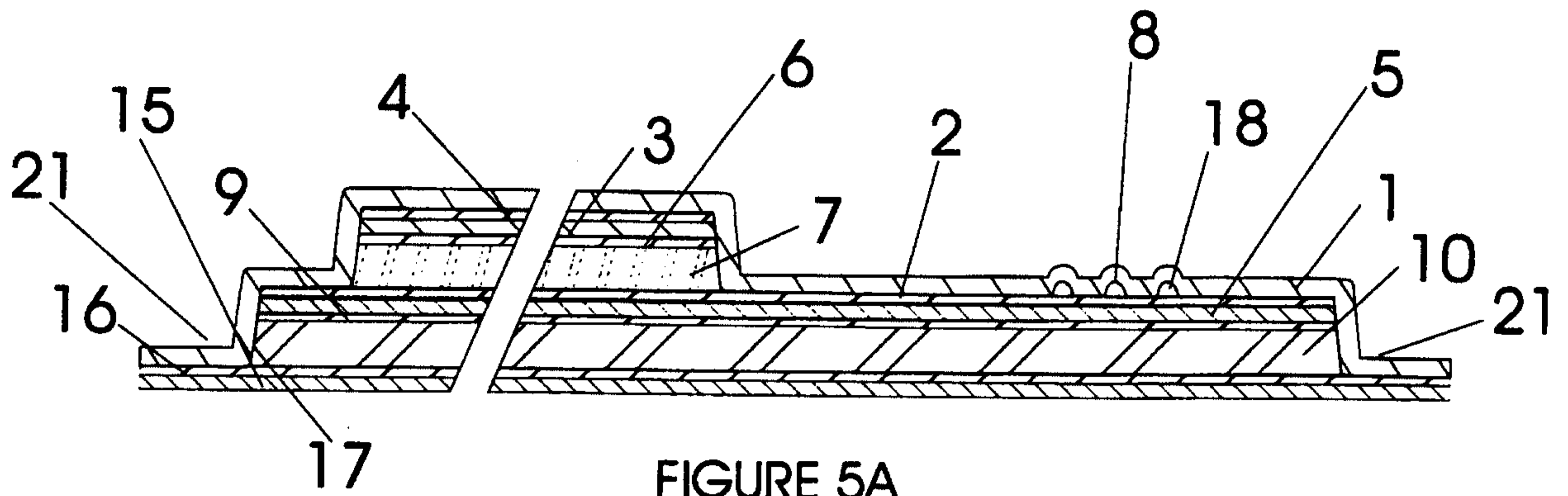


FIGURE 5A
CROSS SECTION HH

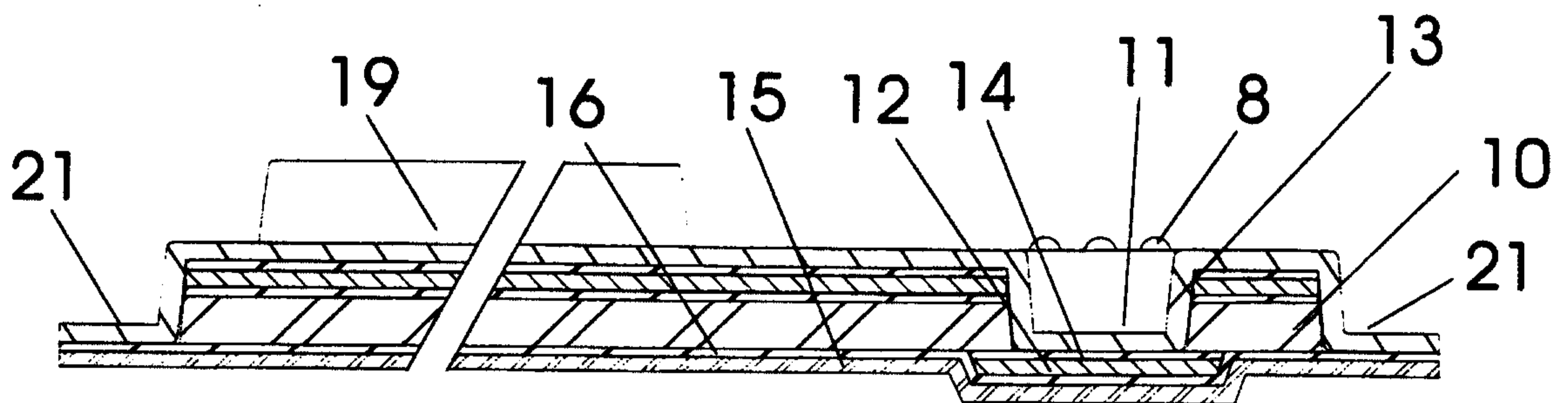


FIGURE 5B
CROSS SECTION GG

