



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
06.04.2011 Bulletin 2011/14

(51) Int Cl.:
B65D 30/04 (2006.01) **D03D 1/04** (2006.01)
B31B 21/14 (2006.01)

(21) Application number: **09800084.7**

(86) International application number:
PCT/ES2009/000361

(22) Date of filing: **10.07.2009**

(87) International publication number:
WO 2010/010205 (28.01.2010 Gazette 2010/04)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(71) Applicant: **Guasch Pubill, Marcos**
08034 Barcelona (ES)

(72) Inventor: **Guasch Pubill, Marcos**
08034 Barcelona (ES)

(30) Priority: **22.07.2008 ES 200802170**
22.05.2009 ES 200901268

(74) Representative: **Morgades y Manonelles, Juan Antonio**
Morgades & Del Rio, S.L.
C/Rector Ubach, 37-39, bj. 2.o
08021 Barcelona (ES)

(54) **METHOD, FABRICS AND MACHINES FOR PRODUCING SEAMLESS BAGS AND SIMILAR ITEMS**

(57) The procedure consists of weaving on a loom two superimposed separate pieces of fabric, which are joined together transversally by weaving strands of warp at predetermined distances using strands of the weft, at the same time, in the direction of the warp independent bands with the corresponding hems in the longitudinal edges are formed in the loom, the sides of which are then

subject to total or partial die cutting that conforms the bag or similar product. One of the fabrics to be used has, between the transversal and longitudinal hems, joining areas with floating strands of warp and joining areas with floating strands of weft, and this machine comprises means for moving, tensioning and aligning the fabric, and means for transversal and angular or curved cutting.

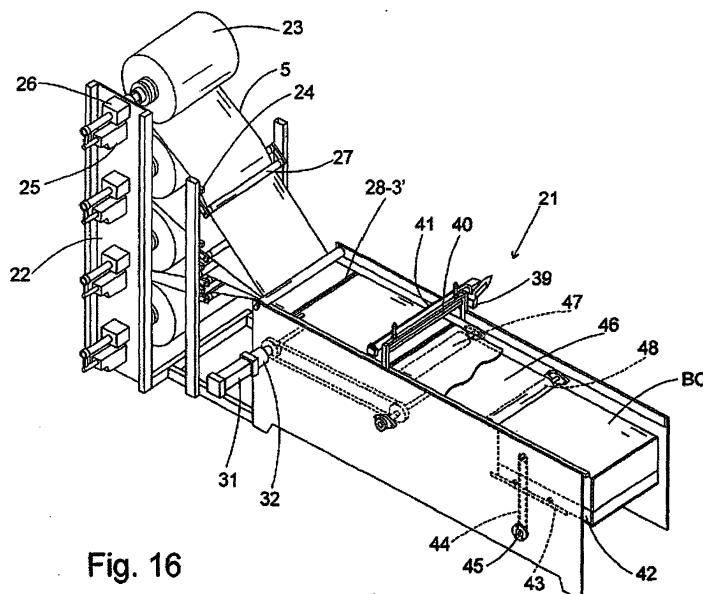


Fig. 16

Description

BACKGROUND OF THE INVENTION

[0001] There are different types of bags, manufactured in different materials, the most commonly used being plastics, cloth and paper, which are obtained by several procedures.

[0002] Plastic bags are very economic and easy to manufacture by welding and die cutting, and are widely used, generally for a single use, such as for instance when purchasing in stores, mainly in supermarkets and similar shops. This material is not biodegradable and creates a serious waste problem.

[0003] Paper bags, although their manufacturing is more complex, are also economic, but they are not very strong, thus their use is limited.

[0004] Regarding cloth bags, they are the most ecological and are quite strong, though their handicap is their high cost, especially due to the cutting and stitching operations they require in the manufacturing process.

SUMMARY OF THE INVENTION

[0005] The object of this invention is a procedure, fabrics and machines for obtaining bags and similar products without any stitching.

[0006] This procedure produces bags or similar products directly from the loom with a subsequent die-cutting process, which results in a low cost that can compete with plastic bags, enabling them be used as single-use bags, even though due to their construction, they can be used several times.

[0007] The procedure consists of weaving two superimposed separate pieces of fabric, which are joined together transversally by weaving strands of warp at predetermined distances using strands of the weft, at the same time, in the direction of the warp independent bands with the corresponding hems in the longitudinal edges are formed in the loom, the sides of which are then subject to total or partial die cutting that conforms the bag or similar product.

