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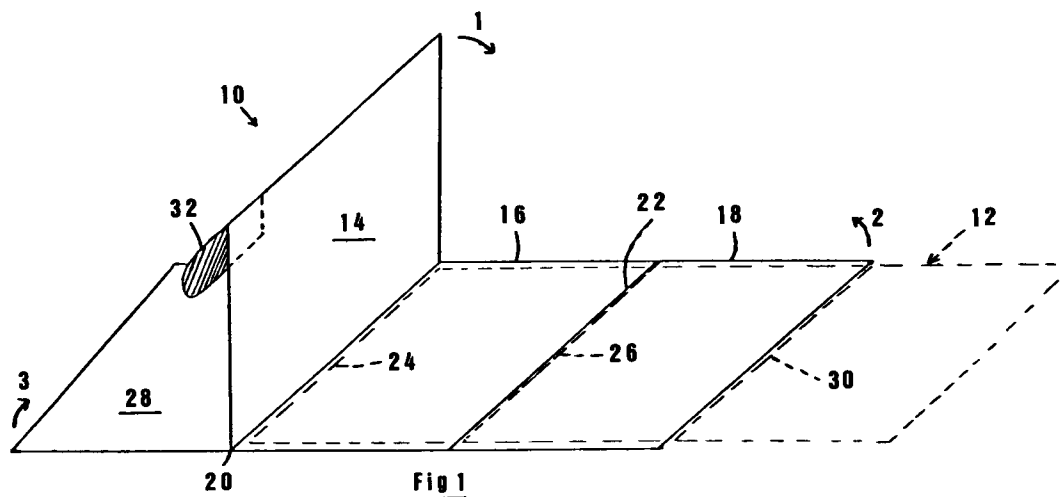
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(54) **A device for folding a sheet of paper for insertion into an envelope.**

(57) A device (10) for folding at least one sheet of paper (12) such that the sheet of paper (12) is ready for insertion into an envelope, which device (10) comprises first, second and third sections (14, 16, 18) which are hinged together by first and second hinges (20, 22) and which are made of sheet material which is sufficiently rigid to enable the sheet of paper (12) to be folded, the device (10) being such that in use it is operated by folding the first section

(14) on top of the second section (16) with the sheet of paper (12) having one free edge (24) abutting the first hinge (20) between the first and the second sections (14, 16), and then the third section (18) is folded on top of the first section (14) to give the sheet of paper (12) a first fold (26), and the device (10) being such that the hinges (20, 22) are constructed not to interfere with the folding of the sheet of paper (12) into well defined creases.



This invention relates to a device for folding at least one sheet of paper and, more especially, this invention relates to a device for folding at least one sheet of paper such that the sheet of paper is ready for insertion into an envelope.

The folding of sheets of paper such for example as letters and leaflets is a time-consuming chore. Where window envelopes are used, often the paper is incorrectly folded such that the address on the paper does not coincide with the window on the envelope.

It is an aim of the present invention to reduce the above mentioned problem.

Accordingly, this invention provides a device for folding at least one sheet of paper such that the sheet of paper is ready for insertion into an envelope, which device comprises first, second and third sections which are hinged together by first and second hinges and which are made of sheet material which is sufficiently rigid to enable the sheet of paper to be folded, the device being such that in use it is operated by folding the first section on top of the second section with the sheet of paper having one free edge abutting the first hinge between the first and the second sections, and then the third section is folded on top of the first section to give the sheet of paper a first fold, and the device being such that the hinges are constructed not to interfere with the folding of the sheet of paper into well defined creases.

In a first embodiment of the invention, the device is one in which the device includes a hinged fourth section, and in which the device is then operated such that the sheet of paper is given a second fold by folding the fourth section on top of the folded third section.

In a second embodiment of the invention, the device is one in which there are only the first, second and third sections, and in which the device is then operated such that the sheet of paper is given a second fold by rotating the entire folded device through 180° on a flat support surface about the free edge of the folded third section which is opposite the second hinge between the second and third sections. In this second embodiment of the invention, when the device is open in front of a person and is extending transversely of the person, then a right handed person will usually form the second fold in the paper by rotating the entire folded device in an anti-clockwise manner. A left handed person may however wish to reverse the operation of the device, in which case the second fold in the paper may be provided by rotating the entire folded device in a clockwise manner.