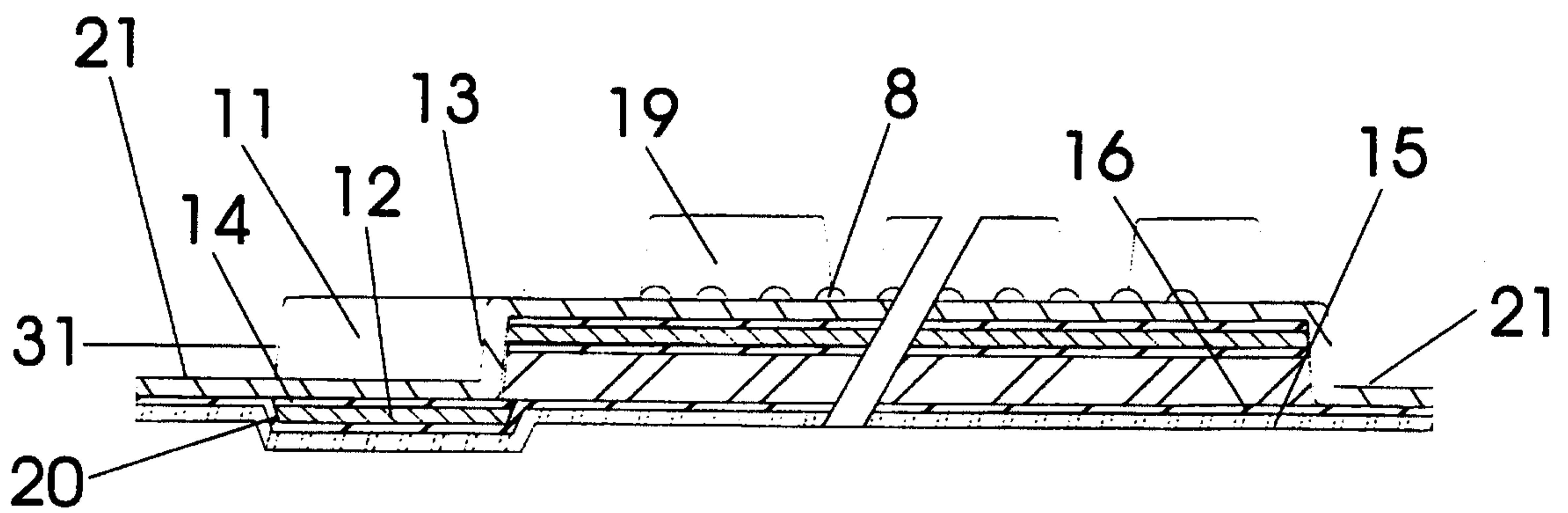


FIGURE 5C
CROSS SECTION II

6/11

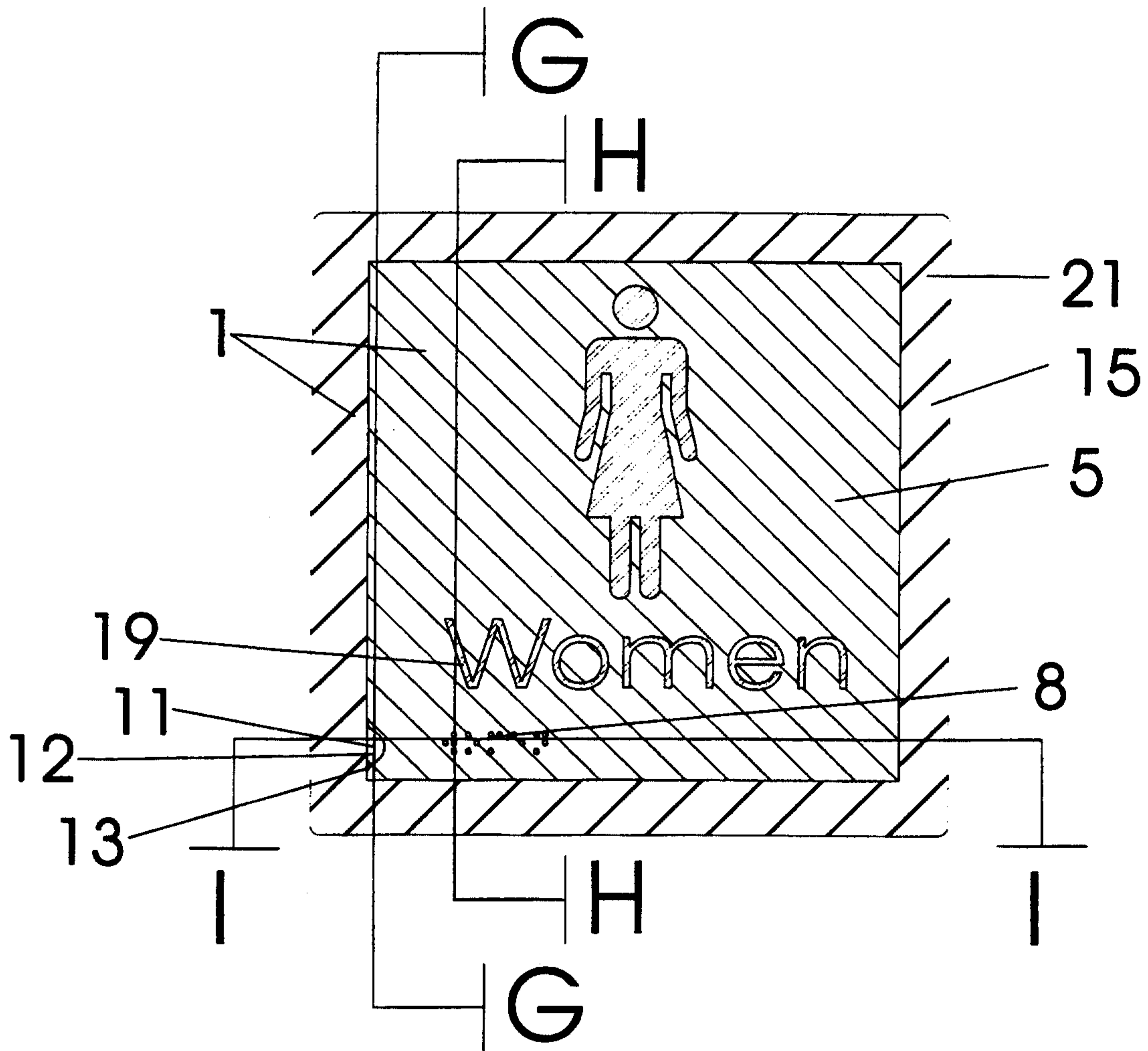


FIGURE 6A

