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**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**06.11.2002 Bulletin 2002/45**

(51) Int Cl.<sup>7</sup>: **B65B 43/14**

(21) Application number: **02253119.8**

(22) Date of filing: **02.05.2002**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**  
Designated Extension States:  
**AL LT LV MK RO SI**

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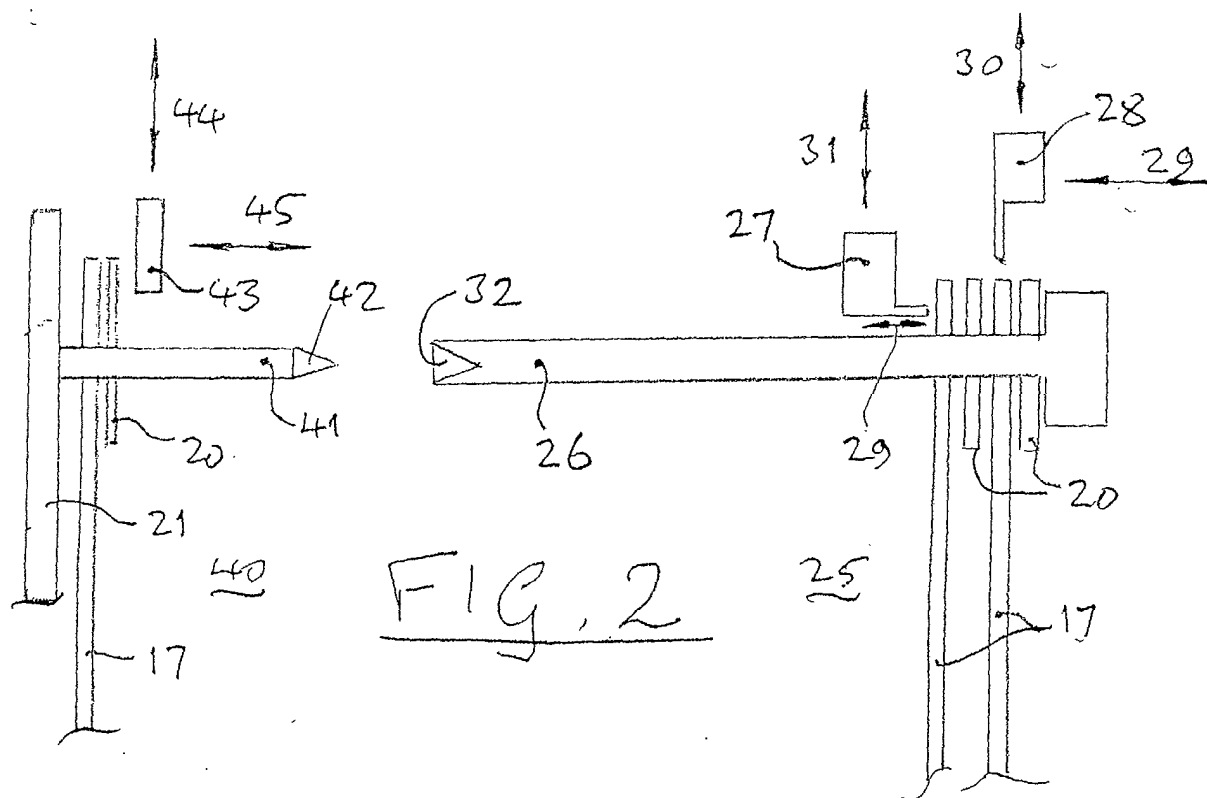
(30) Priority: **02.05.2001 GB 0110763**

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(54) **Handling booklets of wraps**

(57) Wrap filling apparatus handling booklets 17 of wraps 10. A booklet magazine 25 holds a plurality of booklets separated by sweep plates 20 extending across the booklet wickets (top portion 19 of the booklets) 12. A carrier 40 is engaged with the magazine 25. A sensor 27 senses the position of the next booklet in the magazine, and detent means 28 transfer a booklet

17 and the sweep plate 20 behind it from the magazine to the carrier. Clamp means 43 then clamp the sweep plate to the carrier. The carrier 40 then carries the booklet, with its top wrap then opened, through stations where the wrap is opened, filled with a bouquet of flowers, tied, labelled, has a flower food sachet attached, the next wrap opened, etc.



