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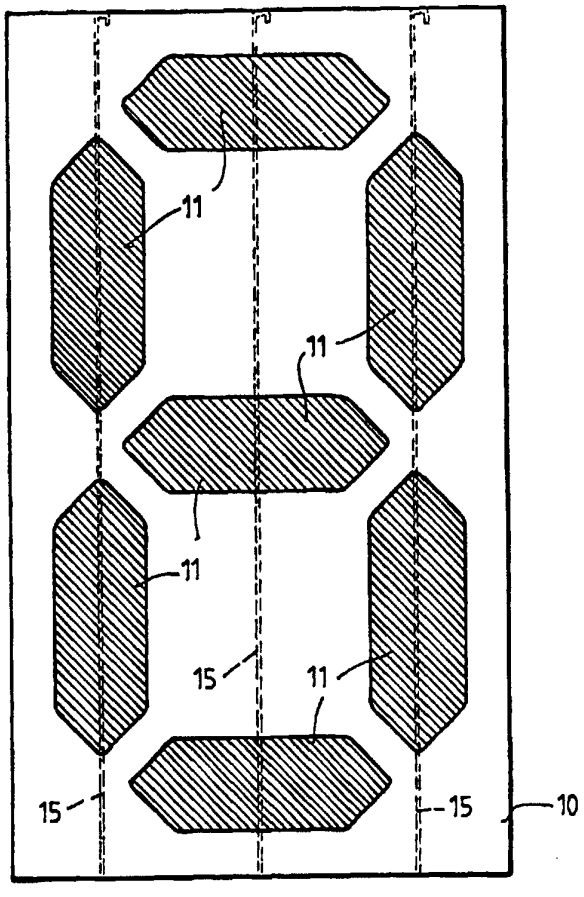
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Published
With international search report.
With amended claims.

(54) Title: DISPLAY DEVICES

(57) Abstract

The sign consisting of a board (10) which may be of Corflute or similar material having die cut therefrom at required position components (11) which can be inverted, the two sides of the board (10) being of different colours. The arrangement being such that when the components (11) are inverted, they can display a numeral letter or the like. The components can be rotatable with respect to the board (10) by means of rods (15) which extend downwardly through passage ways in the board and the component. The invention also describes a sign in which a strip member can pass through slits in the body so that particular material thereon can be seen when examining the body.



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DISPLAY DEVICES

This invention relates to display devices and in particular to display devices having moving components.

The invention is particularly applicable to display devices of the type made of plastic materials sold under the trade mark Corflute (and other trade marks), which is an extruded sheet having two spaced face members and parallel divisions which divide the area of the sheet into a number of parallel cells.

Whilst the invention is particularly applicable to use with such sheets, it will be appreciated that it will also be used with other materials, such as corrugated cardboard.

It is desirable on many signs to illustrate the cost of particular articles and, conventionally, there have been a number of ways of doing this.

In the simplest form, there is simply a space left on the sign onto which the price can be placed by the use of a felt pen, marker or the like and, in some applications, the space could be in the form of a blackboard upon which a chalk or other type of writing implement could be used.

In another form there have been provided numerals made up of seven components which normally made up the numeral 8 but from

which any other required numeral can be made simply by blanking out one or more of the components. The numerals displayed are in a form similar to those displayed from a LED.

The major disadvantage with this form of sign is that normally, and particularly where the sign is used outside, the blanking has to be done with a permanent marker so is generally not possible to re-use the sign if there is any price change. Because of this, such signs have usually been made of relatively flimsy material as they must be thrown away after a single use.

Further it is normally difficult to match the marker with the background so that whilst, from a distance, the sign can give a good effect, when examined from a closer range it can have an uneven appearance.

A further form of sign, which practically is not dissimilar to the one described above, the numerals can be provided on the sign by a die cutting and various selected components can be removed to provide the required display.

In this case, again, it is usually found that the removed portions of material are lost so it is effectively not possible to re-use the sign in applications were the price varies.

A first object of the invention is to provide a sign which enables the price to be readily changed and thus gives the sign a good long term life.

Another disadvantage with signs of this general type is that it is often desirable to change certain of the information which appears on the sign and a second object of the invention is to provide a sign whereby this can readily be done.