[0008] The die cutting will produce a bag or similar product with the desired shape, for instance with or without handles, but there will always be die cutting in transversal direction, that be intermittent or continuous, obtaining in the first case bands of bags that can be separated by the user and can be commercialised in rolls, and in the second case, separate units will be produced that may be stacked and commercialised in boxes, for instance.

[0009] This procedure can also incorporate silkscreen printing to customise the bags with the desired motifs.

[0010] One of the fabrics to be used is composed of two independent superimposed pieces of fabric interwoven in transversal and longitudinal bands determining the hems between which are the joining areas with floating strands of warp and joining areas with strands of float-

ing weft.

[0011] With this fabric, bands are formed with transversal joining areas with floating strands of warp, which are installed in the winding machine to manufacture the bags.

[0012] This machine is fitted with at least one roll of fabric and comprises means for moving, tensioning and aligning the fabric, means for transversal and angular or curved cutting, and means for stacking the bags manufactured.

[0013] The means for moving, tensioning and aligning the fabric consist of a transversal spiked comb that is inserted into the areas with floating strands of warp and that is movable and retractable, moving with a motor under a platform with longitudinal slits on which the fabric moves along.

[0014] The means for transversal cutting consists of a pneumatically activated cylinder holding an electric cutter, in collaboration with a pneumatic pressure pad that maintains the fabric tense.

[0015] The means for stacking comprise a reception tray with to and fro and vertical movements on which the bags are deposited.

[0016] These and other characterising features will be best made apparent by the following detailed description whose understanding will be made easier by the accompanying five sheets of drawings showing same practical embodiments being cited only by way of example not limiting the scope of the present invention.

[0017] In the drawings:

Figure 1 shows a plan view of the formation of the double cloth with the longitudinal bands and their hems and with their transversal joints.

Figures 2 and 3 indicate schematically the cutting of the bands along lines II-II and III-III respectively in figure 1,

Figure 4 shows a plan view of the transversal die cutting of the bands,

Figures 5 and 6 correspond to the bag obtained and its longitudinal cut along line VI-VI, respectively,

Figure 7 shows a plan view of the transversal die cutting with other die-cuts to form a bag with handles, Figures 8, 9 and 10 correspond to the bag with handle and its longitudinal cut along lines A-B and C-D, respectively,

Figure 11 is a perspective view of a roll of bags in which the transversal die-cuts are intermittent,

Figure 12 shows schematically in side elevation the die cutting of the bands, them being stacked on one other, and

Figure 13 represents the stacked bags in a box.

Figures 14 and 15 show respectively, one of the fabrics used and the band that is obtained from the same, which will be rolled up for installation on the machine,

Figure 16 is a perspective view of the machine for manufacturing bags, with the fabric of figure 14.

Figure 17 shows in perspective a detail of the spiked comb,

Figure 18 shows in perspective the platform on which the fabric moves, and

Figure 19 is a perspective view of an example of the means used for angular or curved cutting of the fabric.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] According to the drawings, the procedure object of the invention for obtaining bags and similar products made of fabric without any stitching, consists in weaving on a loom of any type, for instance sulzer, airjet, ketten and raschel, two separate superimposed pieces of cloth (1 and 2) that at predetermined distances (x) are joined transversally by interweaving the strands of warp using strands (3) of the weft.

[0019] At the same time in the loom the independent warp sides (4) are formed, presenting their longitudinal edges finished with the corresponding hems (5).

[0020] These bands (4) at the output of the loom or in a subsequent process, are subject to transversal die cutting (6) (figure 4), conforming the bag (7) (figure 5) with the mouth (8) using for example a rotating cylinder or a "flat guillotine".

[0021] In the case of figure 7, the transversal die cutting (6') is carried out in the area where the two pieces of cloth join with strands (3) of the weft and this is complemented with other curved cuts (9, 10 and 11) forming the handles (12 and 13) of the bag (7').

[0022] Figure 11 illustrates a band already cut, but with the transversal cut (6'') partial (intermittent) so that the collection of bags can be rolled up forming a reel (14) from which the user can detach the bags, one by one. In this case the reel (14) may be placed, for instance, in a dispensing machine.

