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(54) Improved display device.

(57) A display device comprising a sheet form support member 11 having a lower portion with two base edges 32x, 32y extending from a vertical fold line 14 to enable such member to be folded with the first base edge 32x and an adjacent first lower area 13x overlapping the other, second, base edge 32y and adjacent second lower area 13y. The first and second lower areas 13x, 13y have thereabove respective first and second intermediate areas 30x, 30y bounded at their lowermost extents by respeotive second fold lines 16 formed therein at acute angles to, and in the same direction as, the vertical fold line 14 and being bounded at their uppermost extents by respective third fold lines 19A formed therein at acute angles to, and in the opposite direction to, the vertical fold line 14 formed in the lower portion. The vertical fold line 18A between the first 30x and second 30y intermediate areas is in the opposite direction to vertical fold line 14. Respective first and second upper areas 31x, 31y are bounded at their lowermost extents by the third fold lines 19A being separated by a vertical fold line 22B therebetween which is in the same direction as that dividing the lower portion.

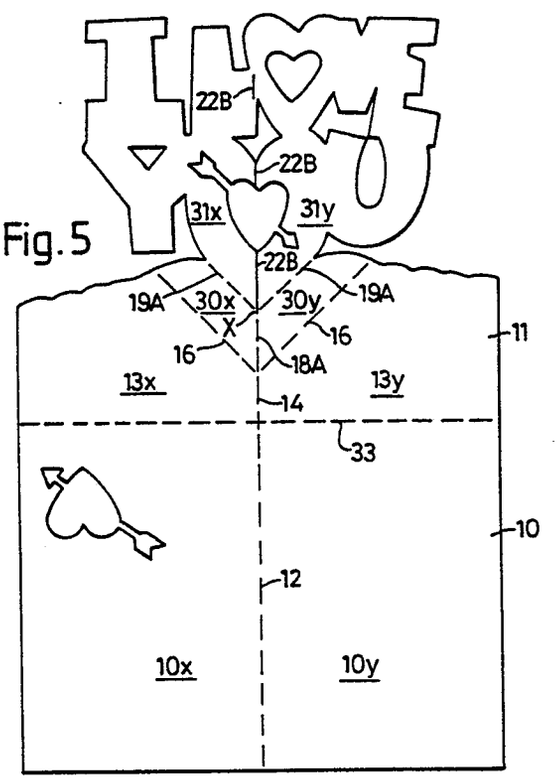

Fig.5

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IMPROVED DISPLAY DEVICE

The invention relates to an improved display device and more particularly to such a device which comprises a sheet form cover member, normally folded down a vertical centre line to enclose a folded three dimensional display located therein which is located flat when the cover is folded upon itself, when not in use. Opening of the cover causes the display to be viewable in three-dimensional form.

Such devices are known in the form of greetings cards, display for retail outlets or promotional use, and in books. Heretofore there has been difficulty in providing such a display which is free-standing in a stable manner without the use of some resilient means to maintain such stability. Production of devices incorporating such resilient means is expensive and such devices can be hazardous to children.

It is an object of the invention to obviate or mitigate these disadvantages.

According to one aspect of the invention there is provided a display device comprising a sheet form support member having a lower portion with two base edges extending from a vertical fold line to enable such member to be folded with the first base edge and an adjacent first lower area overlapping the other, second, base edge and adjacent second lower area, the first and second lower areas having thereabove respective first and second intermediate areas bounded at their lowermost extents by respective second fold lines formed therein at acute angles to, and in the same direction as, the vertical fold line and being bounded at their uppermost extents by respective third fold lines formed therein at acute angles to, and in the opposite direction to, the vertical fold line formed in the lower portion and with a vertical fold line between the first and second intermediate areas also being in the opposite direction thereto, and respective first and second upper areas which are bounded at their lowermost extents by the third fold lines being separated by a vertical fold line therebetween which is in the same direction as that dividing the lower portion.

Preferably the second fold lines are substantially parallel to the respective third fold lines.

The first and second base edges may constitute a fold line dividing the sheet form support member from a rearwardly foldable backing cover member area. The sheet form support member may be preforated by die-cutting. The sheet form support member and backing cover member area may each have at least a part-complementary outline form for registration when in their folded positions.

The backing cover member area upper edge may be bounded by a fold line from first and second inverted lower areas having thereabove respective first and second inverted intermediate areas bounded at their uppermost extents by respective inverted second fold lines formed therein at acute angles to, and in the ame direction as the vertical fold line and being bounded at their lowermost extents by respective inverted third fold lines formed therein at acute angles to, and in the opposite direction to, the vertical fold line folded in the inverted lower portion and with the vertical fold line between the first and second inverted intermediate areas also being in the opposite direction thereto, and respective first and second inverted upper areas which are bounded at their uppermost extents by the inverted third fold lines being separated by a vertical fold line therebetween which is in the same direction as that dividing the lower portion. The first and second inverted upper areas may be arranged to lie in part behind the first and second lower areas when the device is in its folded configuration. The first and second inverted upper areas may be adhered to the rear face of the first and second lower areas respectively.

The support member may be adhered at its lower portion to a lower portion of a separate sheet form backing/cover member.

The device may include a separate sheet form backing/cover member, said first and second intermediate, and hence upper, areas being adhered thereto by respective flaps bounded by said respective second fold lines and said lower portion of the sheet form support member being constituted by the backing/cover member. A plurality of first and second intermediate, and respective upper, areas may be adhered to the backing/cover member, one above another.

Portion(s) of at least one of said first and/or second upper areas may be arranged to depend downward therefrom below said respective third fold line(s) said portion(s) being formed by being cut-outs from said first and/or second intermediate portions respectively.

According to a further aspect of the invention there is provided a display device comprising a sheet form cover member formed with a vertical fold line to enable such cover member to be folded upon itself, a sheet form display member adhered within, or formed integrally with, the cover member at least across a horizontal zone spaced from the upper edge of the cover member and the display member being formed with fold lines at least above said horizontal zone to produce a three-dimensional display when the cover member is opened,

in use, at least a portion of such fold lines being formed so as to provide a stabilizing reaction to such display and cover members when such portion is manually urged away from its three-dimensional configuration towards the cover member.

The display member may have a non-attached zone below the adhered zone but not extending below the lower edge of the cover member, such non-attached zone being formed with fold lines to provide a further three-dimensional display, which may also enhance the stability of the device when in its open, displaying position, in use.

The display member portion above the adhered zone or at said first and second upper areas, may be formed to lie within the backing/cover member in its closed position but to extend above the upper edge thereof when the device is in its open, displaying position, in use.

Such extending part of the upper portion of the display support member may be formed in a non-rectangular shape to provide an outline of a desired design, such as a hat, building, vehicle, etc., to be a continuation of a printed design on the remainder of the display member and may be preformed by die-cutting prior to attachment to the backing cover member when provided.

The foregoing and further features of the invention may be more readily understood from the following description of some preferred embodiments thereof, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a plan view of a first embodiment of a display device in flat form;

Fig. 2 is a perspective view of the device of Fig. 1 in a partially open position;

Fig. 3 and 4 are similar views to those of Fig. 1 and 2 respectively of a display device of a second embodiment;

Fig. 5 is a plan view of a blank for a display device of a further embodiment;

Fig. 6 is a perspective view of the device of Fig. 5 in its partially folded display position;

Figs. 7 and 8 are perspective views of a further alternative devices in their partialy folded display position, and

Figs. 9,10 and 11 are plan views of blanks for display devices of yet further embodiments.