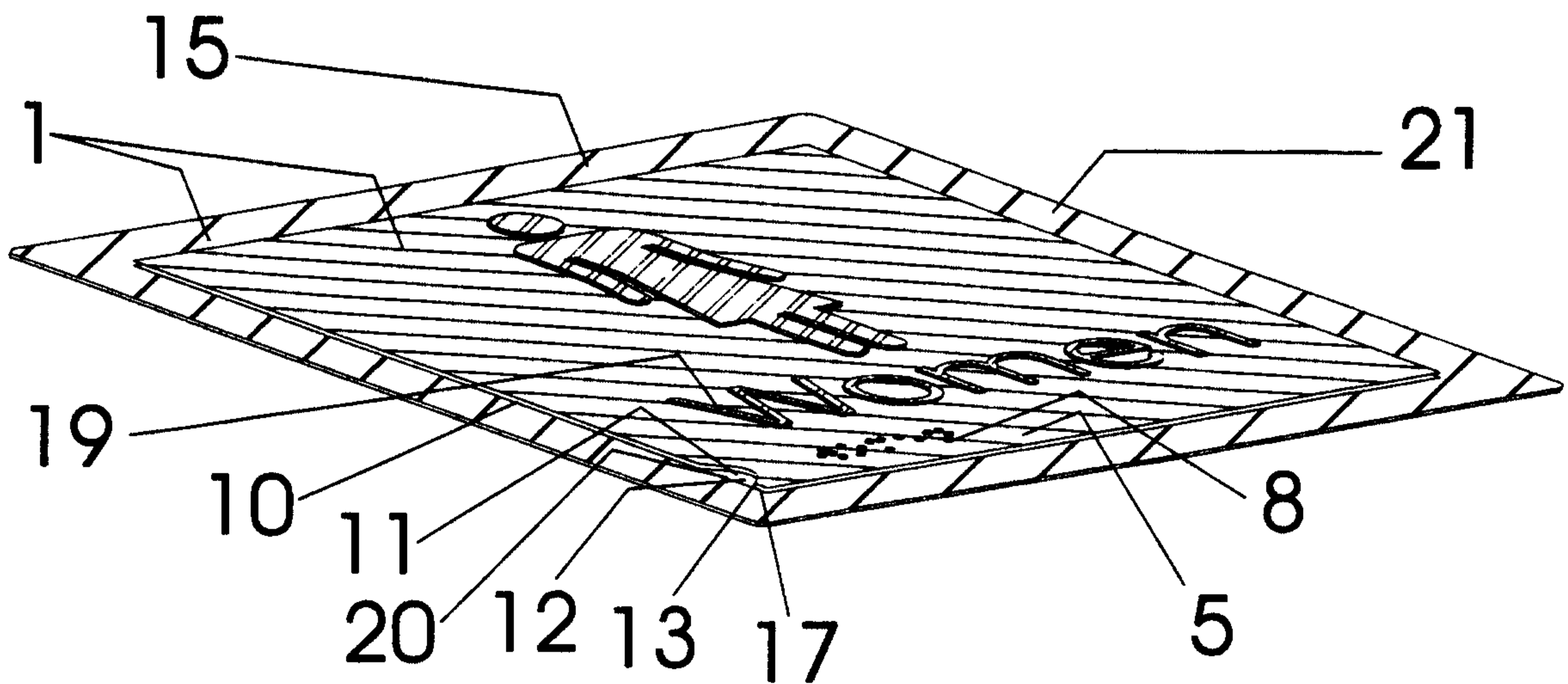


FIGURE 6B

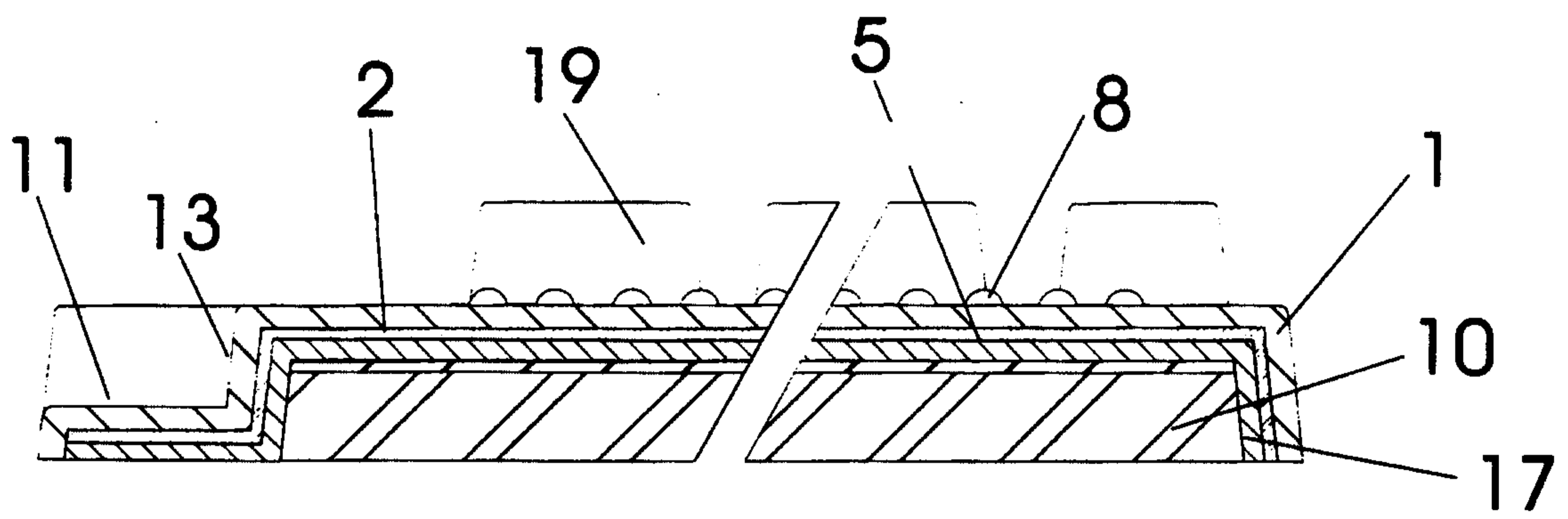


FIGURE 7

8/11

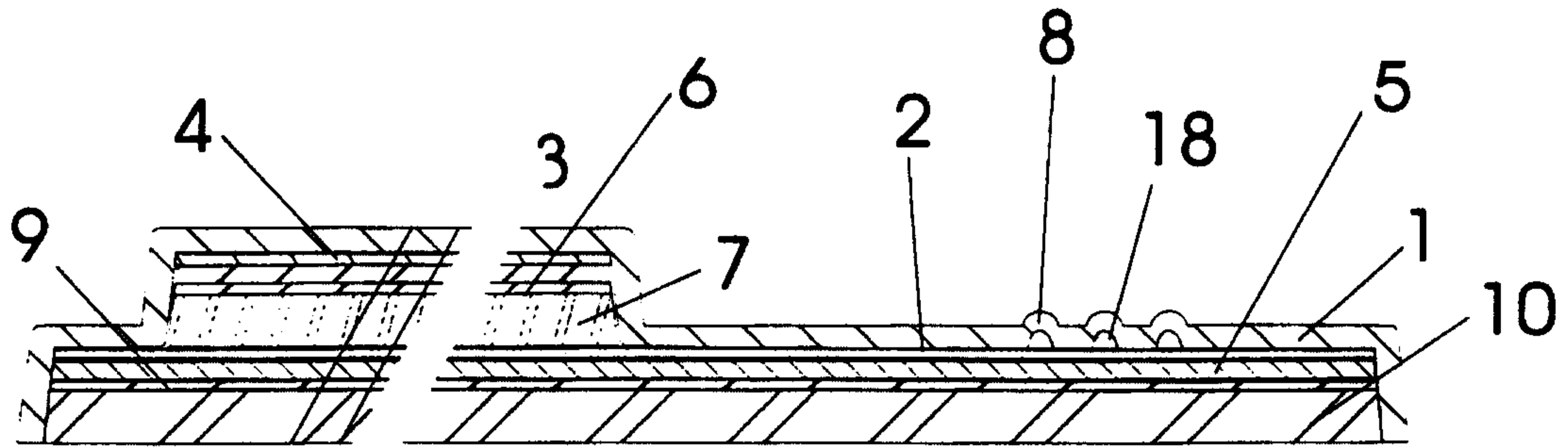