It will be apparent that devices in accordance with the present invention can very easily be used to give a piece of paper one, two or more folds as may be necessary to fold the paper into a size

appropriate for an envelope. Usually, an A4 size piece of paper will require two folds to fit in a standard business-sized letter envelope, whereas an A5 size piece of paper may only require one fold. Generally, the device of the present invention can be used with paper and envelopes of any suitable and appropriate sizes.

The device of the invention can be used to fold one or more sheets of paper at any one time. Thus, for example, up to six sheets of papers may be folded at one time and this may be especially useful for folding leaflets for mailshot purposes.

The sections of the device may be made from a metal, a plastics material or any other suitable and appropriate rigid material. Various types of metals may be used including aluminium, stainless steel and plated steel. Any suitable and appropriate type of plastics materials may be employed, for example polyvinyl chloride. Where the sections are made from plastics material, then the hinges may be integrally formed by thinned parts of the plastics material between the sections. Thus the entire device may be made as a plastics injection moulding.

If desired, the sections of the device may each be made of a stiffener member located in a pocket, the various pockets being joined together by the hinges.

The stiffener members may be made of a metal or a plastics material, and the pockets may be made of a thin flexible plastics material, or leather. The stiffener members may advantageously have radiused edges adjacent to the hinges in order to avoid the stiffener members tending to cut through the pockets as the various sections are folded during use of the device, especially where more than one sheet of paper is being folded.

Generally, the various sections of the device can be made of any appropriate and suitable stiffener material and the material can be of any suitable and appropriate thickness. The device is preferably constructed to be sufficiently robust to enable the easy folding of multiple sheets of paper, for example up to six sheets of paper, at one time.

The first section may include gripper means for facilitating folding of the first section and also for facilitating positioning of the entire device. The gripper means is preferably a flexible finger tab. The flexible finger tab may be made of any suitable flexible material, for example a flexible plastics material.

The various sections of the device may each be provided with a paper withdrawal slot, the paper withdrawal slots being positioned such that they are all in registry on top of one another when the device is in a folded condition.

Embodiments of the invention will now be described solely by way of example and with refer-

ence to the accompanying drawings in which:

Figure 1 shows a first device for folding a sheet of paper;

Figure 2 is a side view of the device shown in Figure 1;

Figure 3 is a side view like that shown in Figure 2 but illustrates a second device for folding a sheet of paper;

Figure 4 shows a third device for folding a sheet of paper;

Figure 5 shows a fourth device for folding a sheet of paper; and

Figure 6 shows a fifth device for folding a sheet of paper.

Referring to Figure 1, there is shown a device 10 for folding a sheet of paper 12. For simplicity of illustration, the sheet of paper 12 has been shown in dotted lines and it has been shown as having a width which is slightly smaller than the width of the device 10.

The device 10 comprises a first section 14, a second section 16 and a third section 18. The first and the second sections 14, 16 are hinged together by a first hinge 20. The second and third sections 16, 18 are hinged together by a second hinge 22. The first, second and third sections 14, 16, 18 are made of sheet material which is sufficiently rigid to enable the sheet of paper 12 to be folded.

The device 10 is such that in use it is operated by folding the first section 14 in the direction of the arrow 1 and on top of the second section 16, with the sheet of paper 12 having one free edge 24 abutting the first hinge 20 between the first and the second sections 14, 16. The third section 18 is then folded in the direction of the arrow 2 and on top of the folded first section 14. This folding of the third section 18 gives the sheet of paper 12 a first fold 26.

The device 10 is provided with a fourth section 28. During use of the device 10, the sheet of paper 12 is given a second fold 30 by folding the fourth section 28 in the direction of the arrow 3 and on top of the folded third section 18. As can be seen from Figure 1, the hinge 20 is a multiple hinge which also hinges the fourth section 28 in position. If desired, a separate hinge could be employed for hinging the fourth section 28 in position.

As shown in Figure 1, the first section 14 is provided with gripper means in the form of a flexible finger tab 32. The finger tab 32 facilitates folding of the first section 14 in the direction of the arrow 1, and it also facilitates positioning of the entire device 10 in relation to the sheet of paper 12.

Referring now to Figure 2, there is shown a side view of the device 10 shown in Figure 1. It will be seen that the hinges 20, 22 are formed by thin parts 20, 22. If the first, second, third and fourth

sections 14, 16, 18, 28 are made of a plastics material, then the hinges 20, 22 may be formed by thinned parts of the plastics material as it is extruded or otherwise moulded to shape. If the first, second, third and fourth sections 14, 16, 18, 28 are made of a metal, then the hinges 20, 22 may be fabric hinges which are stuck in position on the first, second, third and fourth sections 14, 16, 18, 28.