Referring firstly to Figs. 1 and 2 there is shown a display device which comprises a sheet-form backing/cover member 10 to which is adhered a sheet-form display member 11, the display member 11 being formed with a plurality of fold lines detailed hereinafter. In the following description each fold line whichcauses the display member 11 to extend away from the cover member 10 is suffixed "A" and each fold line which causes the display member 11 to tend to extend towards the cover member 10 is suffixed "B".

The cover member 10 is formed with a vertical fold line 12 to enable the cover member to be folded upon itself to encompass display member 11 when so folded. The display member is adhered to the cover member 10 at lower areas or zones 13x and 13y with a vertical fold line 14 located to conform with the fold line 12 in cover member 10 over the adhered zone. The upper portion 15 of display member 11 bounded by fold lines 16 and 17 bounding zones 13x and 13y allow the upper portion 15 to move away from cover member 10 when such cover member is opened, in use. Further fold lines 18A, 19A and 20A are provided together with fold lines 21B and 22B in portion 15 so that when the cover member 10 is moved from a closed position to a partially open position such portion 15 assumes the configuration shown in Fig. 2. In this position the point X is directed outwardly away from the cover member 10 as bounded by the fold lines 18A, 19A and 22B. By manual manipulation of the point X towards the cover member 10 the fold lines 18A and 22B will substantially reverse their natural state, hence providing a locking situation to maintain the device in a stabilized position for free-standing. In this embodiment the fold lines 16, 19A and 18A bound respective first and second intermediate areas 30x and 30y and the fold lines 19A and 22B bound respective first and second upper areas 31x and 31y.

In the embodiment of Figs. 1 and 2 the fold lines 16 and 20A (in Figs. 3 and 4 additionally 24 and 26A) may be angularly adjusted to provide greater stability according to the width of the device.

Referring now to Figs. 3 and 4 there is shown a display device of a second embodiment of the invention in which construction and operation of the upper portion 15 of the display member II is the same as that for the first embodiment except that the portion 15 is arranged to extend beyond the upper edge of the cover member 10 when in the opened, displaying position but contained within such cover member 10 in the closed position. In this embodiment shown the upper edge of portion 15 of display member 11 is shown as a straight line but the extending portion could be formed with the outline of a desired design, such as a hat, building, vehicle etc., and to be a continuation of a printed design on the outer displayed face of display member 11.

In this embodiment the adhered zones 13x and 13y do not extend to the lower edge of display member 11 but are bounded by fold lines 23 and 24 to provide a lower area or zone 25 which can extend away from the cover member 10 in the opened position. Such portion 25 is formed with further fold lines 26A, 27A and 28B so that the lower zone 25 of display member 11 will take up

the configuration as shown in Fig. 4 when in the partially opened position. With such arrangement the portion of zone 25 adjacent the fold lines 28B may be extended to provide additional stabilisation of the device when in its opened position.

Referring now to Figs. 5 and 6 there is shown a display device in which the backing/cover member 10 is formed by rearwardly foldable backing areas 10x and 10y separated from base edges 32x and 32y by a fold line 33. The whole blank is die-cut prior to folding and a further cut-out 34 is formed in area 10x which comprises the front sheet when the device is completely closed. In this embodiment respective second and third fold lines 16 and 19A are parallel and all at an acute angle to fold line 14.

Fig. 7 shows a similar embodiment to that of Figs. 5 and 6 but in this device a plurality of intermediate areas 30x and 30y are provided each supporting respective upper areas 31x and 31y. Each of the intermediate areas 30x and 30y have lips 35 formed adjacent fold lines 16 and such lips 35 are adhered to a support sheet 11 which also serves as the cover for the device.

Fig. 8 shows an embodiment in which portions 36 depend downwardly from fold lines 19A, which portions 36 are provided as cut-out portions from intermediate areas 30x and 30y. A single upper area 31y could be provided at intermediate area 30y and intermediate area 30x could be mainly dispensed with except closely adjacent fold line 18A.

Fig. 9 shows a blank for a further device in which the upper edges 37 of cover areas 10x and 10y are continued beyond upper fold lines 37x and 37y to provide inverted, downwardly depending areas 13x, 13y, 30x, 30y and 31x, 31y when such areas are folded to overlie 10X and 10y. Areas 38x and 38y are provided which are located behind and preferably adhered to areas 13x and 13y adjacent fold lines 33 when folded upwardly to overlie areas 10x and 10y. This gives an enhanced three dimensional effect to the device when in the display position. It is envisaged within the scope of the invention that such "inverted" form alone could be utilised and the terms "base edges" etc. are used for ease of definition herein and in the claims since, as seen from this embodiment, the converse/inverse arrangement provides a similar display effect.

Fig. 10 shows a blank for yet a further device in which the backing/cover areas 10x and 10y are die-cut as a mirror image of part of the sheet 11 such that, in this example, when completely folded the shape of a swan is shown and when opened to the display position a heart out-out is then displayed at upper areas 31x and 31y. Other shapes could be provided, for example numerals which when opened display other shapes.

Fig. 11 shows a blank for a still further device in which upper areas 31x and 31y extend downwardly below respective second fold lines 16 as defined by cut lines 39, and are supported by intermediate areas 30x and 30y which are merely provided remote from vertical fold line 14 adjacent the side edges of member 11. Such an arrangement could, for example depict a person, animal etc. suspended from a parachute or balloon.

The embodiments as shown in Figs. 7, 8 and 11 are not provided with a backing/cover member, but such a backing/cover member could be provided as described for any of the other embodiments.

The display device of each of the above embodiments may be utilised as a greetings card, as a promotional display in respect of retail outlets or exhibitions or as portions of a book. Such display devices provide an attractive three dimensional effect and are stable in a display position without the requirement of separate resilient positional devices.

United Kingdom patent specification No 2171320 discloses a greetings card which embodies a blank for a face mask. Such blank has fold lines indicated thereon to be used to provide a three dimensional effect for the nose and ears during subsequent use of the blank as a mask. Such three dimensional effect is not produced upon opening of the card but requires manual manipulation subsequent to cutting out the mask outline. Furthermore a different arrangement of fold lines and fold directions is disclosed in such specification, for producing a different three dimensional effect.

Claims

1. A display device characterised by comprising a sheet form support member (11) having a lower portion with two base edges (32x,32y) extending from a vertical fold line (14) to enable such member to be folded with the first base edge (32x) and an adjacent first lower area (13x) overlapping the other, second, base edge (32y) and adjacent second lower area (13y) the first and second lower areas (13x,13y) having thereabove respective first and second intermediate areas (30x,30y) bounded at their lowermost extents by respective second fold lines (16) formed therein at acute angles to, and in the same direction as, the vertical fold line (14) and being bounded at their uppermost extents by respective third fold lines (19A) formed therein at acute angles to, and in the opposite direction to, the vertical fold line (14) formed in the lower portion and with a vertical fold line (18A) between the first and second intermediate areas (30x,30y) also being in the opposite direction thereto, and respec-

tive first and second upper areas (31x,31y) which are bounded at their lowermost extents by the third fold lines (19A) being separated by a vertical fold line (22B) therebetween which is in the same direction as that dividing the lower portion.