[0023] The die cutting phase may also be done by spreading the fabric from a roll (16) along a table (M) (figure 12) forming several layers (18) one on top of the other, making cuts in different areas (17) coinciding in each layer to obtain blocks of ready-cut bags one on top of the other.

[0024] The bags, both those without handles (7) as well as (7') with handles, either in rolls or stacked, can be dispensed in boxes (15) with the features of 2 or as desired (figure 13).

[0025] The bags can be customised (19) either with decorations or motifs, by means of printing (20) for instance by transfer or laser. This can be done at the moment of die cutting, in the case of the process according to figures 4 and 7, or before die cutting, in the case of figure 12.

[0026] In the case illustrated, the procedure produces bags with or without handles, however, with the same procedure, other similar products can be obtained, such as sacks, containers and covers in general, for instance for pillows.

[0027] The bags can be obtained in uniform colours or several colours combined to give them a more original appearance, for this purpose there will be tinted strands in the loom with the predetermined colours.

[0028] According to the figure 14 of the illustrations, the fabric used for manufacturing the bags is composed of a separate double cloth (1, 2) with stroke without weft with strands of floating warp (3') (width of the fabric) and with combed empty spaces with strands of floating weft (3'') (length of the fabric) that join the hems (5) of the double cloth of this fabric, bands are cut longitudinally (B) (figure 15) by the strands of floating weft (3'').

[0029] The machine (21) comprises a support (22) where the four rolls are fitted (23) vertically (formed by bands (B) of fabric), which are centred to determine the location of the hems (5) for the transversal cutting and final stacking. For this centring there are photoelectric sensors (24) that transmit a signal to electrical worm drive lineal actuators (25) for guiding, with incorporated end of travel devices, the driving part comprising a linear bearing (26).

[0030] The roll carrier has an adjustable braking system (not illustrated), which will be used if the roll has inertia greater than the stretching.

[0031] The photoelectric sensors (24) are incorporated into alignment assemblies (27) that adjust the tension of the fabric in each roll.

[0032] The means for moving, tensioning and aligning the fabric comprise a spiked comb (28) (figure 17) that enters the areas with floating strands of warp (3') and that is (movable) by lineal guides (29) a double ball circulation (30) by the action of a servo-motorised motor (31), that incorporates an encoder inside, obtaining precision in stoppage, and to which a gear reduction motor (32) is fitted.

[0033] The spiked comb (28) is also retractable by the action of parallel pneumatic cylinders (33 and 34).

[0034] For the search by the spiked comb (28), in the area of floating warp (3') there is a strand of weft (T) of a different colour, detected by a fire optic photoelectric sensor (35) built into the spiked comb (28) (figure 17), which runs under a platform (36) (figure 18) with longitudinal slits (37) for the passage of the spikes of the comb and along which the fabric is moved. This platform has a small window (38) through which the photoelectric sensor works (35).

[0035] The comb (28), when it reaches the mark formed by the strand of weft (T) rises to move the fabric, then an end of travel sensor is activated (39) that stops the movement and a pneumatic pressure pad (40) maintains the stretch tension lowering the spiked comb (28) to proceed then with the transversal cutting through the centre of the strands (3') by means of a pneumatic cylinder (41) holding an electric cutter.

[0036] The means of stacking the manufactured bags (BO) comprises a motorised reception tray (42), with a to and fro movement on a base (43) (figure 16) and vertical movement by means of rails (44) and with a lowering

sensor (45), to which the bags arrive from a motorised conveyor belt (46) on two rollers at the ends (47 and 48), and synchronised with the reception tray (42).

[0037] An alternative to the conveyor belt (46) consists of four pneumatic clamps (49) on the sides of the platform (36) (figure 18) that will hold the sides of the bags and take them and deposit them by gravity onto the reception tray (42).

[0038] Angular or curved cutting may be carried out by different systems incorporated to the machine and placed before the stacking devices.

[0039] An example of a cutting system could be that represented in figure 19, comprising electric cutters (50) a rotating disc moved by a pneumatic cylinder (51) without shaft with and end of travel damper, or moved by an electric motor and pulleys; Reference (52) shows a tray comprising the cutting devices and the guides (53) for moving these devices.

[0040] An angular or curved cut (C) determines the handles of the bag (BO). The cutting system to obtain the handles of the bag may be any other, for instance through a bridge die cutter using in motorised band at the lower part.