The invention is its broadest sense comprises a sign having a face of sheet material having cutout components so located as to be able to form any required letter or numeral, the cutouts being so arranged as to be able to be inverted to present their second face which is contrasting in appearance to the front face whereby on correct selection of the cutouts a letter or numeral can be displayed.

Preferably, where numerals are to be provided, the cutouts are in the forms of elongated diamonds and in respect of each of these, there is a pivotal member passing through a central portion whereby the sign can adopt its required positions by rotation and without removal of any of the components.

The numerals are normally provided in a display having seven bars, which, when all exposed show a numeral 8, when the central horizontal bar is not exposed shows a numeral 0, and the other

numerals are all attainable, in a matter similar to that in which they would appear on an LED or other device.

Where letters are to be formed there may be additional members which are cut out or able to be removed, which are located basically diagonally in the sign.

In its second sense, the invention provides a sign having changeable material including a pair of spaced slits or the like in the sign body, the variable material being on a flat sheet which can pass through the slits and be located so the required information is displayed and means to hold the material relative to the body.

In order that the invention may be more readily understood, I shall describe, in relation to the accompanying drawings, embodiments of each part of the invention.

In these drawings:

Fig 1 shows a portion of a sign which can display any numeral with all of the components rotated to illustrate the numeral 8;

Fig 2 is a view similar to that of Fig 1 with one of the components rotated to illustrate the numeral 6;

Fig 3 is a view of portion of the sign showing in dashed line, the method of location of two of the components;

Fig 4 is a front view of the second form of sign; and

Fig 5 is a side elevation of the sign of Fig 4.

In the first aspect, illustrated in Figs 1 to 3, I preferably use a plastics board 10 of the type sold under the trade mark Corflute but, as previously indicated, I could use corrugated cardboard or some other material.

I die cut from the board, at the required positions, seven components 11 each of which is in the form of an elongated diamond shape and which are so located as to form the numeral 8. These components are so formed that any required numeral can be achieved by selecting a certain number of the components and, as can be seen from the figures, are shaped in a manner of the components of an LED.

In the sign of the invention, the two sides of the board are of contrasting colours, such as black and white, so that when any of the components 11 are rotated, there is a contrast on each face of the sign.

I provide passing through each of the components 11 a rod or the like 15 which extends downwardly through the passage 16 in the

board which is closest to central as far as the components is concerned.

To provide the single numeral illustrated I have three such rods 15, the two outer rods passing through the two side components so that these are adapted to rotate about their longitudinal axis and the centre rod passing through the three cross components so that these are adapted to rotate about their transverse axis.

The diameter of the rod used is each case smaller than the width of the passage 16. Practically, in standard Corflute, the passage is approximately one and a half to twice as wide as the height of the divider and the use of small diameter rod enables sufficient freedom so that, no matter where the components are formed relative to the body of the Corflute backing, there will be sufficient movement of the component relative to the rod to permit the component to be located in the aperture from which it was removed but with its opposite face being outwardly directed.

That is, it is not essential for the tradesman making the sign to ensure that each component is centred on a passage through the Corflute.

This, it will be appreciated, saves very substantial time when signs are being made.

The rods may be preferably of a hollow plastic extrusion and may be formed at least at one end to either return into the same passage in the board so as to firmly locate therein or, alternatively, and as illustrated, to return into an adjacent passage in the board.

It will be seen then that for a user to set a price it is only necessary to decide which of the components are necessary to form the particular numeral, or generally which of the components in four of five numerals are necessary to set up the required price and to rotate these components so that the contrasting colour is directed outwardly from the sign.

If the price is to vary, or the sign is to be used in respect of a different product, then it is only necessary to reset the components to provide the new required amounts.

Whilst I have described herein before one particular form of sign, it will be appreciated that variations can be made in this.

For example, the sign could be provided with a backing sheet and the removable sections could be physically removed, reversed and reinserted and these can either be held against a backing sheet or alternatively, the backing sheet could have a ready release adhesive thereon so that the cutout portions are held there against although they can be readily removed or replaced.

An arrangement such as this does provide means whereby a wider range of shapes can readily be provided.

For example, components on an angle to the remainder to the sign can be provided and as these do not need to be pivoted, any required position can be used.