FIGURE 8A
CROSS SECTION JJ

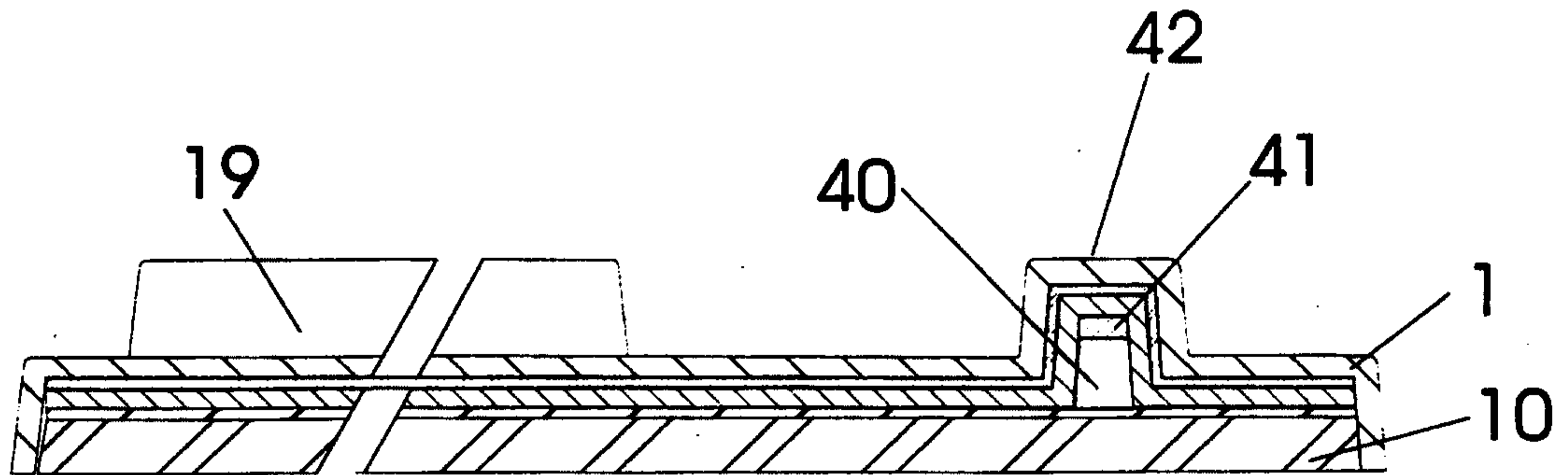


FIGURE 8B
CROSS SECTION KK

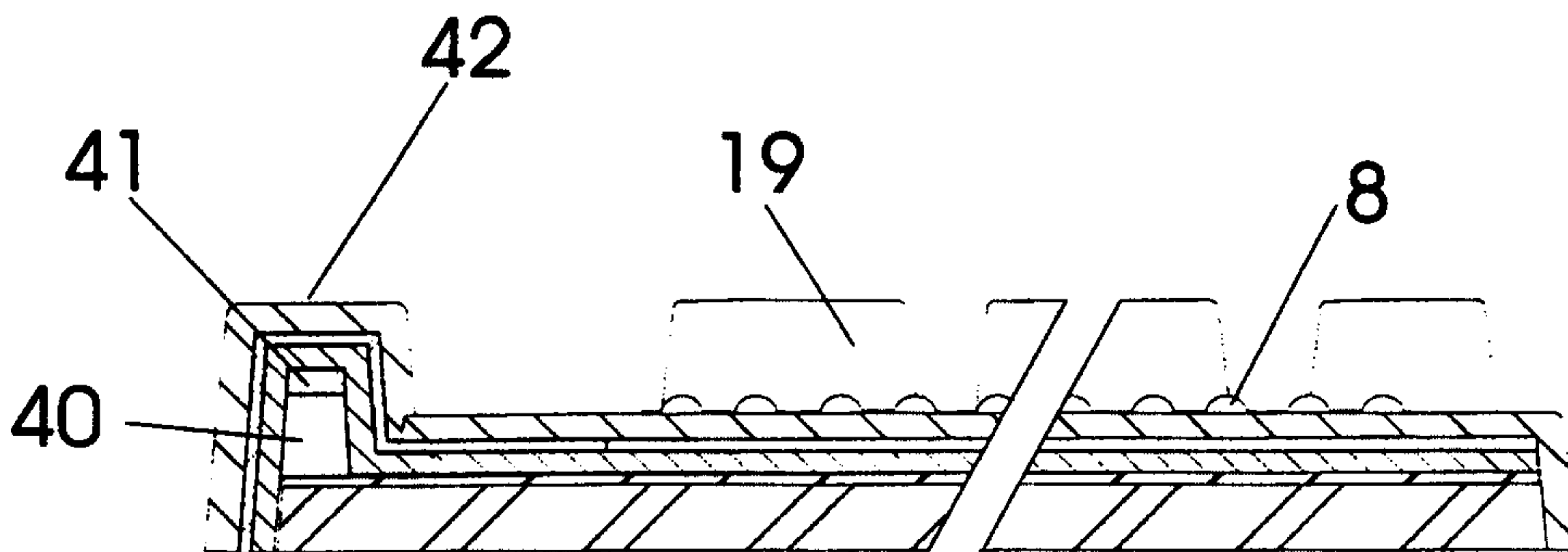