Figure 3 is a side view like Figure 2 except it illustrates how the first, second, third and fourth sections 14, 16, 18, 28 are each made of a stiffener member 34 located in a pocket 36. The stiffener member 34 may be made of a metal or a plastics material, whilst the pocket 36 may be made of a thin flexible plastics material, a fabric or leather. In order to avoid the stiffener member 34 tending to press or cut through the pocket in the vicinity of the first and the second hinges 20, 22, it will be seen from Figure 3 that the edges of the stiffener members 34 are curved.

Referring now to Figure 4, similar parts as in Figure 1 have been given the same reference numerals for ease of comparison and understanding.

In Figure 4, it will be seen that the device 10 only comprises the first, second and third sections 14, 16, 18. The device 10 is operated such that the sheet of paper 12 is given its first fold 26 in exactly the same manner as described above for Figure 1. The sheet of paper 12 is then given its second fold 30 by rotating the entire folded device 10 through 180° in an anti-clockwise manner on a flat support surface such as a table (not shown). The rotation is thus in the direction of the arrow 3 shown in Figure 4 and it occurs about the free edge 38 of the folded third section 18. This free edge 38 is thus opposite the second hinge 22 between the second and the third sections 16, 18 and it is also co-incident with the hinge 20.

Referring now to Figure 5, similar parts as in Figures 1 to 4 have been given the same reference numerals.

Figure 5 shows a device 10 which is folded flat for use and which is like the device shown in Figure 1. The device 10 shown in Figure 5 is provided with a paper withdrawal slot 40 in each of its four sections 14, 16, 18, 28. As shown all the withdrawal slots 39 are in exact alignment when the device 10 is fully folded.

The slots 40 permit one or more sheets of paper (not shown) easily to be withdrawn from the device after folding. More specifically, the slots 40 enable the folded paper to be gripped and pulled out of the folded device 10.

The device 10 shown in Figure 5 is preferably for use in the folding of one or two sheets of paper. The device 10 may however be used for the fold-

ing of more than two sheets of paper if desired.

If desired, a device 10 having only three sections 14, 16, 18 as shown in Figure 4 may be provided with withdrawal slots such for example as the withdrawal slots 40.

Referring now to Figure 6, similar parts as in previous Figures have been given the same reference numerals. The device 10 shown in Figure 6 is like the device 10 shown in Figure 1 except for the slots 40 and the positioning of the section 14. In Figure 10, the section 14 is joined to one of the shorter sides of the section 16 by a hinge 42.

Irrespective of which device 10 is used, it will be apparent that a sheet of paper 12, for example of A4 size, can be given a first fold 26 and a second fold 30 in a very simple and efficient manner. The hinges 20, 22 are such that they do not interfere with the folding of the paper so that, for example, the hinges 20, 22 do not buckle, crease or tear the paper. The hinges 20, 22 enable the paper to be folded into well defined creases formed by the first fold 26 and the second fold 30.

It is to be appreciated that the embodiments of the invention described above with reference to the accompanying drawings have been given by way of example only and that modifications may be effected. Thus, for example, more than one sheet of paper 12 may be folded at any one time and the size of the sheet of paper 12 can be varied as may be desired so that the sheet of paper 12 may be, for example, A4 size, A5 size or notelet size. The device of the present invention can be used for folding letters, leaflets, small pamphlets or any other suitable and appropriate sheets of paper into any suitable and appropriate types of envelopes including envelopes for business and personal use. The device is especially advantageous for use with window envelopes since, providing addresses are correctly positioned on the sheets of paper, the device will always fold the sheets of paper in the same manner so that the addresses can always be correctly positioned in the window of the window envelopes.

If desired, different types of hinges to those shown may be employed. Also, the finger tab 32 can be omitted or it can be replaced by another type of gripper means.

The device of the present invention may be manufactured and sold under the trade mark LETA-FOLD.

Claims

1. A device for folding at least one sheet of paper such that the sheet of paper is ready for insertion into an envelope, which device comprises first, second and third sections which are hinged together by first and second hinges

and which are made of sheet material which is sufficiently rigid to enable the sheet of paper to be folded, the device being such that in use it is operated by folding the first section on top of the second section with the sheet of paper having one free edge abutting the first hinge between the first and the second sections, and then the third section is folded on top of the first section to give the sheet of paper a first fold, and the device being such that the hinges are constructed not to interfere with the folding of the paper into well defined creases.