## Description

[0001] The present invention relates to apparatus for handling booklets of wraps, particularly apparatus for filling wraps with bouquets and the like.

[0002] Before describing the present apparatus, it is convenient to discuss the wraps which it uses. A wrap for a bouquet of flowers is typically conical, around 330 mm length and with its top circumference being around 400 mm and its bottom end open with a circumference of around 150 mm. The wrap may be made of a variety of materials, a common material being polypropylene. Wraps of this material are commonly formed from two sheets which are cut and heat-welded along their edges. This results in the wrap initially being flat.

[0003] For ease of handling, the wraps are normally assembled into booklets. For this, each wrap is made with the top of the rear sheet extending say 50 mm beyond the top of the front sheet. The wraps are stacked into a stack of say 50 wraps, and a pair of holes is formed through the upper single parts of the wraps by a device which heat welds the wraps together at the same time as it makes the holes through the stack. The result is a booklet of 50 wraps which has a pair of holes at its top end; the booklet can be held in place by a pair of prongs through the holes, with the holes also serving to hold the stack together. The rear sheet of each wrap is perforated at or just above the top edge of the front sheet, so that the wraps can be torn off the booklet. The top part of the stack, comprising the portions of the wraps above the perforations and which hold the wraps together in the stack, is termed a wicket.

[0004] Obviously, variations are possible in the wraps and booklets. For example, the size and shape of the wraps can be varied, as can the number of holes in the wicket. It may also be desirable to cut or drill further holes in the wicket for subsequent handling, as the holes by which the wraps are welded together tend to be somewhat irregular.

[0005] A major use of such booklets is in apparatus for inserting bouquets of flowers and the like into the wraps. Bunches or bouquets of flowers are fed into the apparatus by means of a conveyor or other infeed means, and the apparatus inserts each bouquet into a wrap from a booklet of wraps. The apparatus may be of the type described generally in WO 01/10634 A1. Typically, the wrap is held in a carrier unit which is passed through a series of stations, either linearly or by means of a carousel. Various operations are carried out at the successive stations, eg filling the wrap with a bouquet, attaching a label to the wrap, attaching a sachet to the wrap, and tying the bouquet in the wrap. There are usually several carriers, so that several wraps can be processed in echelon.

[0006] In such apparatus, it is convenient for each station to have a booklet of wraps. Each time the station receives another bouquet, a fresh wrap is opened from the booklet, and eventually removed from the booklet.

This means that the apparatus works its way automatically through the booklet.

[0007] It is however still necessary for the booklets to be loaded onto the apparatus. If there are several carriers in the apparatus, each of these will need to be loaded when all the wraps in its booklet have been used.

[0008] We have found, however, that automatic handling of the booklets is not easy. A major difficulty is caused by the fact that the booklets are relatively flimsy and liable to distort during handling.

[0009] The general object of the invention is to provide improved means for handling booklets or wraps in a wrap filling apparatus or the like.

[0010] According to the invention there is provided wrap handling apparatus comprising a booklet magazine for holding a plurality of booklets and transfer means for transferring a booklet from the magazine to the carrier, **characterized in that** the booklets are separated by sweep plates extending across the booklet wickets, the transfer means transfer each booklet with the sweep plate behind it, and means are provided for clamping the sweep plate to the carrier.

[0011] A wrap filling apparatus embodying the invention will now be described by way of example and with reference to the drawings, in which:

Figs. 1A and 1B show a wrap and booklet;

Fig. 2 shows the magazine and carrier in simplified form;

Fig. 3 shows the magazine in more detail; and  
Fig. 3 shows the carrier in more detail.

[0012] Referring to Fig. 1A, a wrap or sleeve 10 consists of two wedge-shaped pieces 11 and 12 of plastics film welded together to form a wrap. The front sheet 11 is shorter than the rear sheet 12, so the wrap has a double thickness in the region 13 and a single thickness in the region 14. The sheets are welded together along their sloping sides, so the top and bottom of the wrap are open. The rear sheet has a line of perforations 15 just above the top edge of the front sheet.

[0013] Fig. 1B shows a stack of wraps forming a booklet 17. The wraps are stacked and then combined into the booklet by a device (not shown) which pierces the stack to form a pair of holes 18 and simultaneously heats the wraps so that they are welded together by the holes. The top portion 19 of the booklet is termed a wicket.