In this way an arrangement can be set up whereby not only numerals but also letters can be displayed.

In an even simpler version it may be possible to simply provide the components so they can be inverted and replaced.

In such an arrangement the components could be provided with slightly non-parallel sides so that on replacement there is a certain deformation which will act to keep the portion in place.

There could of course be other variations of the arrangement.

In the second aspect of the invention, I provide means whereby certain information can be displayed on signs of this type.

For example, if the sign was to be used for several different products, I provide a sheet or strip of material 20 which has each individual product marked thereon and in the required position on the body of the sign, I can provide two spaced split lines 21a 21b so that the strip of material 20 can be passed

through one of the lines 21a from behind, over the face 24 of the sign between the two lines and through the other split line 21b so that a portion of the strip of material 20 extends outwardly from the face of the sign.

The back of the sign and the strip can be provided with locating means 22, which could be Velcro or similar material so that the strip can be located in the required position.

If it is subsequently required to change what is on the sign, then the strip is simply released, moved until the other position is reached and then again locked into position or removed and replaced with another strip.

It can be seen that by the use of the two aspects of the invention a very flexible sign can be achieved. The sign also provides a professional appearance.

It can readily be used indoors or outdoors and it can have a relatively substantial life.

I Claim:

1. A sign having a face of sheet material having cutout components so located as to be able to form any required letter or numeral, the components being so arranged as to be able to be inverted to present their second face which is contrasting in appearance to the front face whereby on correct selection of the components a letter or numeral can be displayed.

2. A sign as claimed in claim 1 the components of which can be readily be returned to their initial condition and subsequently selectively inverted to form another required letter or numeral.

3. A sign as claimed in claim 1 or claim 2 wherein the components are in the forms of elongated diamonds and in respect of each of these, there is a pivotal member passing through a central portion whereby the components can be inverted to adopt their required positions without the removal of any of the components.

4. A sign as claimed in claim 3 wherein the components are adapted to form numerals and each numeral is provided as a display having seven bars, which, when all exposed show a numeral 8, when the central horizontal bar is not exposed shows a numeral 0, and the other numerals are all

attainable, in a matter similar to they would appear on an LED or other device.

5. A sign as claimed in claim 3 wherein the components are adapted to form letters and there are sufficient of these and they are so located as to enable any required letter to be formed on inversion of the components.

6. A sign having changeable material including a pair of spaced slits or the like in the sign body, the variable material being on a flat strip which can pass through the slits and be located so the required information is displayed on the face of the sign.

7. A sign as claimed in claim 6 having means to hold the strip relative to the body.

8. A sign substantially as hereinbefore described with reference to the accompanying drawings.

AMENDED CLAIMS
[received by the International Bureau on 6 June 1995 (06.06.95); original claim 6 amended; remaining claims unchanged (1 page)]

attainable, in a matter similar to they would appear on an LED or other device.

5. A sign as claimed in claim 3 wherein the components are adapted to form letters and there are sufficient of these and they are so located as to enable any required letter to be formed on inversion of the components.

6. A sign as claimed in any of the preceding claims and wherein the sign also comprises changeable material including a pair of spaced slits or the like in the sign body, the variable material being on a flat strip which can pass through the slits and be located so the required information is displayed on the face of the sign.