FIGURE 8C
CROSS SECTION LL

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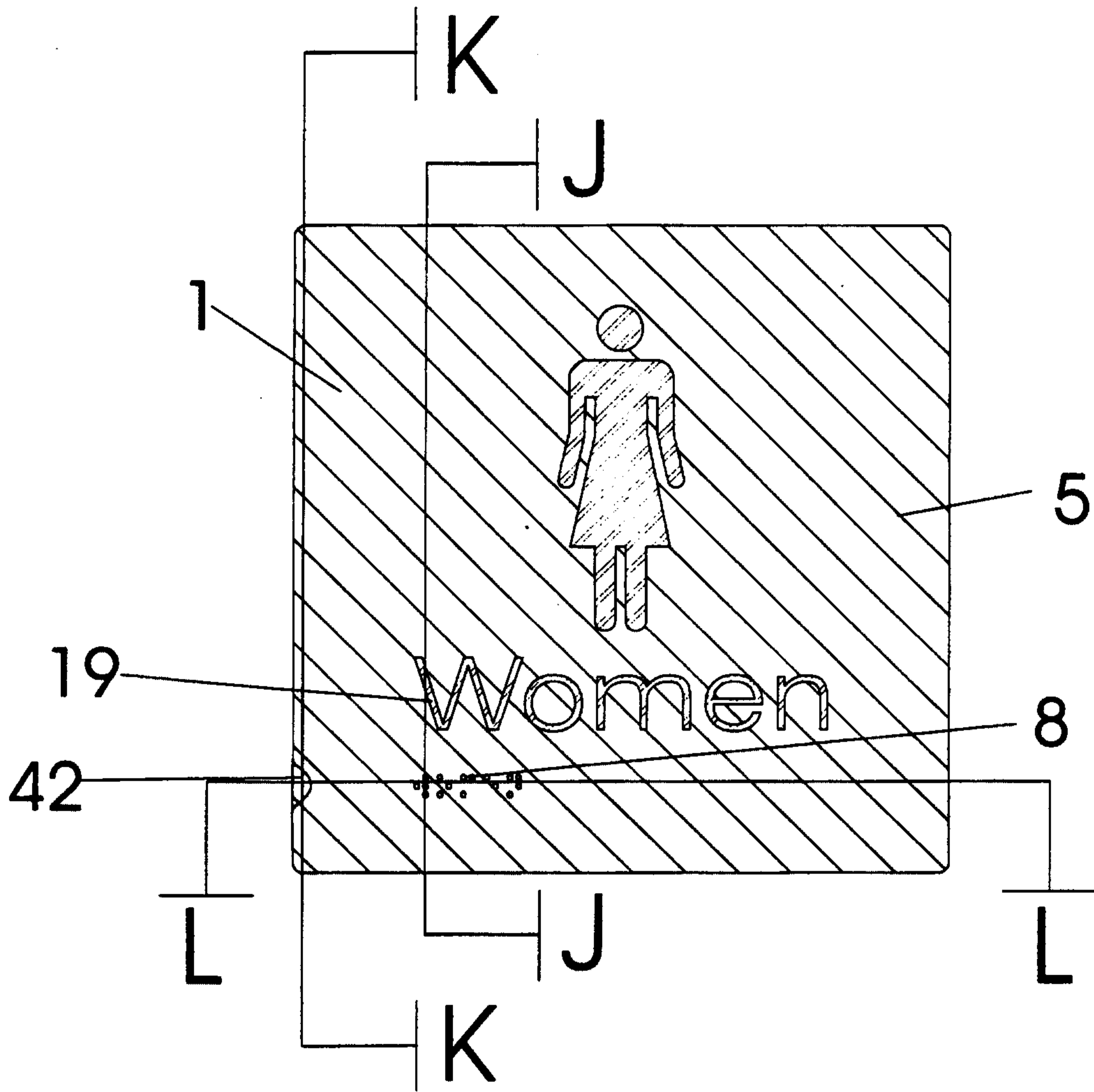