[0014] The wraps and booklets are used in conjunction with sweep plates and platens. As shown in Fig. 1B, a sweep plate 20 is larger than the wicket 21 of a booklet, and a platen is larger than the entire booklet. The sweep plate has a pair of holes 21 corresponding to the holes 18 of the booklet.

[0015] Fig. 2 shows the magazine 25 and carrier 40. The magazine 25 has a pair of arms 26 on which a series of booklets 17 and sweep plates 20 are loaded alternately. A sensor switch 27 and detent device 28 are mounted on a common linear bearing assembly (not

shown in Fig. 2). The switch is mounted towards the end of the sweep plates 20, and as these sweep plates are larger than the booklets 17, the sensor switch contacts the outer end of the sweep plates; the booklet does not come into contact with the switch.

[0016] To transfer a booklet from the magazine to the carrier, the sensor switch 27 and detent device 28 are advanced together to the right along axis 29 until the sensor switch detects a sweep plate. At this point, the detent 11 is advanced downwards along axis 30 such that it engages between the first and second sweep plates in the stack. (This may of course be done in advance.) As with the sensor switch, the detent device engages with the sweep plate, without coming into contact with the booklet. To complete the transfer, the linear drive is then reversed, causing sweep plate 20 to be swept from the magazine along the rods 26 and finally transferred onto the carrier 40, with the first booklet 17 being carried along by the sweep plate. The sensor switch 27 and detent 28 are withdrawn vertically along axes 30 and 31 to finally release the sweep plate and booklet.

[0017] The carrier 40 has a pair of rods 41. To transfer a booklet onto the carrier, the carrier is brought up to the magazine 25 so that the pointed ends 42 of these rods engage with recesses 32 in the ends of the magazine rods 26. An arm clamp 43 is withdrawn vertically along axis 44, and the booklet is then passed, by and together with the following sweep plate 20, onto the carrier from the magazine, as just described. As or after the detent 28 of the magazine is withdrawn, the arm clamp 43 is returned downwards along axis 44 and then moved rightward along axis 45 to clamp the sweep plate 20 against the platen 21 of the carrier. This has the effect of clamping the booklet 17 against the platen. The sweep plate 20 thus helps to retain the booklet under the arm clamp. During the above process, the sensor switch 27 can be hinged out of the way as required.

[0018] The platen 21 with its arm clamp 43 may be made retractable, so that other mechanisms can be avoided and single sleeves selected for subsequent operations (wrap filling with a bouquet, wrap opening with vacuum, etc) as appropriate.

[0019] Means (not shown in Fig. 2) may be provided for releasing the wicket of the booklet on the carrier, together with its sweep plate, when all wraps on the booklet have been used. A receptacle may be provided below the carrier for this purpose. The exhaustion of the booklet may be detected by any convenient method, eg a sensor switch (not shown) which determines when the platen 21 becomes uncovered.

[0020] The sweep plate thus serves to move the booklet along the arms of the magazine, preventing it from buckling and jamming, and also to hold the booklet firmly on the carrier.

[0021] Once the carrier has been loaded with a booklet, it can be moved to whatever stations are appropriate, for loading a wrap with a bouquet, attaching labels,

tying, etc, and discharge.

[0022] Fig. 3 is a more detailed drawing of the magazine, showing the rods 26 with the booklets 17 on them (in this version, the booklets have 4 holes and there are 4 support rods), the rods 33 on which the sensor switch 27 and detent device 28 are linearly movable, and the manner in which the latter elements are mounted by arm means 27'. A box 46 is shown for receiving discarded wickets and sweep plates; this box is conveniently located below the magazine, so that the carrier can be cleared and loaded at the same position.

[0023] Fig. 4 is a more detailed drawing of the carrier with a wrap 10 partially opened (in this version, the wraps have a slightly different shape at the narrow end). The clamps 43 are moved forward and then rotated upwards to the horizontal to release the wicket; these movements are reversed to clamp the booklet. A further clamp 47 supports the front wrap when it is opened; this clamp is operated and retracted for each wrap in turn. The arms 48 are used to clamp and manipulate the bottom end of the bouquet when it is inserted into the wrap. The mechanism may be arranged to swing the booklet backward about its top edge once the front wrap has been engaged and opened, to keep the remaining wraps in a safe position.