2. A device according to claim 1 in which the device includes a hinged fourth section, and in which the device is then operated such that the sheet of paper is given a second fold by folding the fourth section on top of the folded third section.
3. A device according to claim 1 in which there are only the first, second and third sections, and in which the device is then operated such that the sheet of paper is given a second fold by rotating the entire folded device through 180° on a flat support surface about the free edge of the folded third section which is opposite the second hinge between the second and third sections.
4. A device according to any one of the preceding claims in which the sections are made from a metal or a plastics material.
5. A device according to claim 4 in which the sections are made from a plastics material, and in which the hinges are integrally formed by thinned parts of the plastics material between the sections.
6. A device according to any one of claims 1 to 3 in which the sections of the device are each made of a stiffener member located in a pocket, the various pockets being joined together by the hinges.
7. A device according to claim 6 in which the stiffener member is made of a metal or a plastics material, and in which the pockets are made of a thin flexible plastics material, or leather.
8. A device according to any one of the preceding claims in which the first section includes gripper means for facilitating folding of the first section and also for facilitating positioning of the entire device.

9. A device according to claim 8 in which the gripper means is a flexible finger tab.
10. A device according to any one of the preceding claims in which the sections of the device are each provided with a paper withdrawal slot, the paper withdrawal slots being positioned such that they are all in registry on top of one another when the device is in a folded condition.