FIGURE 9A

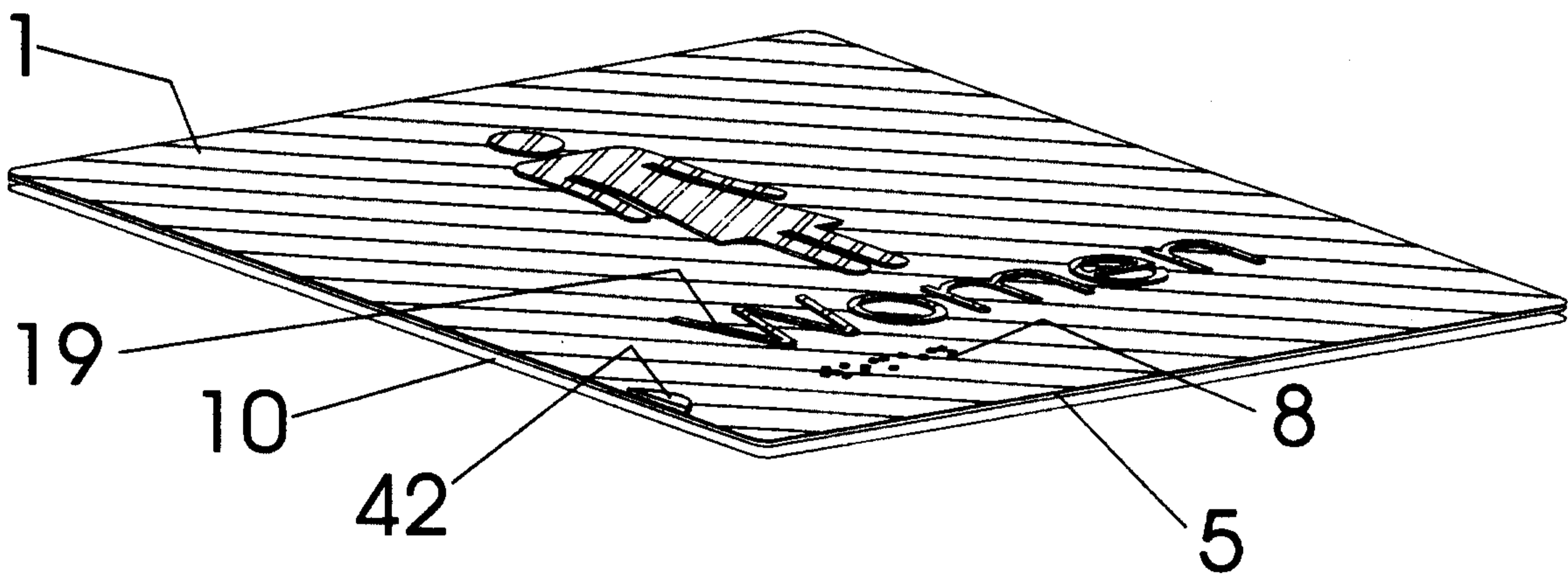


FIGURE 9B

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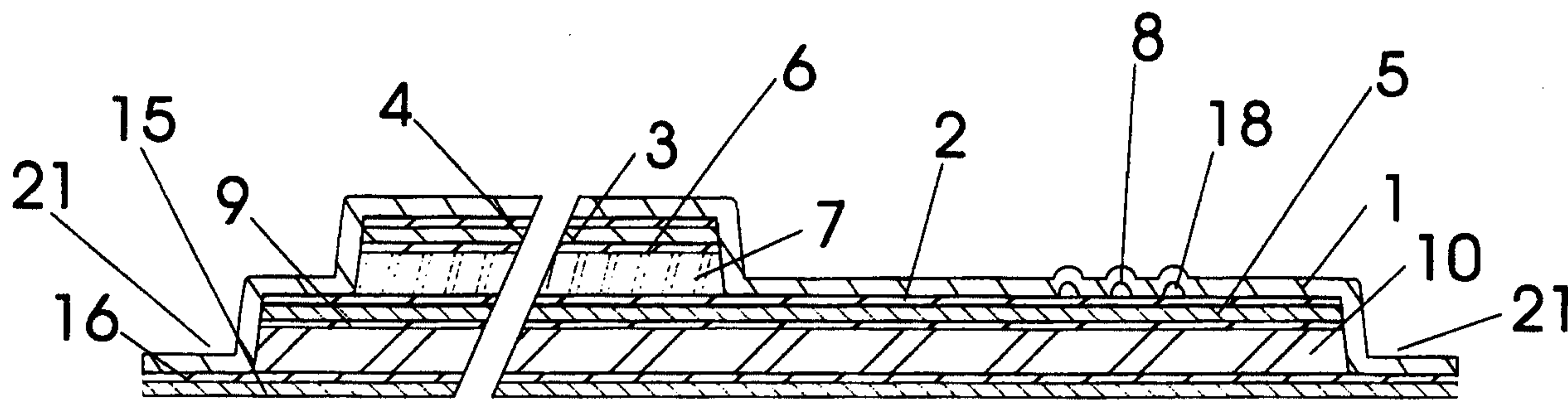