2. A device as claimed in Claim 1 characterised in that the second fold lines (16) are substantially parallel to the respective third fold lines (19A).

3. A device as claimed in Claim 1 or 2 characterised in that the first and second base edges (32x,32y) constitute a fold line (33) dividing the sheet form support member (11) from a rearwardly foldable backing cover member area (10x, 10y).

4. A device as claimed in Claim 3 characterised in that the sheet form support member (11) and backing cover member (10) area are preformed by die-cutting.

5. A device as claimed in Claim 3 or 4 characterised in that the sheet form support member (11) and backing cover member area (10) each have at least a part-complementary outline form for registration when in their folded positions.

6. A device as claimed in Claim 3, 4 or 5 characterised in that the backing cover member area upper edge (37,Fig. 9) is bounded by a fold line (37x,37y) from first and second inverted lower areas (13x,13y) having thereabove respective first and second inverted intermediate areas (30x, 30y) bounded at their uppermost extents by respective inverted second fold lines formed therein at acute angles to, and in the same direction as, the vertical fold line (14) and being bounded at their lowermost extents by respective inverted third fold lines formed therein at acute angles to, and in the opposite direction to, the vertical fold line folded in the lower portion and with the vertical fold line (18A) between the first and second inverted intermediate areas (30x, 30y) also being in the opposite direction thereto, and respective first and second inverted upper areas (31x,31y) which are bounded at their uppermost extents by the inverted third fold lines being separated by a vertical fold (22B) line therebetween which is in the same direction as that dividing the lower portion.

7. A device as claimed in Claim 6 characterised in that the first and second inverted upper areas (38x,38y) are arranged to lie in part behind the first and second lower areas (13x,13y) when the device is in its folded configuration.

8. A device as claimed in Claim 7 characterised in that the first and second inverted upper areas (38x,38y) are adhered to the rear face of the first and second lower areas (13x,13y) respectively.

9. A device as claimed in Claim 1 or 2 characterised in that the support member (11) is adhered at its lower portion to a lower portion of a separate sheet form backing/cover member (10).

10. A device as claimed in Claim 1 or 2 characterised by a separate sheet form backing/cover member (10) said first and second intermediate, and hence upper, areas being adhered thereto by respective flaps (16) bounded by said respective second fold lines and said lower portion of the sheet form support member being constituted by the backing/cover member (10).

11. A device as claimed in claim 10 characterised in that a plurality of first and second intermediate, and respective upper, areas are adhered to the backing/cover member, one above another (Fig. 7).

12. A device as claimed in any preceding claim characterised in that portion(s) (36) of at least one of said first and/or second upper areas (31x,31y) are arranged to depend downward therefrom below said respective third fold line(s) (19A) said portion(s) (36) being formed by being cut-outs from said first and/or second intermediate portions (30x,30y). respectively.

13. A device as claimed in any one of Claims 1 to 11 inclusive characterised in that said first and second upper areas (31x,31y) are arranged to depend downwardly below said respective second fold lines (16) supported from respective first and second intermediate areas (30x,30y) provided only at areas remote from the vertical fold line (14, Fig. 11).

14. A display device characterised by comprising a sheet form cover member (10) formed with a vertical fold line (12) to enable such cover member (10) to be folded upon itself, a sheet form display member (11) adhered within, or formed integrally with, the cover member (10) at least across a horizontal zone (13x,13y) spaced from the upper edge of the cover member (10) and the display member (11) being formed with fold lines at least above said horizontal zone (13x,13y) to produce a three-dimensional display when the cover member (10) is opened, in use, at least a portion (x) of such fold lines being formed so as to provide a stabilizing reaction to such display (11) and cover (10) members when such portion is manually urged away from its three-dimensional configuration towards the cover member (10).

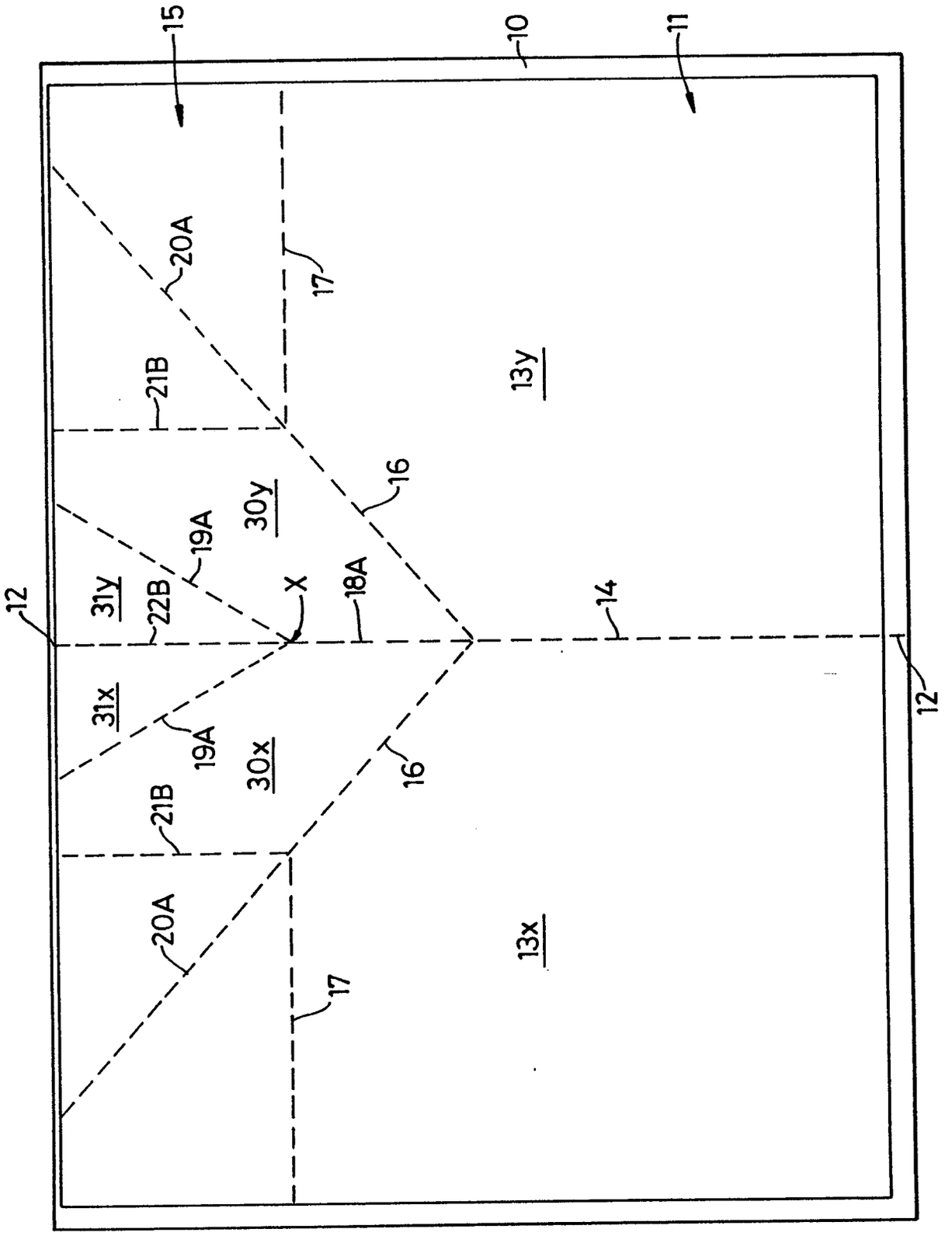
15. A device as claimed in Claim 14 characterised in that the display member (11) has a non-attached zone below the adhered zone but not extending below the lower edge of the cover member, such non-attached zone being formed with fold lines (24, to 28) to provide a further three-dimensional display, which may also enhance the stability of the device when in its open, displaying position, in use.