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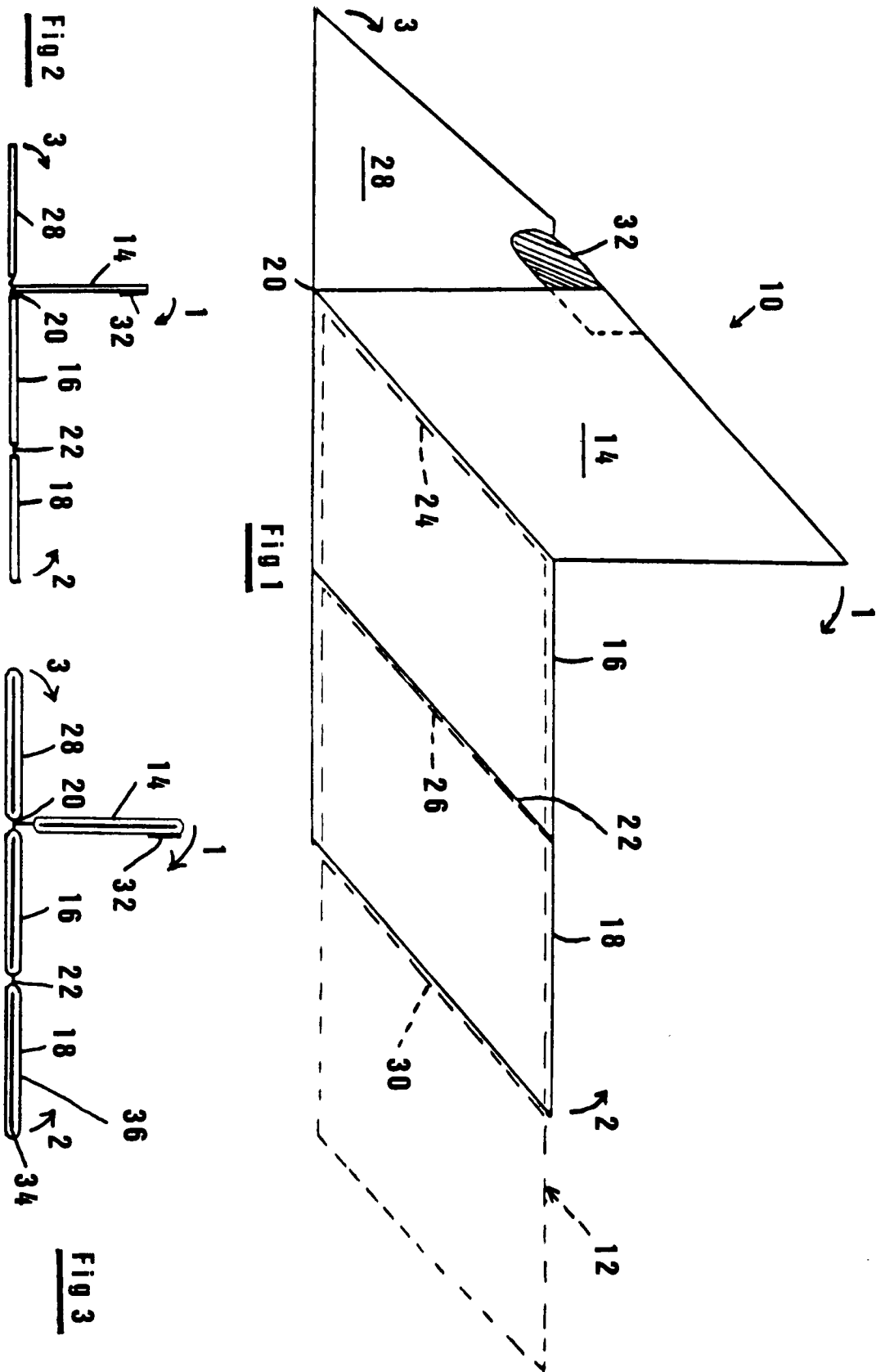
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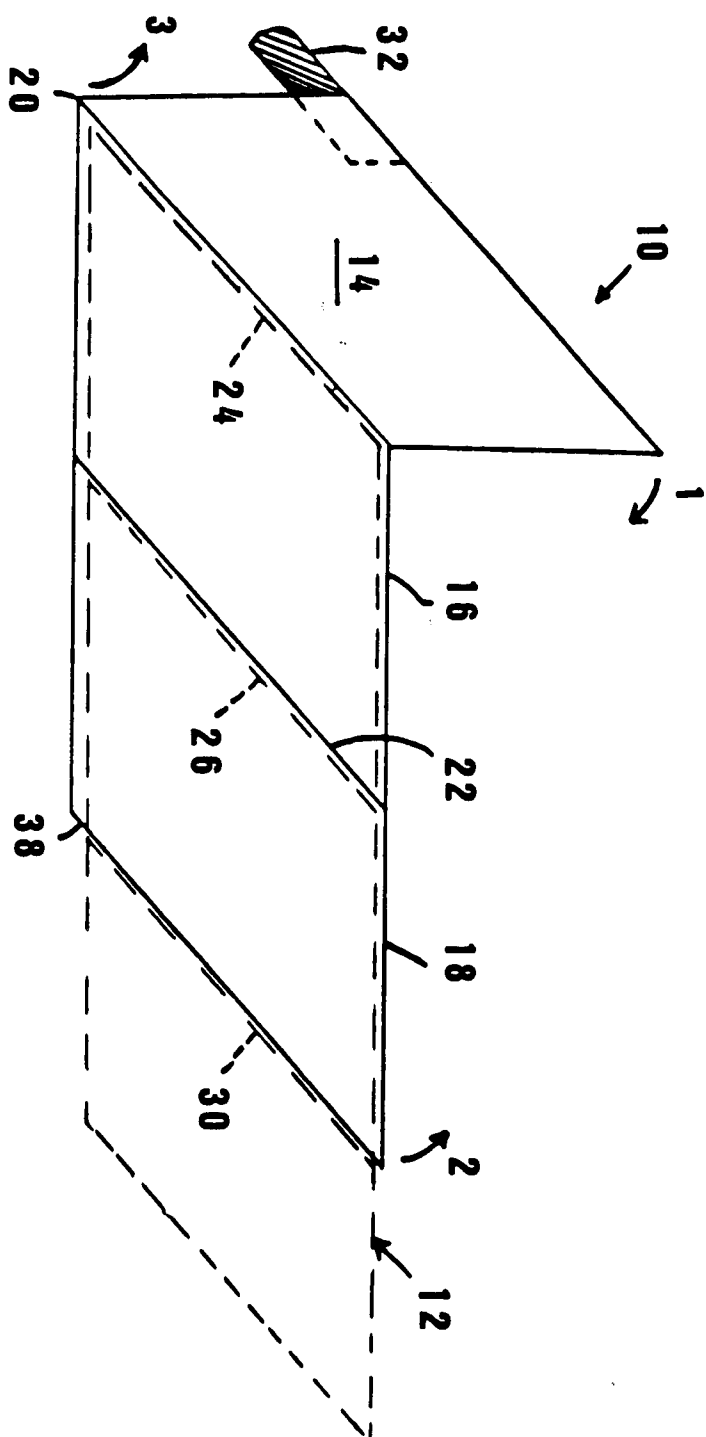