Claims

1. Procedure for obtaining bags and similar products made of fabric without any stitches, **characterised in that** two independent superimposed pieces of cloth are woven on a loom, which are joined together transversally at predetermined distances by weaving strands of warp using strands of the weft, at the same time, in the direction of the warp independent bands with the corresponding hems in the longitudinal edges are formed in the loom, the sides of which are then subject to total or partial die cutting that conforms the bag or similar product.
2. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** the die transversal cutting is intermittent, enabling the user to separate a bag or similar item from the band.
3. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** the die transversal cutting is continuous, obtaining bags or similar products in separate units.
4. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 to 3 **characterised in that** at the moment of die cutting, the bag can be printed with the desired motifs.
5. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** on leaving the loom, the bands are laid out in layers, one on top of the other, with the areas for cutting matched and obtaining blocks of bags, one on top of the other with the die cutting.
6. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** before stacking the bands, they are printed with the desired motifs.
7. Fabric for manufacturing bags, in accordance with the procedure of the claim 5, **characterised in that** it is composed of two separate superimposed pieces of cloth interwoven in transversal and longitudinal strips determining hems between which there are joining areas with strands of floating warp and joining areas with strands of floating weft.
8. Fabric for manufacturing bags, according to claim 4, **characterised in that** the transversal joining areas have un stroke without weft determining the strands of floating warp, and the longitudinal joining areas have combed clear areas determining the strands of floating weft.
9. Fabric for manufacturing bags, according to claim 4, **characterised in that** it forms a band with transversal joining areas with strands of floating warp.
10. Machine for manufacturing bags, with the fabric of claim 7, from at least one roll of fabric, it comprises means for moving, tensioning and aligning the fabric, and means for transversal and angular or curved cutting.
11. Machine for manufacturing bags, according to claim 10, **characterised in that** it comprises means for stacking the bags manufactured.
12. Machine for manufacturing bags, according to claim 10, **characterised in that** the means for moving, tensioning and aligning the fabric consist of a transversal spiked comb that is inserted into the areas with floating strands of warp and that is movable and retractable, moving with a motor under a platform with longitudinal slits on which the fabric moves along.
13. Machine for manufacturing bags, according to claim 12, **characterised in that** it comprises a sensor that detects a strand of weft of as different colour to determine the area of the fabric where the spiked comb must enter.
14. Machine for manufacturing bags, according to claim 10, **characterised in that** the means for transversal

cutting consists of a pneumatically activated cylinder holding an electric cutter, in collaboration with a pneumatic pressure pad that maintains the fabric tense.

15. Machine for manufacturing bags, according to claim 11, **characterised in that** the means for stacking comprise a reception tray with to and fro and vertical movements on which the bags arrive from a motorised conveyor belt, which is synchronised with the reception tray.
16. Machine for manufacturing bags, according to claims 11, 12 and 15, which comprises means for stacking the manufactured bags, **characterised in that** the means for stacking show in the sides of the platform on which the fabric moves, some pneumatic grippers that hold the sides of the bags and lead and deposit them on the reception tray.
17. Machine for manufacturing bags, according to claim 10, **characterised in that** the means for angular or curved cutting comprise electric cutters with a rotating disc moved by pneumatic cylinders.
18. Machine for manufacturing bags, according to claims 10 and 12, **characterised in that** the rolls of fabric are centred and superimposed overlap and are guided by photoelectric sensors to fabric tensioners that take then to the movement platform of the superimposed fabrics.

Amended claims under Art. 19.1 PCT

1. Procedure for obtaining bags and similar products made of fabric without any stitches, **characterised in that** two independent superimposed pieces of cloth are woven on a loom, which are joined together transversally at predetermined distances by weaving strands of warp using strands of the weft, at the same time, in the direction of the warp independent bands with the corresponding hems in the longitudinal edges are formed in the loom, the sides of which are then subject to total or partial die cutting that conforms the bag or similar product.
2. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** at the moment of die cutting, the bag can be printed with the desired motifs.
3. Procedure for obtaining bags and similar products made of fabric without any stitches, according to claim 1 **characterised in that** on leaving the loom, the bands are laid out in layers, one on top of the other, with the areas for cutting matched and obtain-

ing blocks of bags, one on top of the other with the die cutting.

4. Fabric for manufacturing bags, in accordance with the procedure of the claim 1, **characterised in that** it is composed of two separate superimposed pieces of cloth interwoven in transversal and longitudinal strips determining hems between which there are joining areas with strands of floating warp and joining areas with strands of floating weft.