16. A device as claimed in any preceding Claim characterised in that the display member portion above the adhered zone or at said first and

second upper areas, (31x, 31y) is formed to lie within the backing/cover member (10) in its closed position but to extend above the upper edge thereof when the device is in its open, displaying position, in use.

17. A device as claimed in claim 16 characterised in that the extending part of the upper portion of the display support member (11) is formed in a non-rectangular shape to provide an outline of a desired design, to be a continuation of a printed design on the remainder of the display member (11, Figs. 6, 7 and 8).

18. A device as claimed in claim 16 or 17 characterised in that the display support member (11) is preformed by die-cutting prior to attachment to the backing cover member (10) when provided.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10
11
20A
17
21B
13y
16
30y
19A
31y
22B
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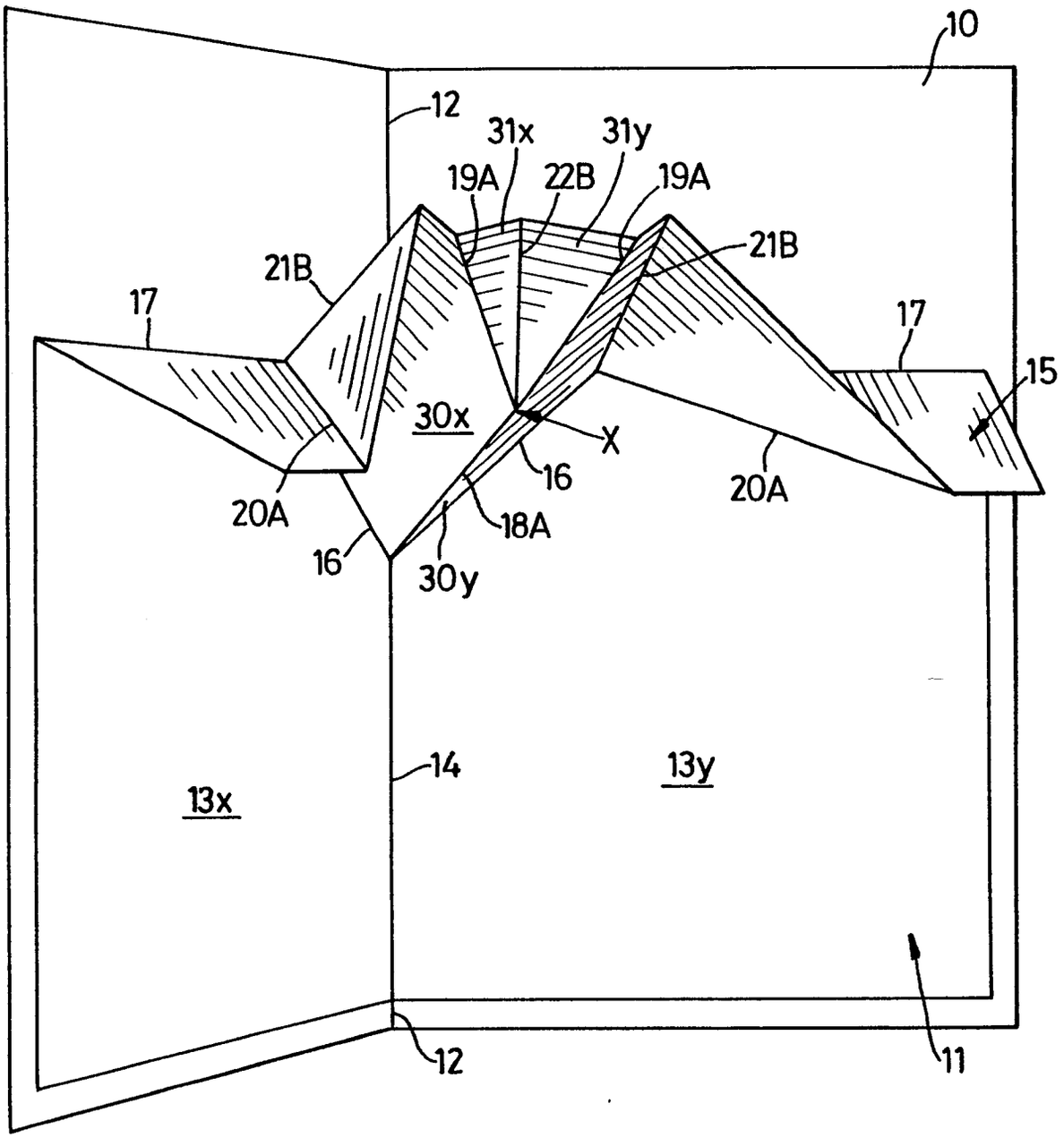
18A
14
12
12
31x
19A
30x
16
21B
20A
17
13x