7. A sign as claimed in claim 6 having means to hold the strip relative to the body.

8. A sign substantially as hereinbefore described with reference to the accompanying drawings.

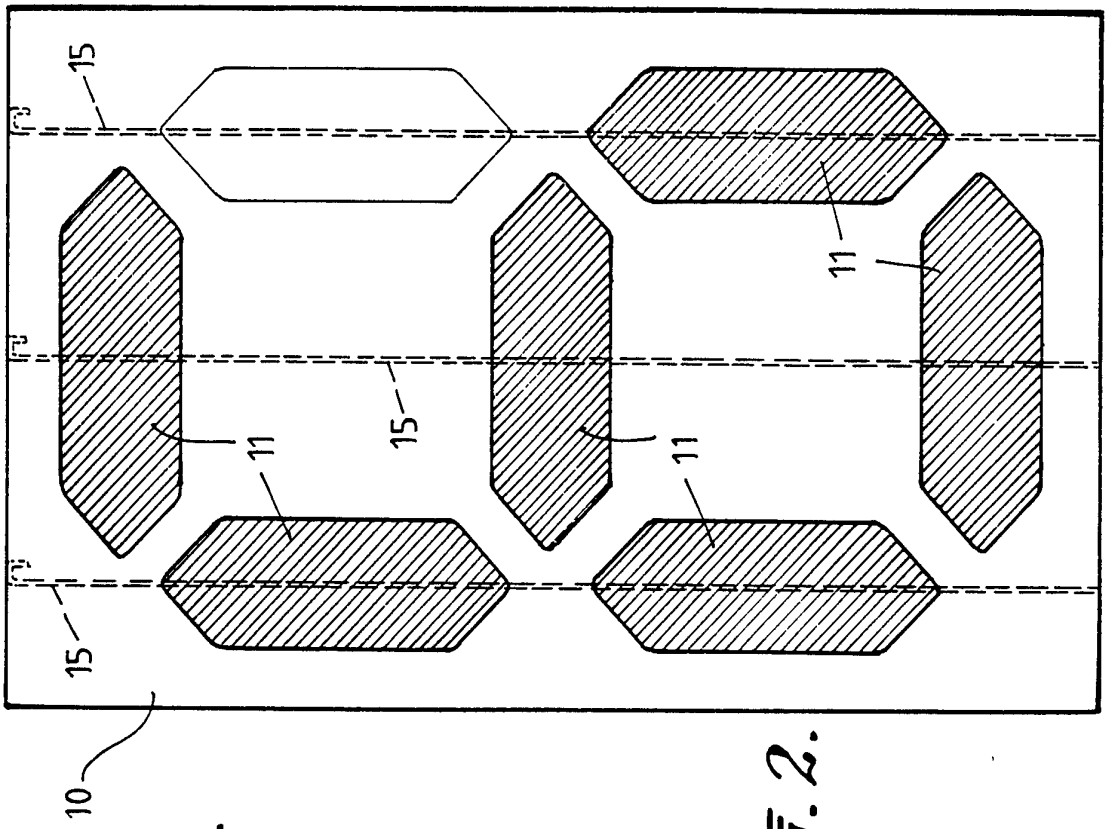


Fig. 1.