5. Fabric for manufacturing bags, according to claim 4, **characterised in that** the transversal joining areas have un stroke without weft determining the strands of floating warp, and the longitudinal joining areas have combed clear areas determining the strands of floating weft.

6. Fabric for manufacturing bags, according to claim 4, **characterised in that** it forms a band with transversal joining areas with strands of floating warp.

7. Machine for manufacturing bags, with the fabric of claim 4, from at least one roll of fabric, it comprises means for moving, tensioning and aligning the fabric, and means for transversal and angular or curved cutting.

8. Machine for manufacturing bags, according to claim 7, **characterised in that** it comprises a sensor that detects a strand of weft of as different colour to determine the area of the fabric where the spiked comb must enter.

9. Machine for manufacturing bags, according to claim 7, **characterised in that** the means for transversal cutting consists of a pneumatically activated cylinder holding an electric cutter, in collaboration with a pneumatic pressure pad that maintains the fabric tense.

10. Machine for manufacturing bags, according to claim 7, which comprises means for stacking the manufactured bags, **characterised in that** the means for stacking show in the sides of the platform on which the fabric moves, some pneumatic grippers that hold the sides of the bags and lead and deposit them on the reception tray.

11. Machine for manufacturing bags, according to claim 7, **characterised in that** the means for angular or curved cutting comprise electric cutters with a rotating disc moved by pneumatic cylinders.

12. Machine for manufacturing bags, according to claim 7, **characterised in that** the rolls of fabric are centred and superimposed overlap and are guided by photoelectric sensors to fabric tensioners that

take then to the movement platform of the superimposed fabrics.

5

10

15

20

25

30

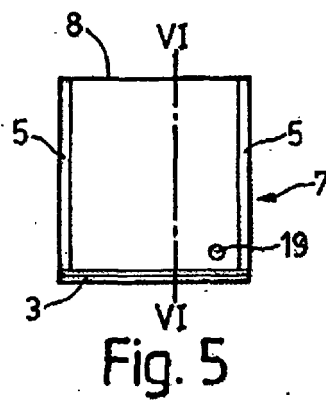
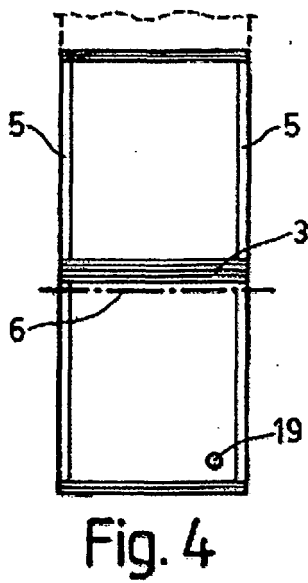
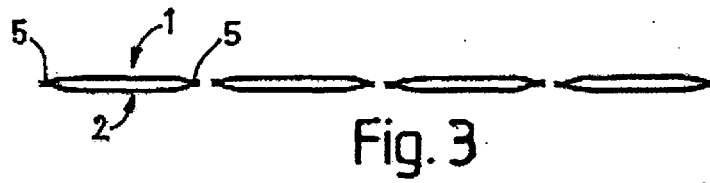
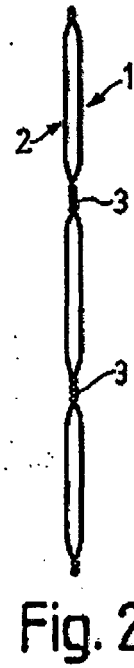
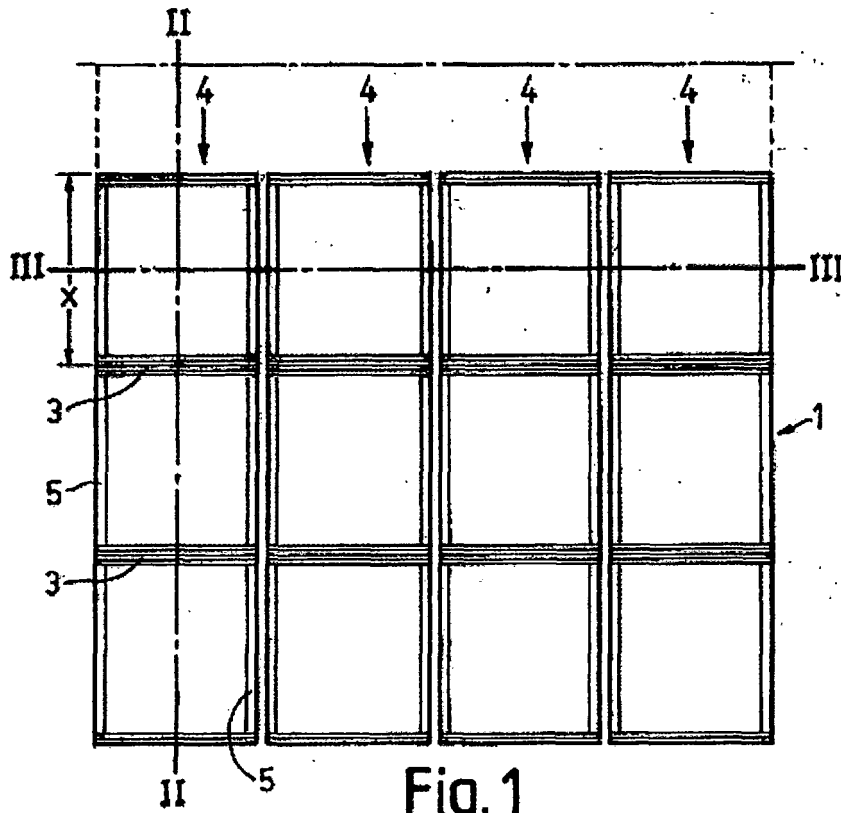
35