Fig.1


10
12
31x
31y
19A
22B
19A
21B
21B
17
17
15
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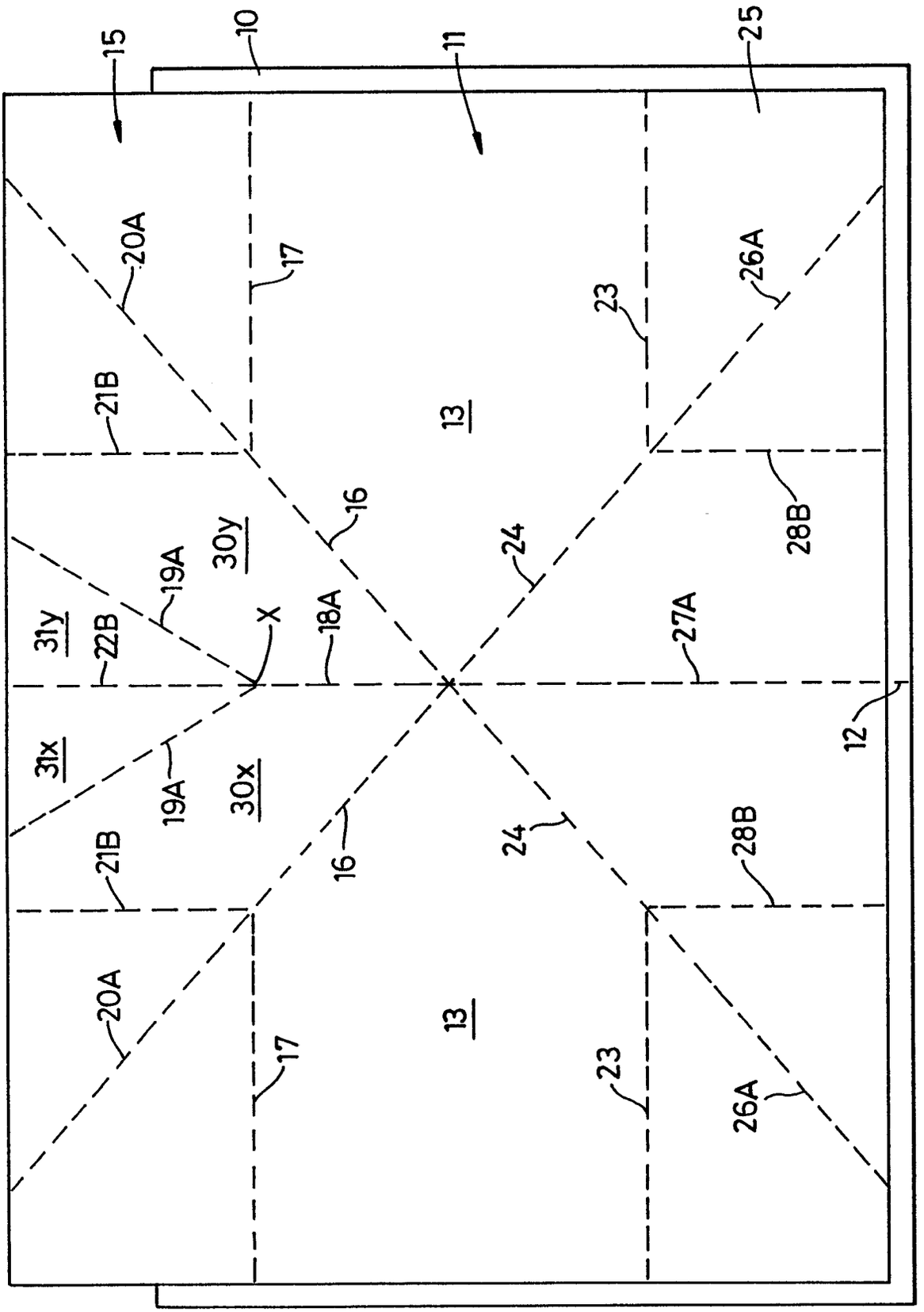
X
16
20A
20A
18A
16
30y
14
13y
13x
12
11

Fig. 2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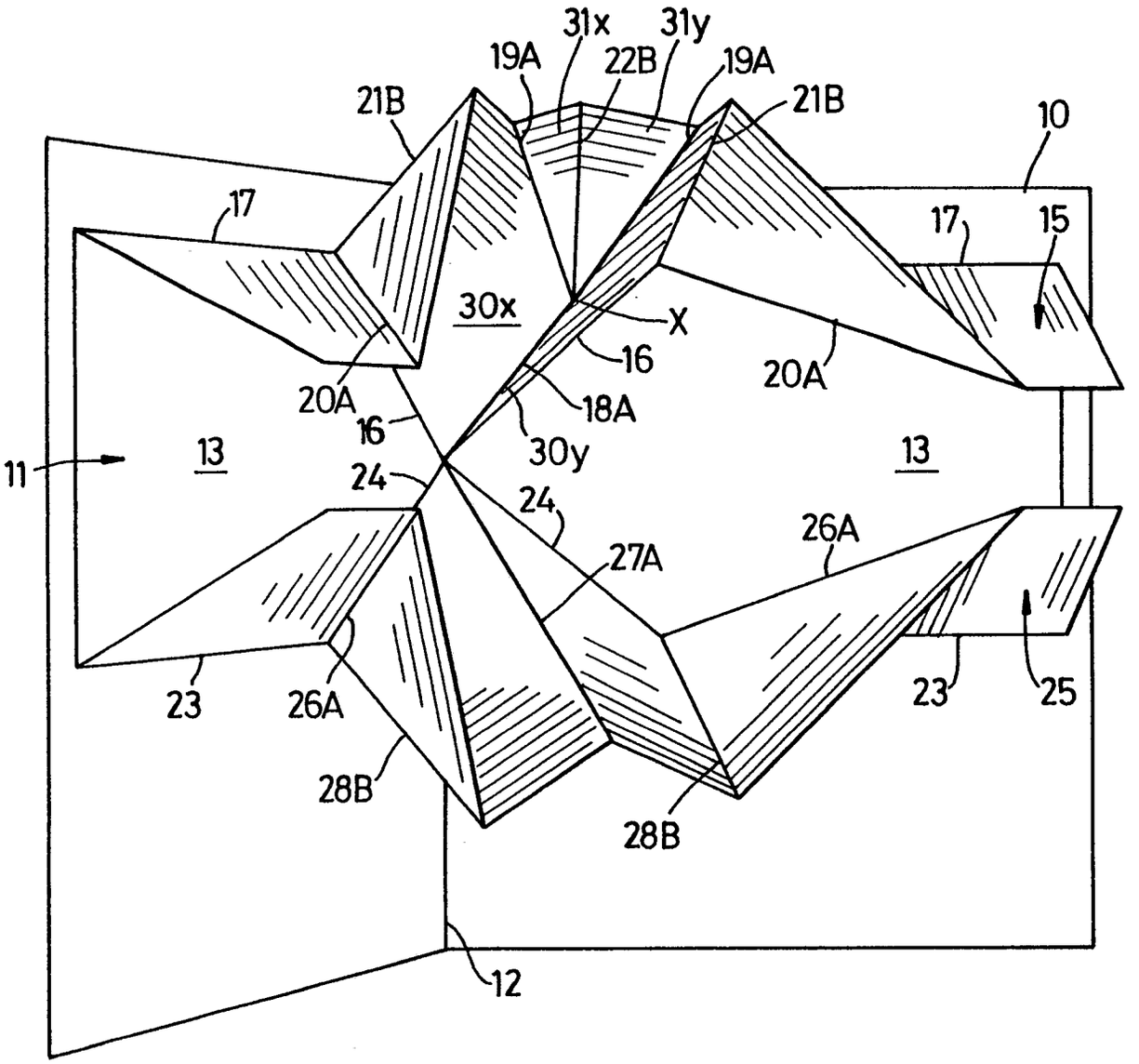
10
11
25
20A
17
23
26A
21B
13
16
24
28B
30y
19A
31y
22B
X
18A
27A
12
31x
19A
30x
21B
16
24
28B
20A
17
13
23
26A