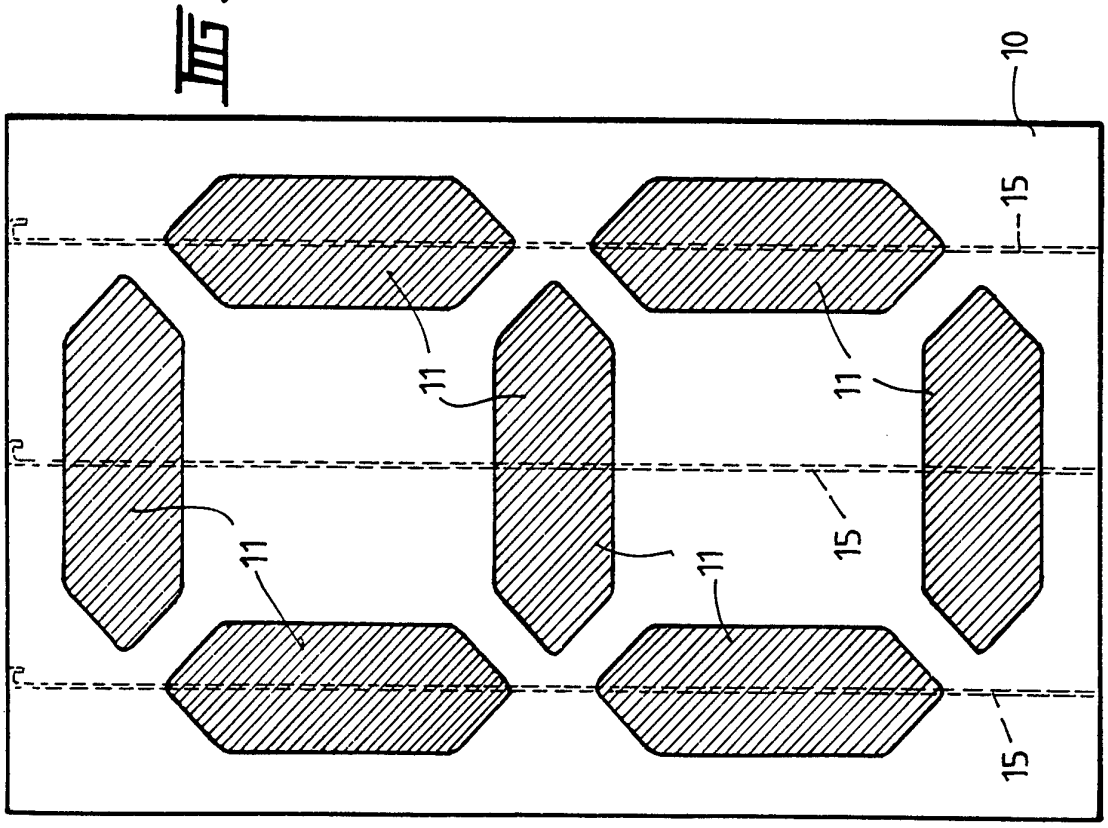


Fig. 2.