Fig 4

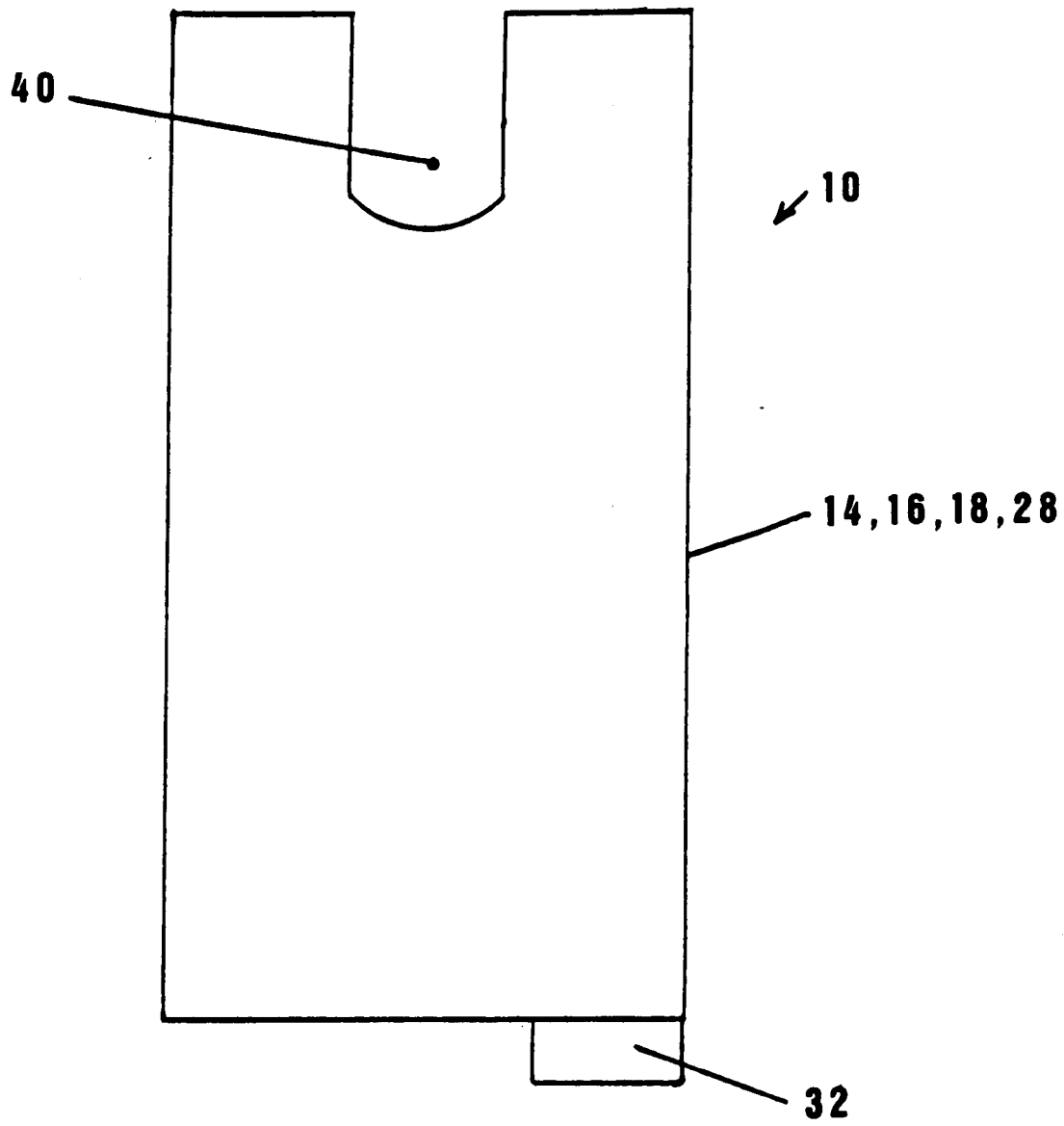


Fig 5

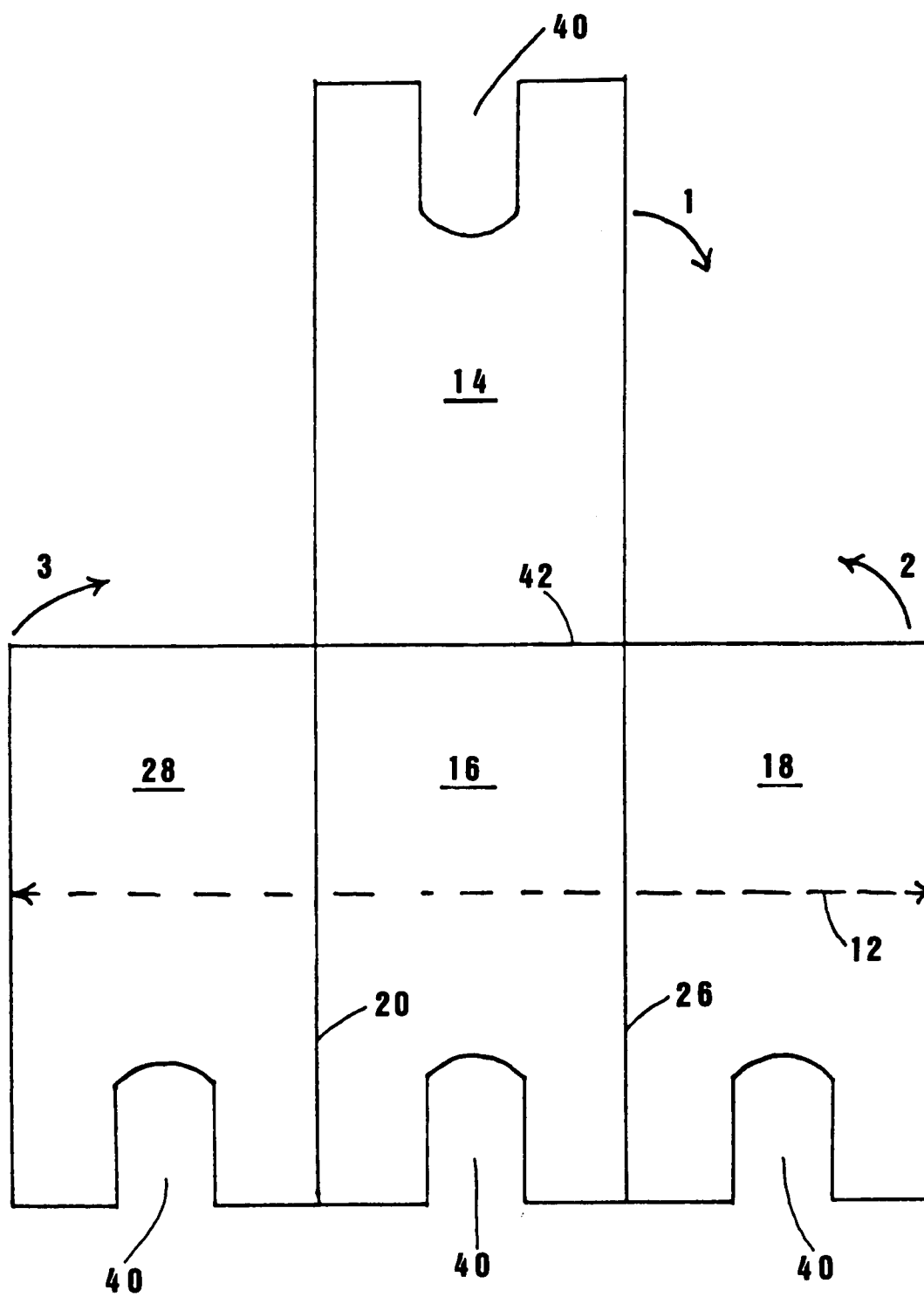


Fig 6



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EUROPEAN SEARCH REPORT

Application Number

EP 92 30 6475

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 421 500 (SMITH) * abstract; figures 1,2,4 *	1,4,6,7	B43M3/02
A	WO-A-9 011 426 (HOWARD) * abstract; figures 1,2 *	1,4,6,7	
A	WO-A-9 013 437 (IDSTEIN) * abstract; figure 1A *	1,8	
A	FR-A-2 083 164 (ALBERT) * claim *	1	
P,A	DE-U-9 105 526 (BRINK) * page 3, paragraph 6 - page 4, last paragraph; figures *	1	
A	DE-C-227 144 (THIEME) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B43M B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 OCTOBER 1992	Examiner PERNEY Y.
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