FIGURE 10A
CROSS SECTION MM

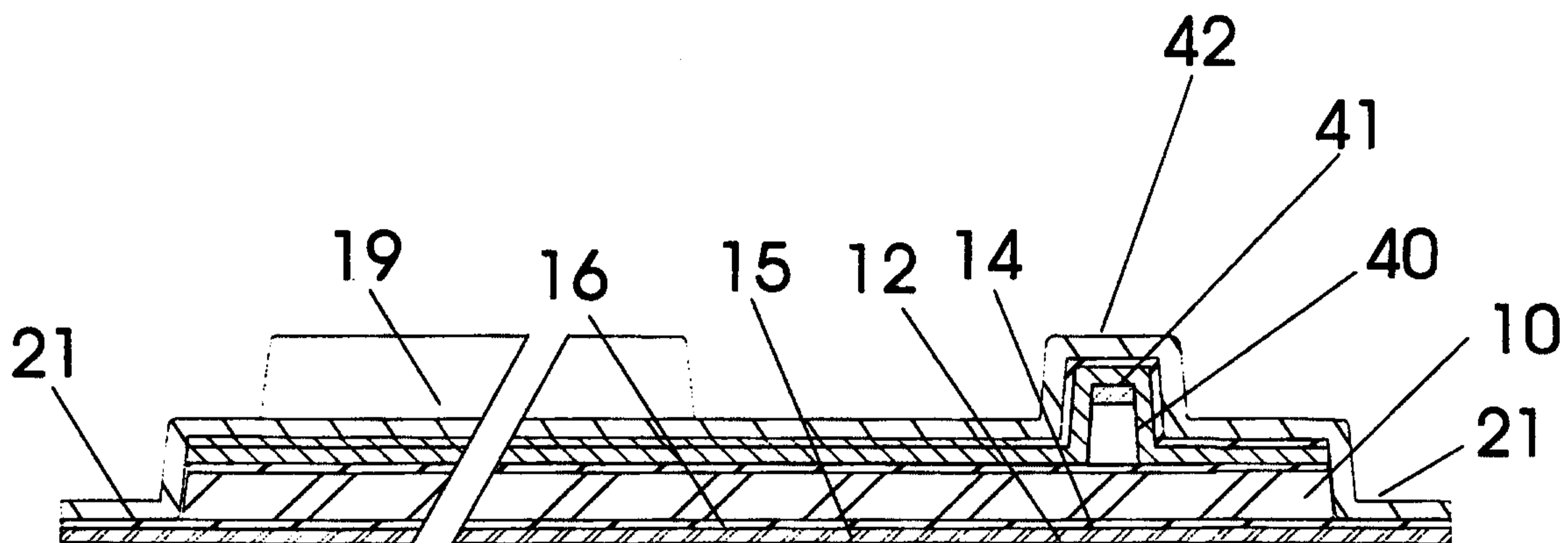


FIGURE 10B
CROSS SECTION NN

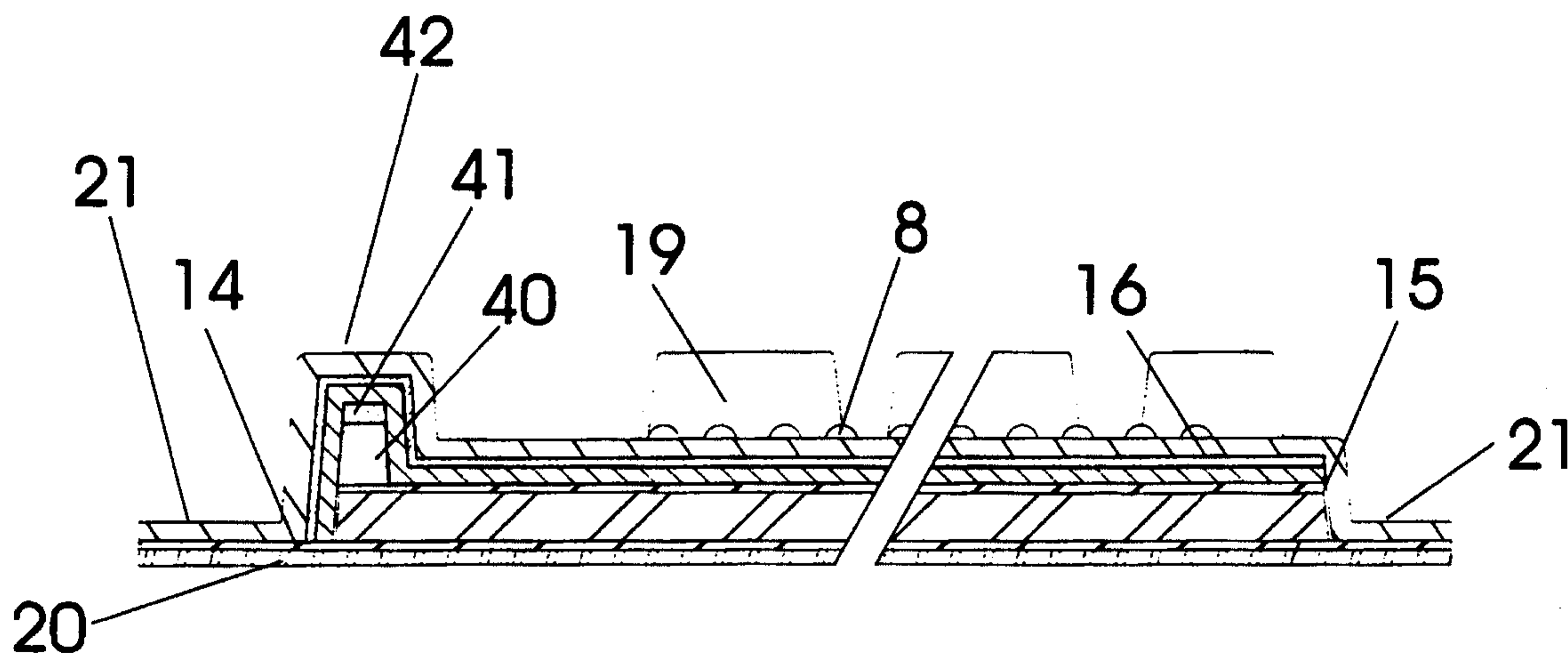