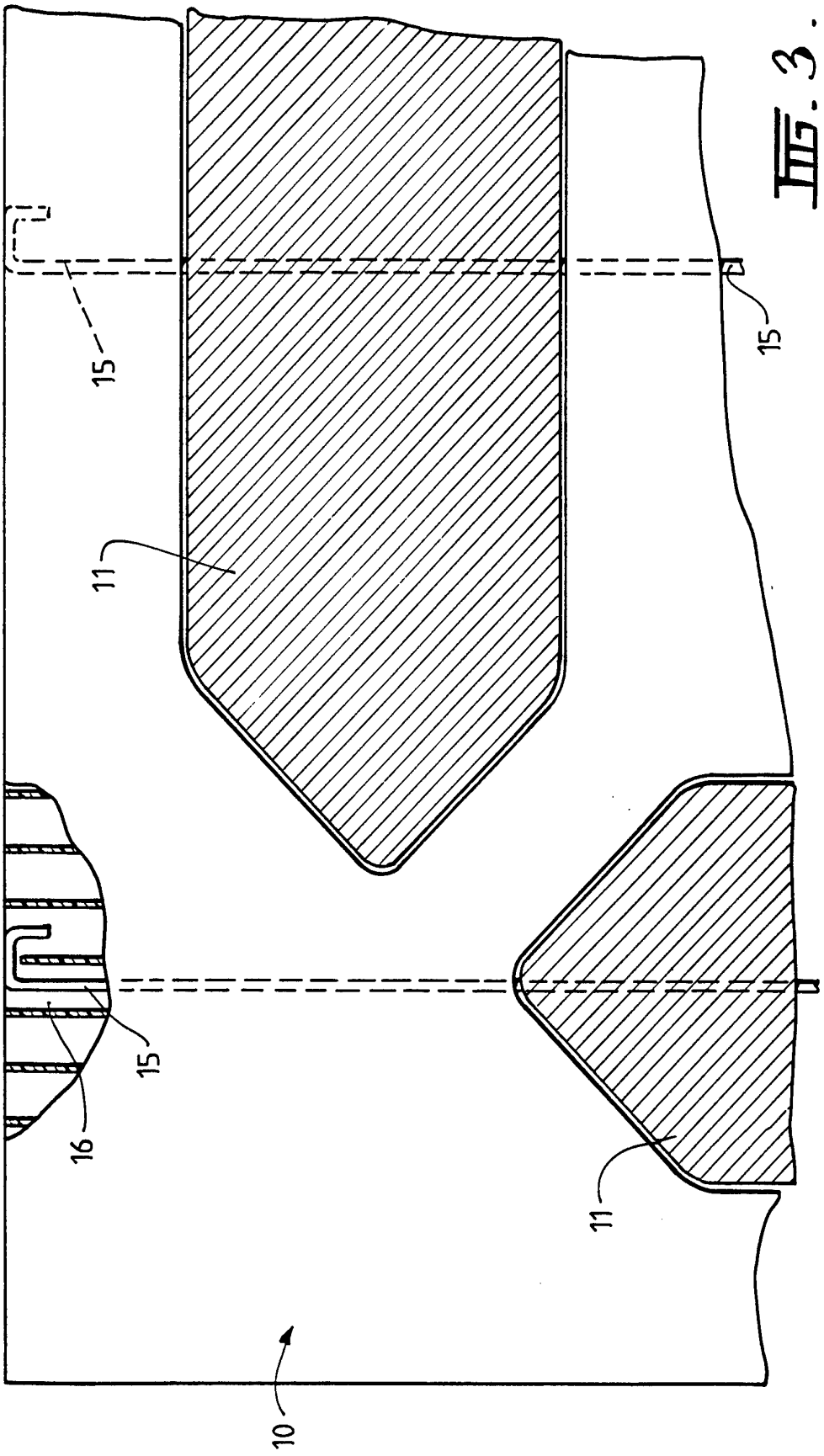


Fig. 3.

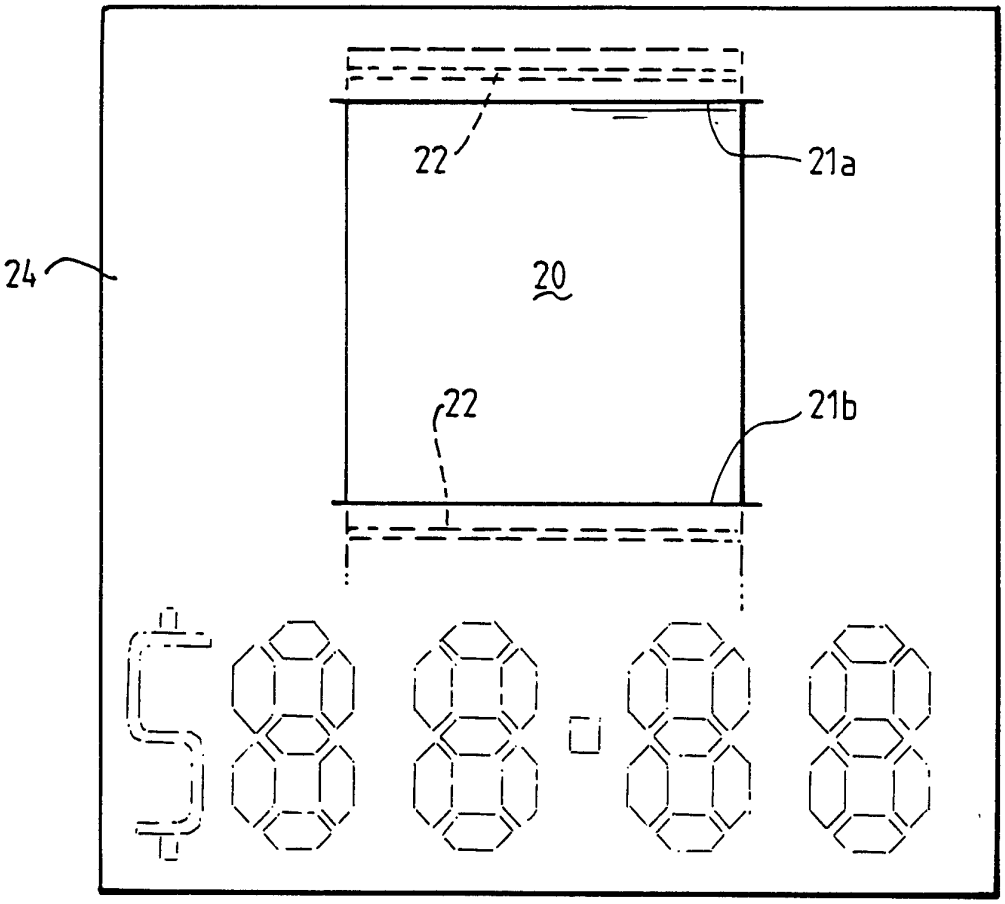


FIG. 4.