## Claims

1. Wrap handling apparatus comprising a booklet magazine (25) for holding a plurality of booklets (17) and transfer means (28) for transferring a booklet (17) from the magazine to the carrier, **characterized in that** the booklets are separated by sweep plates (20) extending across the booklet wickets (12), the transfer means (28) transfer each booklet (17) with the sweep plate (20) behind it, and means (43) are provided for clamping the sweep plate to the carrier.
2. Wrap handling apparatus according to claim 1 **characterized in that** the transfer means (28) include sensing means (27) for sensing the position of the next sweep plate.
3. Any novel and inventive feature or combination of features specifically disclosed herein within the meaning of Article 4H of the International Convention (Paris Convention).

Fig. 1A

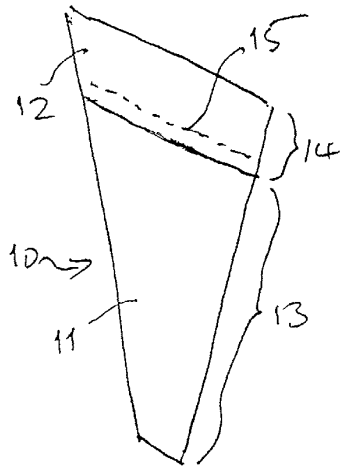


Fig. 1B

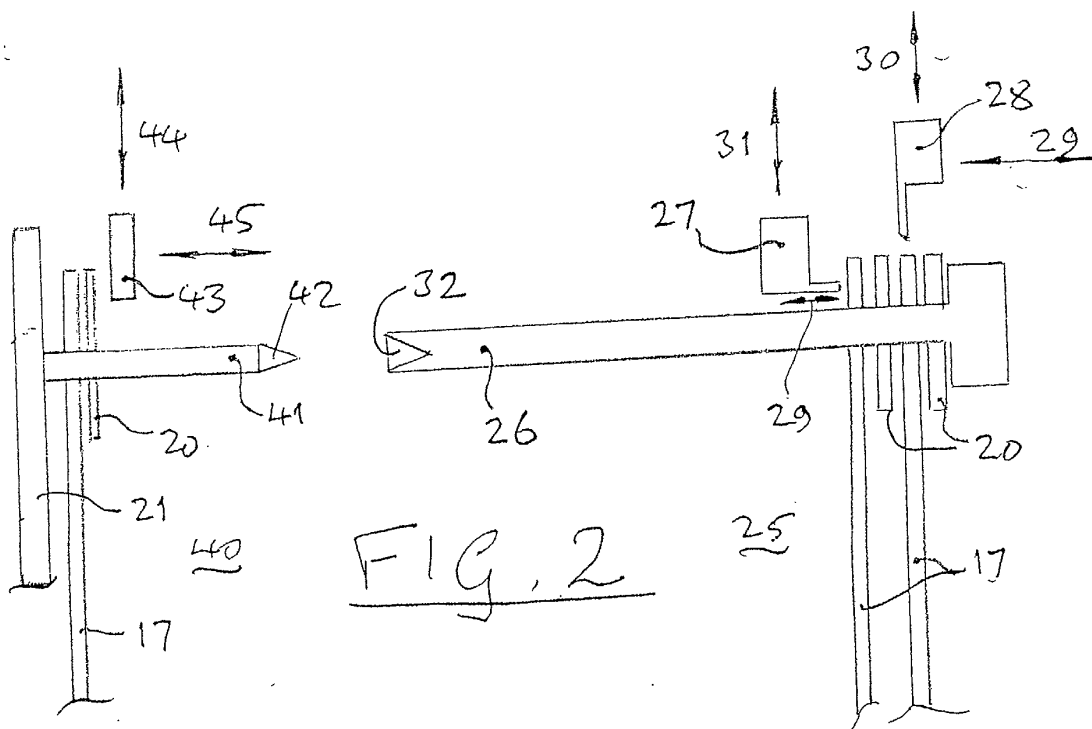
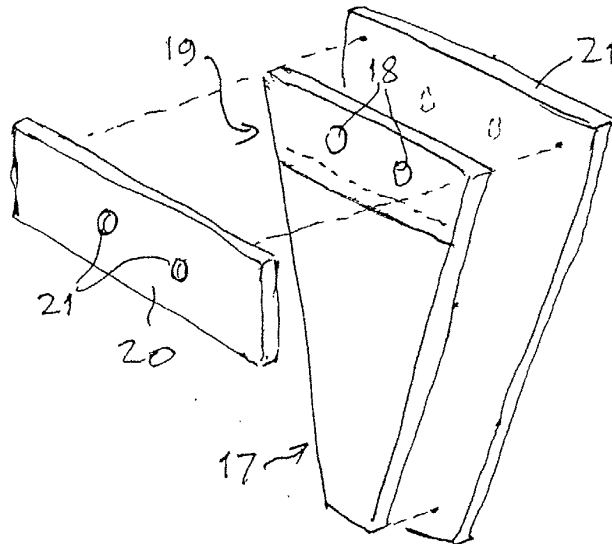
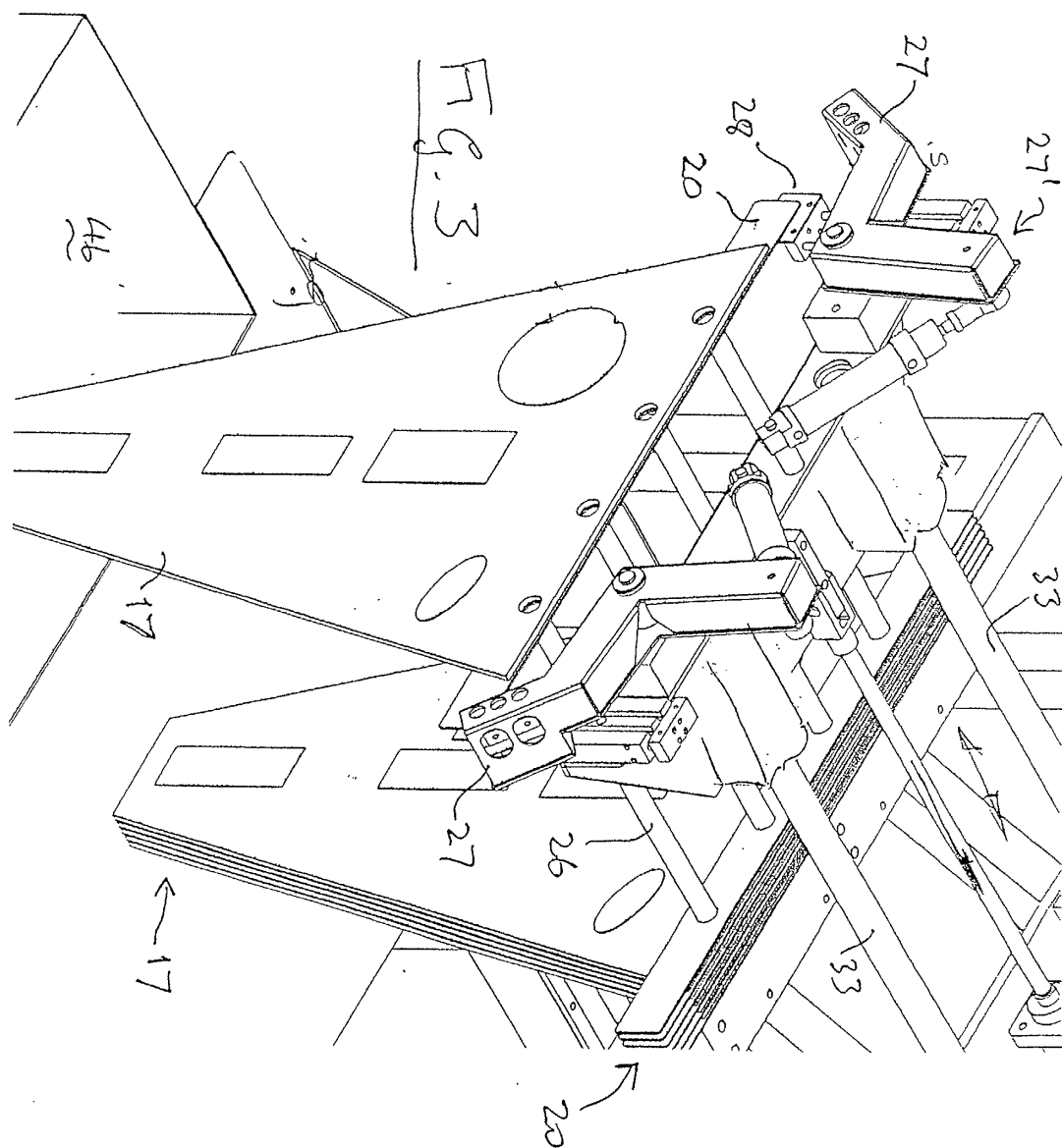
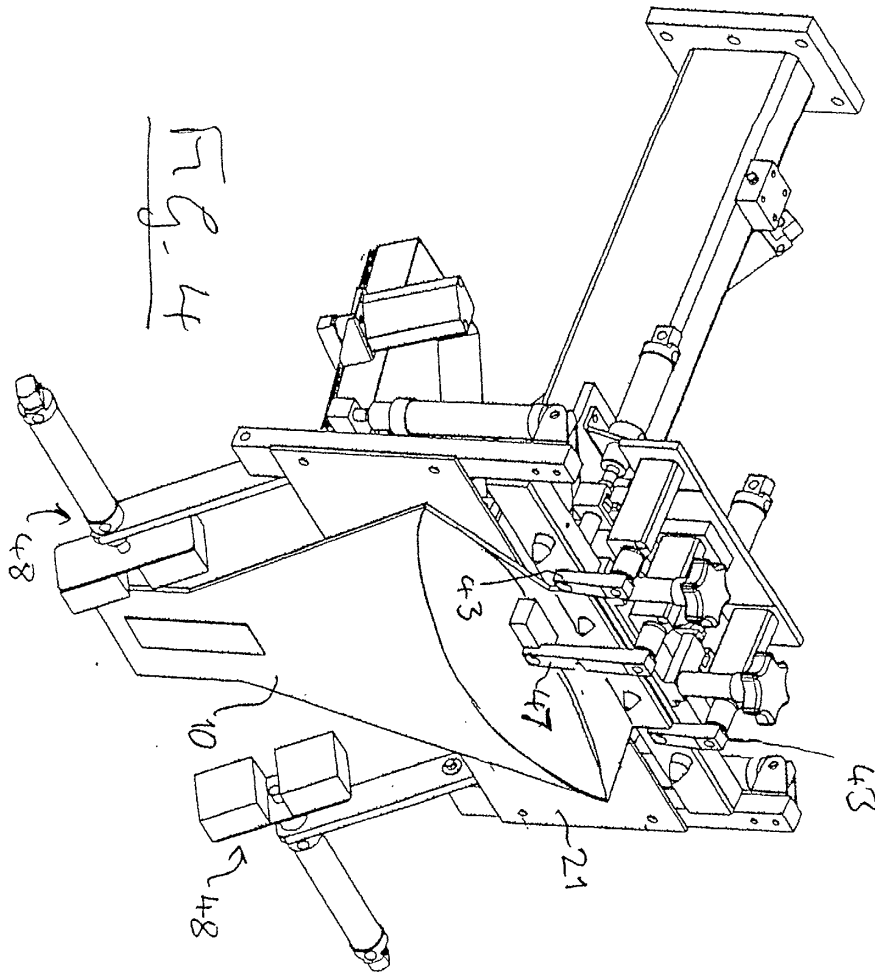


FIG. 2







European Patent  
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# EUROPEAN SEARCH REPORT

Application Number  
EP 02 25 3119

| 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.7) |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 5 495 707 A (LAUZON ROBERT)<br>5 March 1996 (1996-03-05)<br>* column 2, line 30 - column 4, line 43;<br>figures * | 1                                                         | B65B43/14                                    |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CA 915 659 A (A. LIEBERMAN)<br>28 November 1972 (1972-11-28)<br>* page 5, line 22 - page 8, line 21;<br>figures *    | 1                                                         |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                      |                                                           | TECHNICAL FIELDS SEARCHED (Int.Cl.7)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                      |                                                           | B65B<br>A47F<br>B65D                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                      |                                                           |                                              |
| Place of search<br><b>THE HAGUE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                      | Date of completion of the search<br><b>13 August 2002</b> | Examiner<br><b>Jagusiak, A</b>               |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                      |                                                           |                                              |

EPO FORM 1503 03/92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 25 3119

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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13-08-2002

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---|---------------------|----------------------------|---------------------|
| US 5495707                                | A | 05-03-1996          | CA 2125946 A1              | 16-12-1995          |
| CA 915659                                 | A | 28-11-1972          | NONE                       |                     |

EPO FORM P0458

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82