FIGURE 10C
CROSS SECTION OO

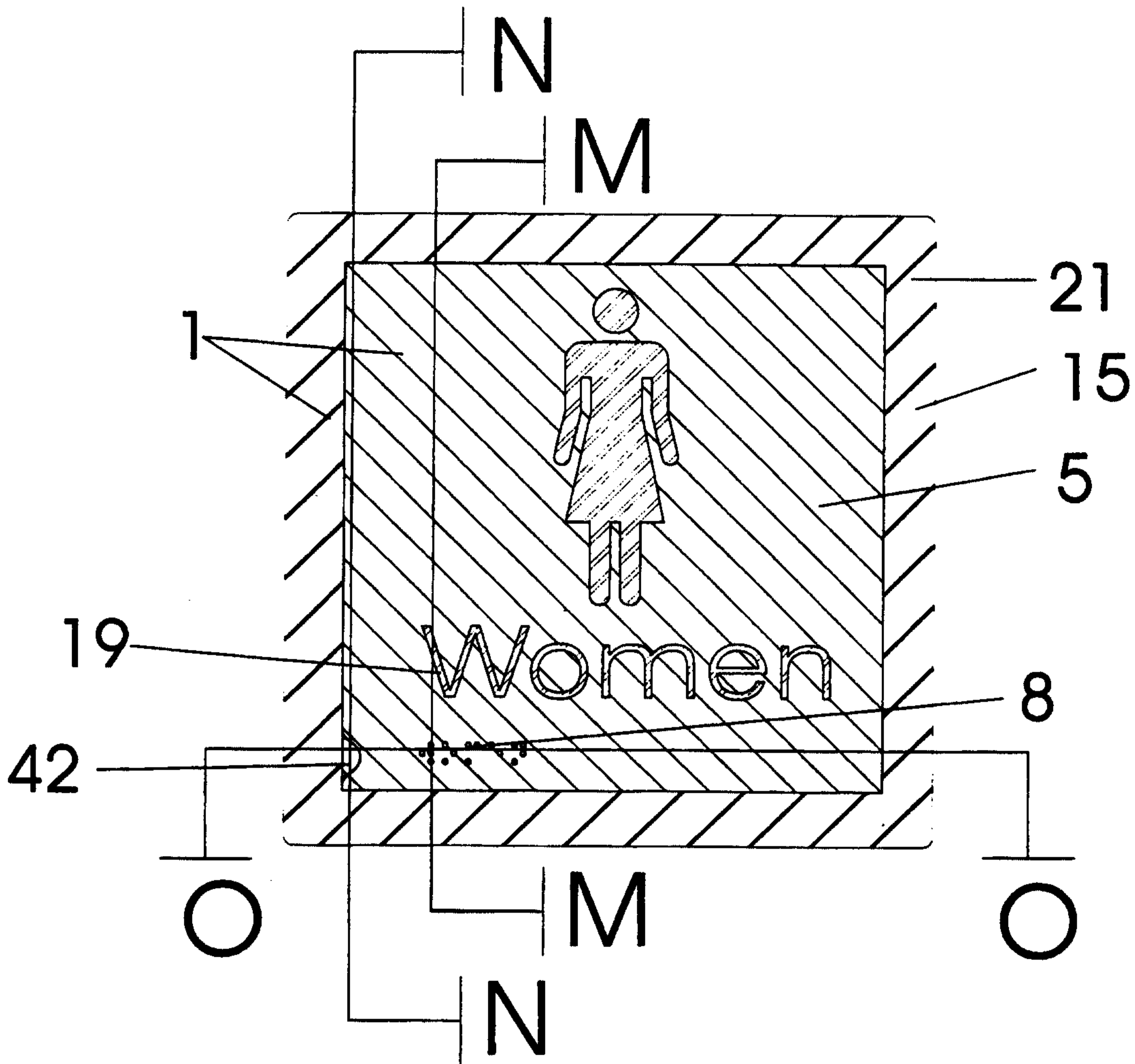


FIGURE 11A

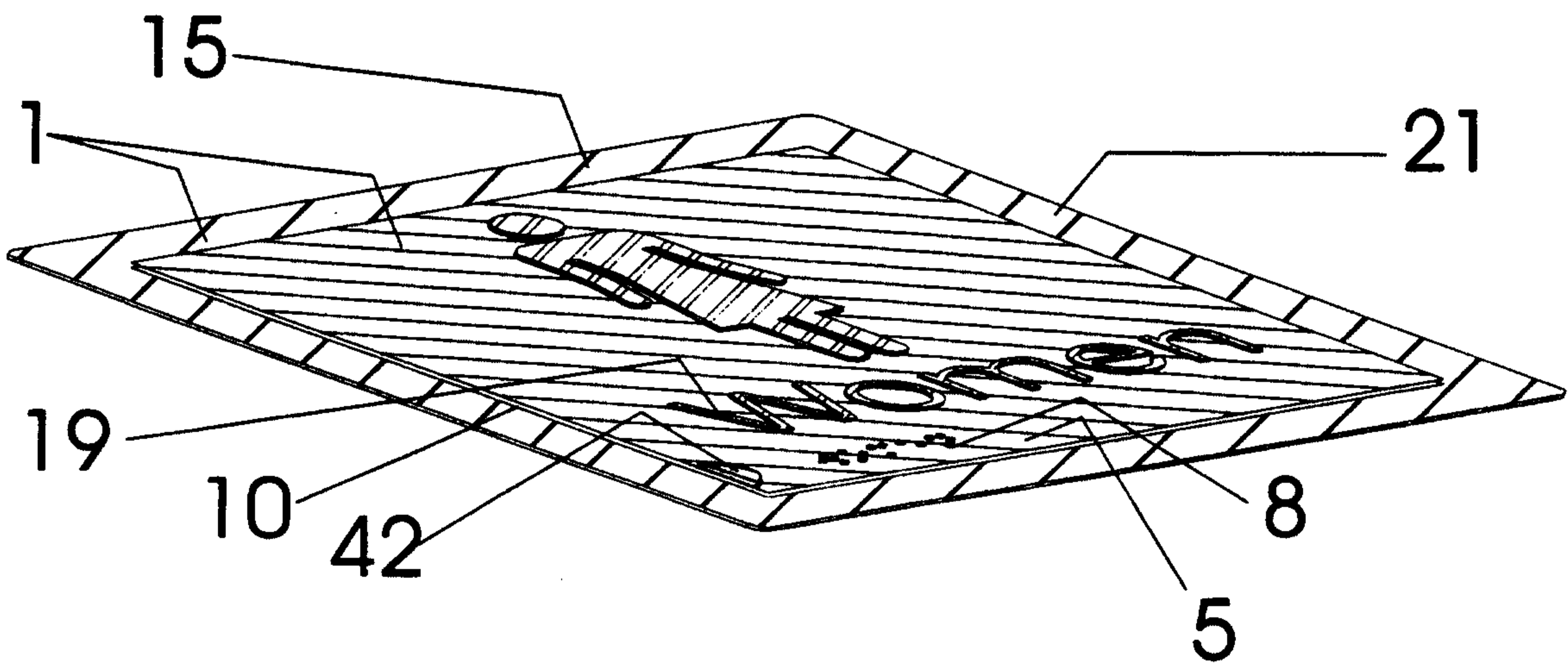


FIGURE 11B