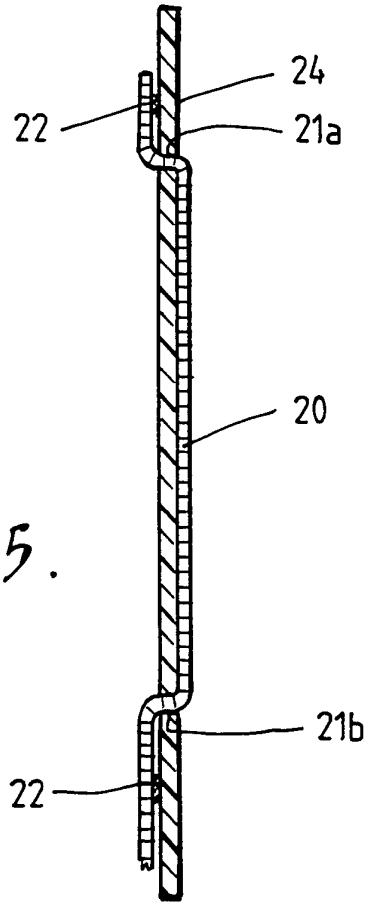


FIG. 5.

International application No.
PCT/AU 94/00001

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl.[5] G09F 9/37

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC G09F 9/37, 9/30

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU : IPC as above

Electronic data base consulted during the international search (name of data base, and where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	EP,A, 0514852 (DAXER) 25 November 1992 (25.11.92)	1 to 5 and 8
X	EP,A, 0482885 (KHOURY, EDWARD JOSEPH) 29 April 1992 (29.04.92)	1 to 5 and 8
X	WO,A, 90/03635 (NIELSEN, BORGE) 5 April 1990 (05.04.90)	1 to 5 and 8
X A	EP,A, 0316095 (HARVEY-JENKINS DEVELOPMENTS LIMITED) 17 May 1989 (17.05.89)	1 and 2 3 to 5 and 8
X	AU,B, 35671/84 (JOHN GERALD CHAPMAN) 19 November 1984 (19.11.84)	1 to 5 and 8

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
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"O" document referring to an oral disclosure, use, exhibition or other means
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 April 1994 (06.04.94)	15 April 1994 (15.04.94)

Name and mailing address of the ISA/AU

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INTERNATIONAL SEARCH REPORT

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X	FR,A, 2543337 (APPLICATIONS INDUSTRIELLES ET ARTISTIQUES DES MATIERES PLASTIQUES) 28 September 1984 (28.09.84)	1 to 5 and 8
X A	US,A, 4411084 (KRAUS) 25 October 1983 (25.10.83)	1 and 2 3 to 5 and 8
A	EP,A, 0031033 (TAMBURINI) 1 July 1981 (01.07.81)	1 to 5 and 8
X A	US,A, 3740878 (OELSCHLAEGER) 26 June 1973 (26.06.73)	1 and 2 3 to 5 and 8
A	Patent Abstracts of Japan, E-109, page 146, JP,A, 54-33696 (CITIZEN TOKEI KK) 3 December 1979 (03.12.79)	1 to 5 and 8
A	Patent Abstract of Japan, E-109, page 145, JP,A, 54-33695 (CITIZEN TOKEI KK) 3 December 1979 (03.12.79)	1 to 5 and 8

INTERNATIONAL SEARCH REPORT

Box I **Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international search report has not established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II **Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims 1 to 5 and 8

   A sign having cutout components so located as to be able to form any required letter numeral. The components being so arranged as to be able to be inverted.

2. Claims 6 and 7

   A sign having changable material as reasoned on extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically

   claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1 to 5 and 8

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Supplemental Box
(to be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box II

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are two inventions:

1. Claims 1 to 5 and 8

   The cutout components comprise a second face which is contrasting in appearance to the front face which enables the components to be selected to form a letter or numeral to make up a display.

2. Claims 6 and 7

   The changable material is a flat strip whcih is fastened and displays the required information in a completely different manner. Interchanging information is carried out by different mechanical and physical features.

Since the abovementioned groups of claims do not share either of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept.

INTERNATIONAL SEARCH REPORT

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	514852	DE	9106321				
EP	482885						
WO	9003635	DK NO	160909 911196	EP	534939	FI	911546
EP	316095	GB	8726015				
AU	84/35671	AU	541448				
FR	2543337						
US	4411084						
EP	31033	IT	1126094				
US	3740878						

END OF ANNEX