40

45

50

55



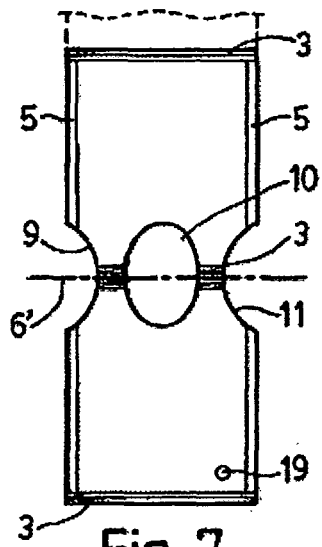


Fig. 7

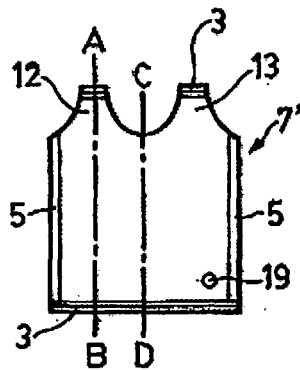


Fig. 8



Fig. 9



Fig. 10

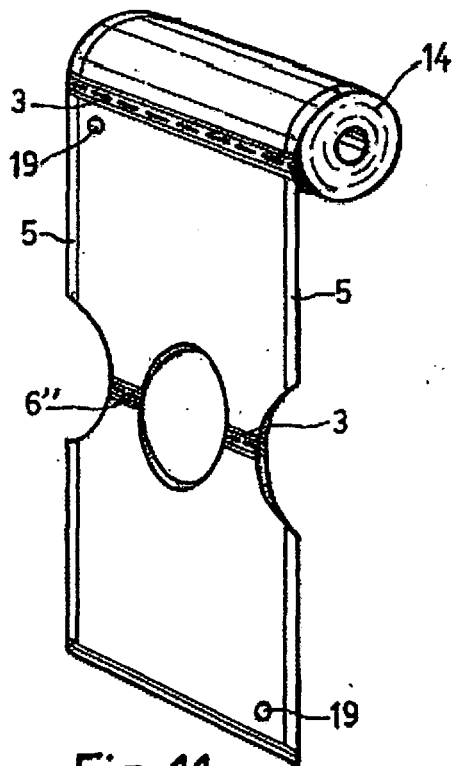


Fig. 11