Fig. 3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31y
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22B
19A
21B
21B
10
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17
15
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X
16
18A
20A
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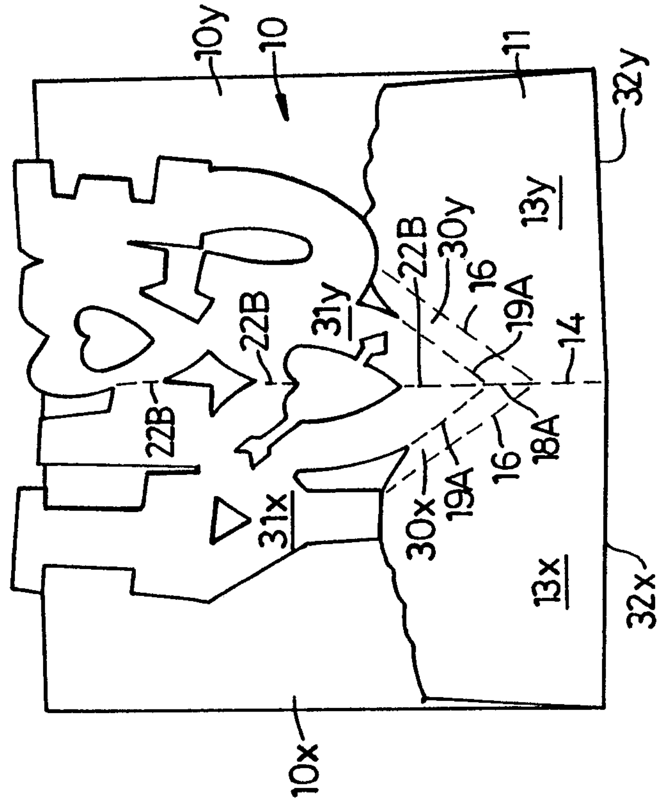
23
26A
23
25
28B
28B
12

Fig. 4


10y
10
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16
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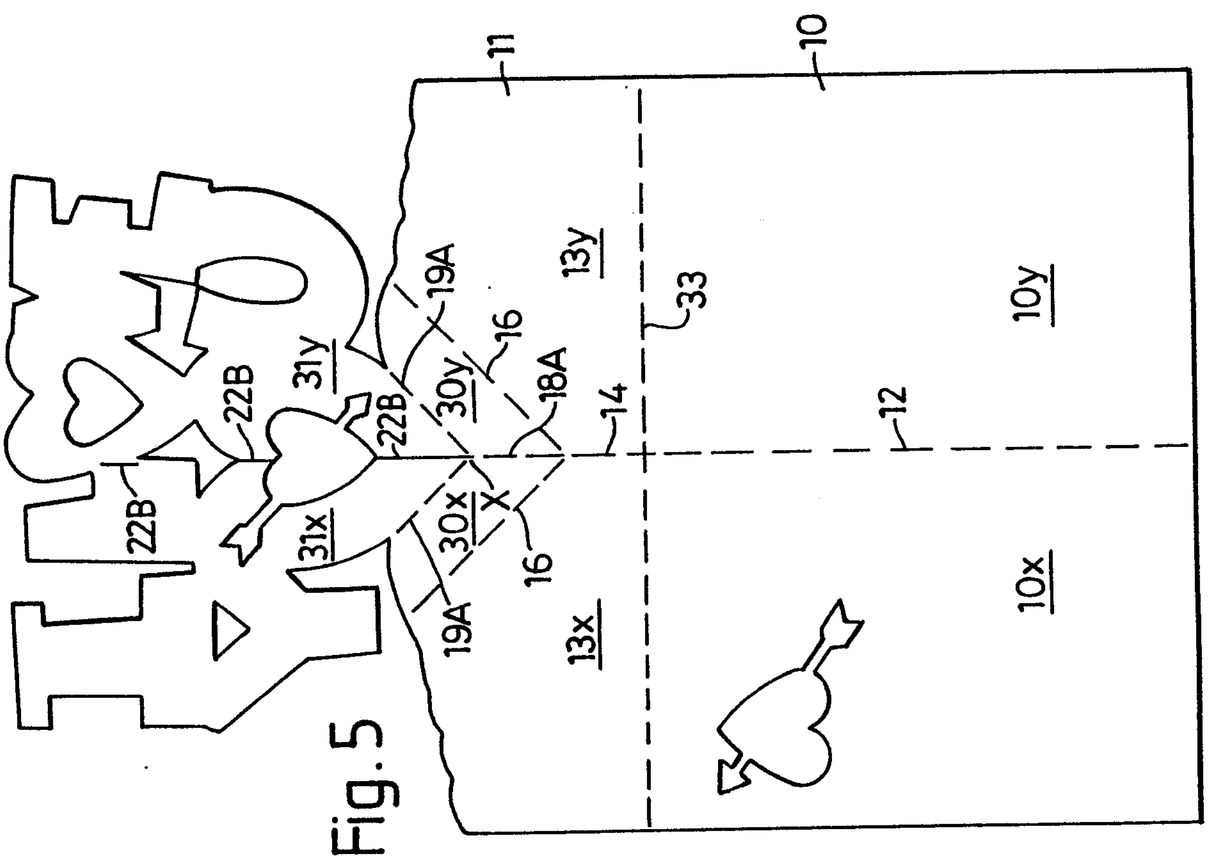
31y
19A
14
18A
30x
31x
13x
32x
10x

Fig. 6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10
19A
22B
31y
30y
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18A
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12
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19A
13x
10x

Fig.5

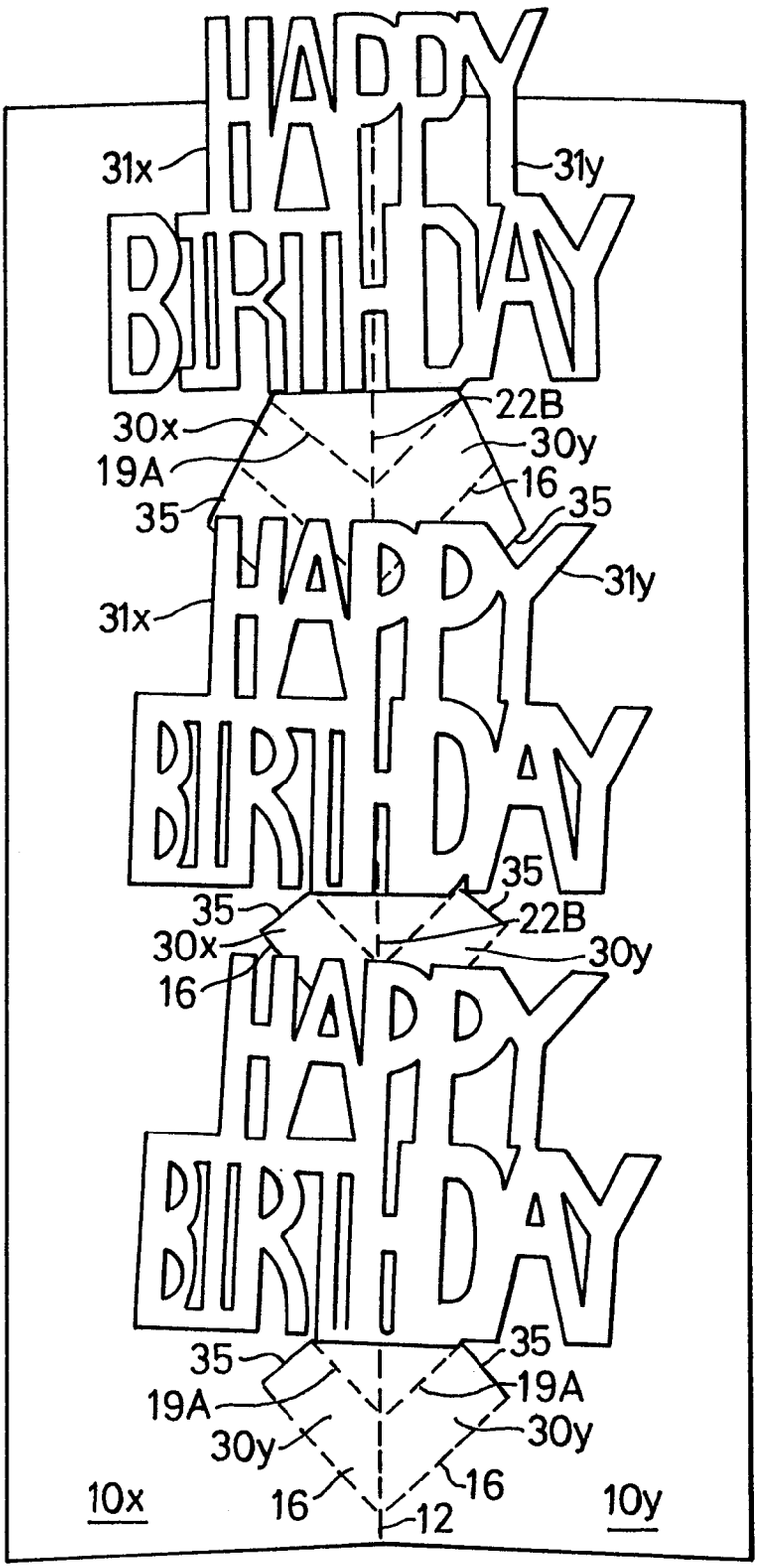


Fig. 7

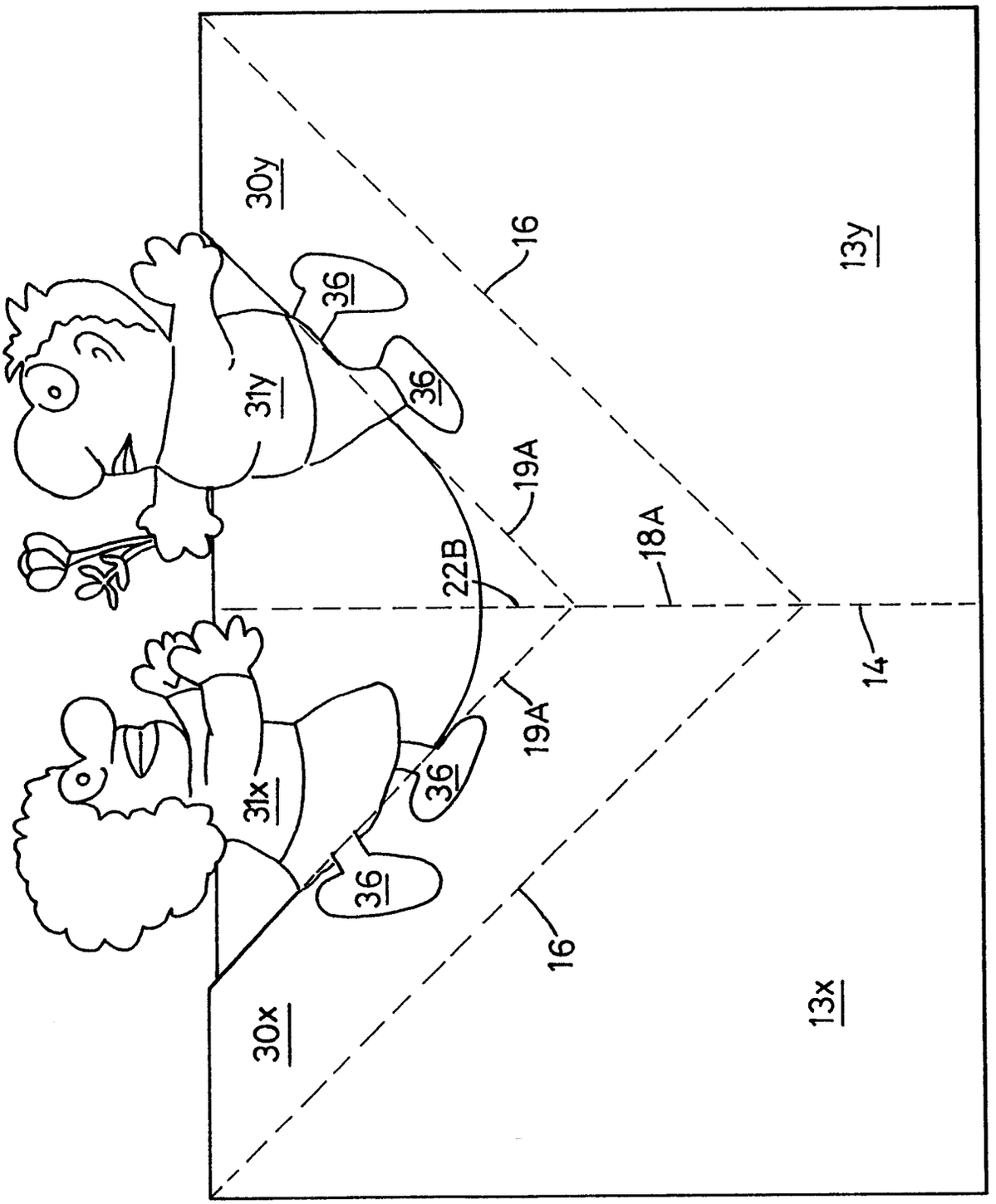
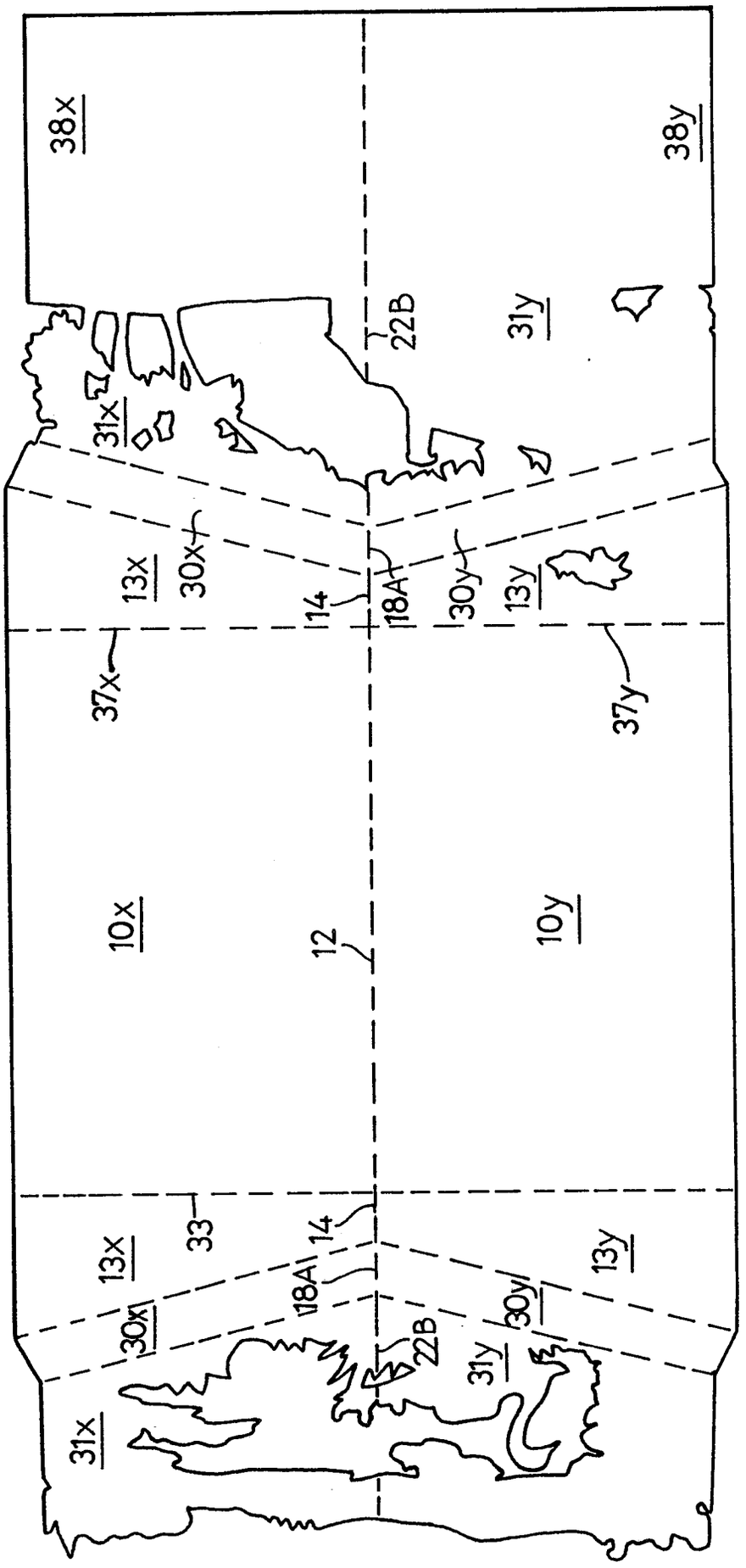


Fig.8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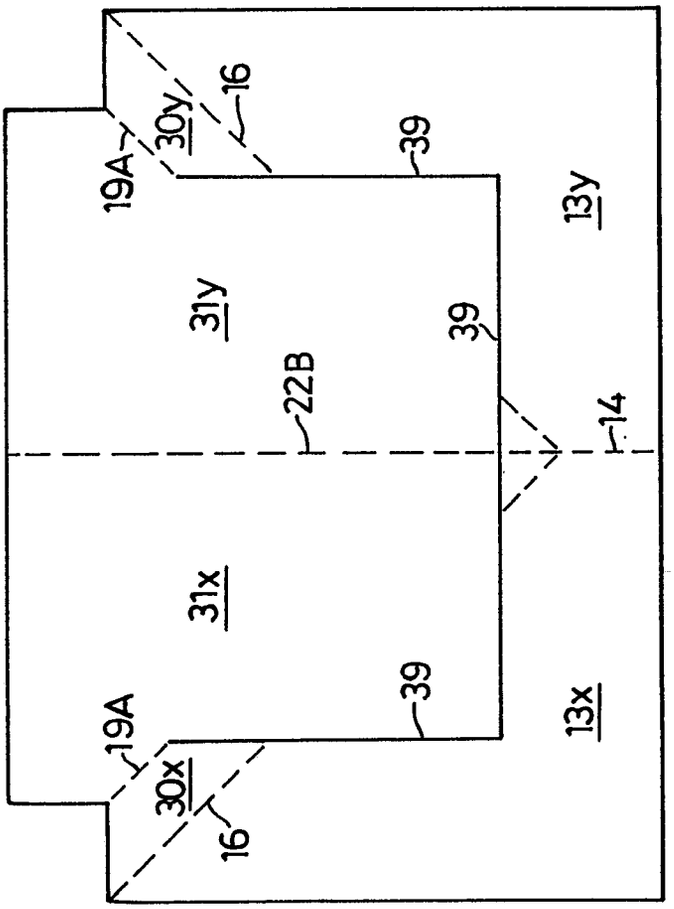
22B
31y
31x
13x
30x
14
18A
30y
13y
37x
37y
10x
12
10y
33
13x
14
18A
13y
30x
30y
22B
31y
31x

Fig. 9


19A
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39
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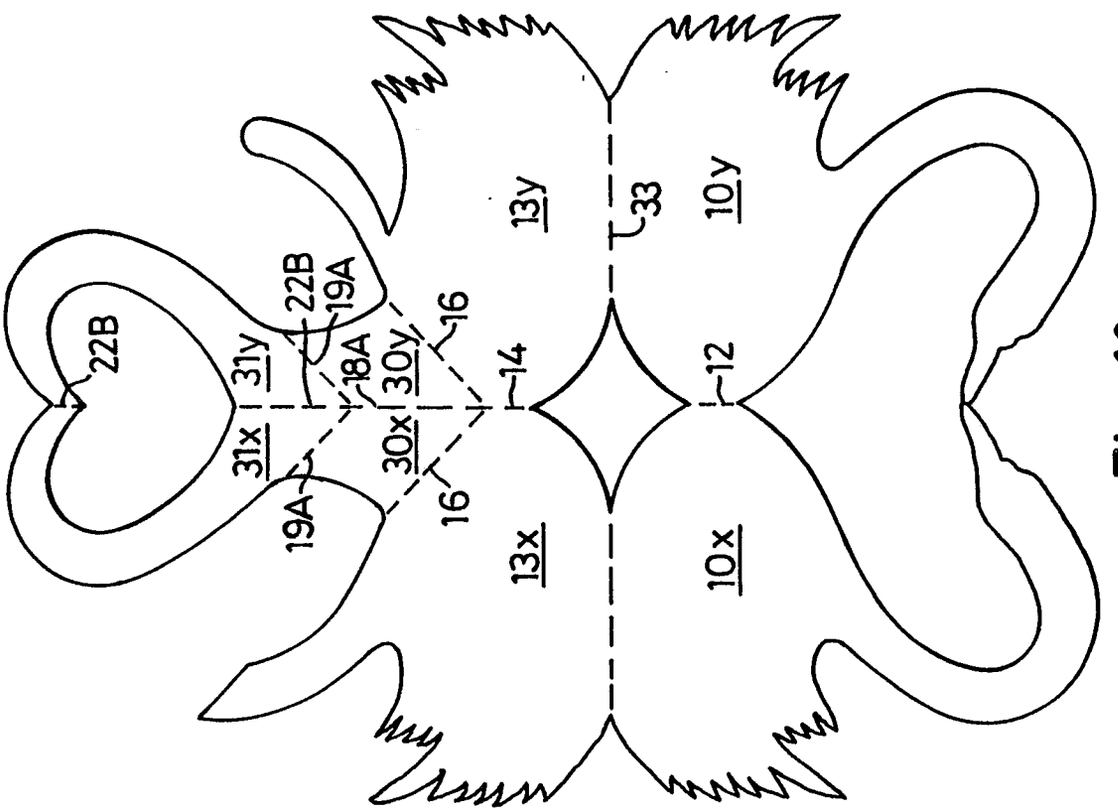
31y
39
22B
14
31x
39
13x
19A
30x
16

Fig. 11


22B
31y
22B
19A
18A
30y
16
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10y
31x
30x
12
19A
16
13x
10x

Fig. 10