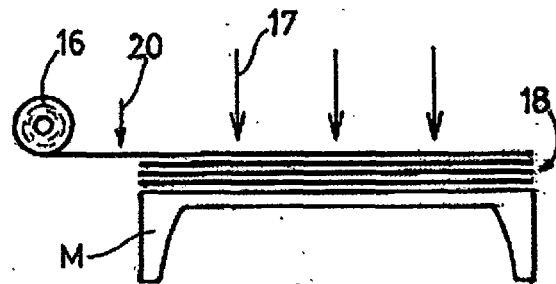


Fig. 12

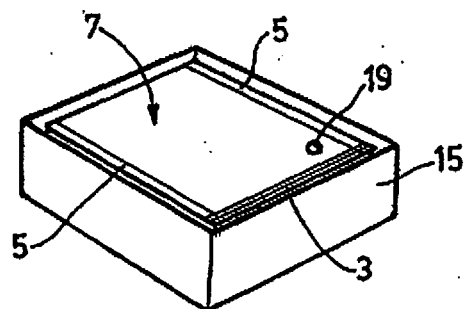


Fig. 13

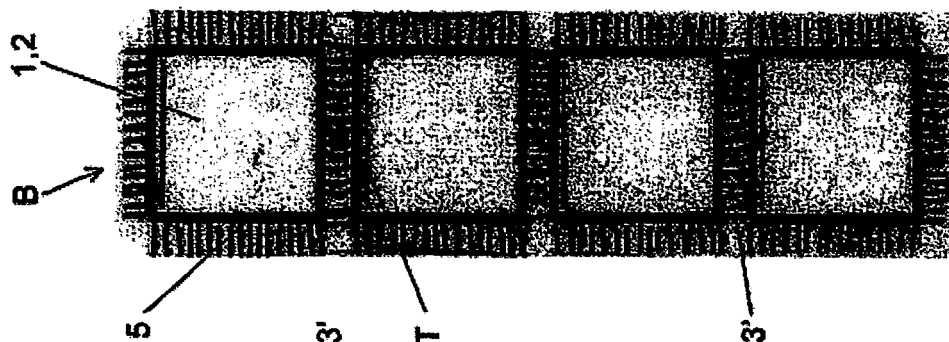


Fig. 15

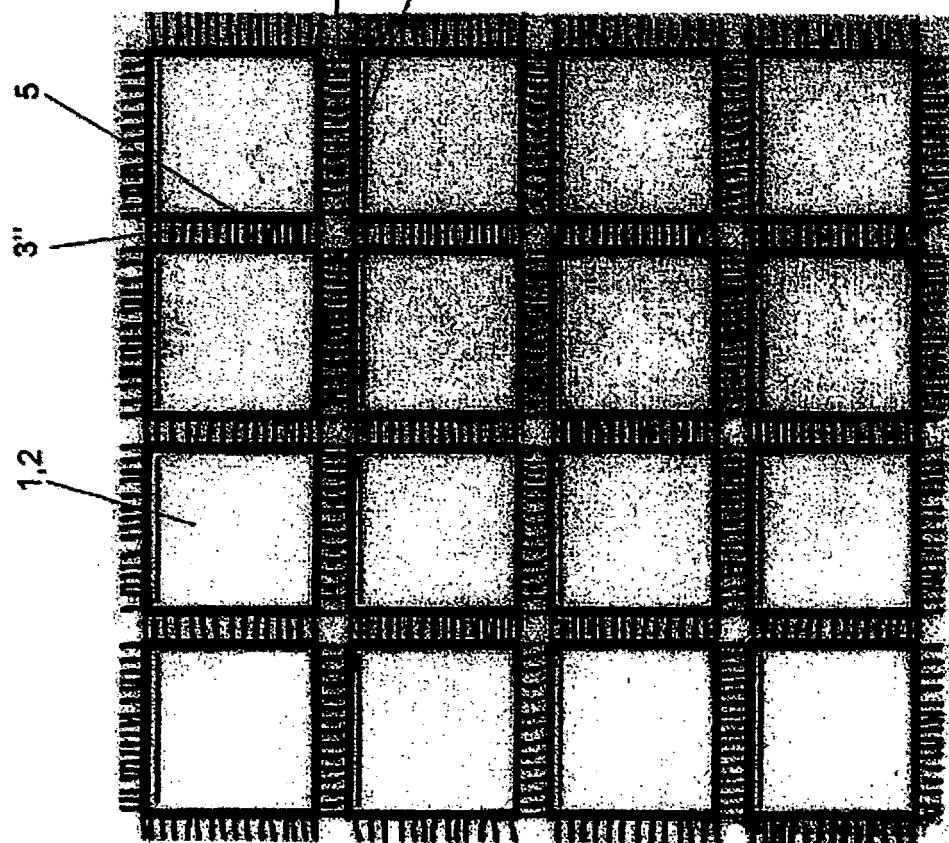


Fig. 14

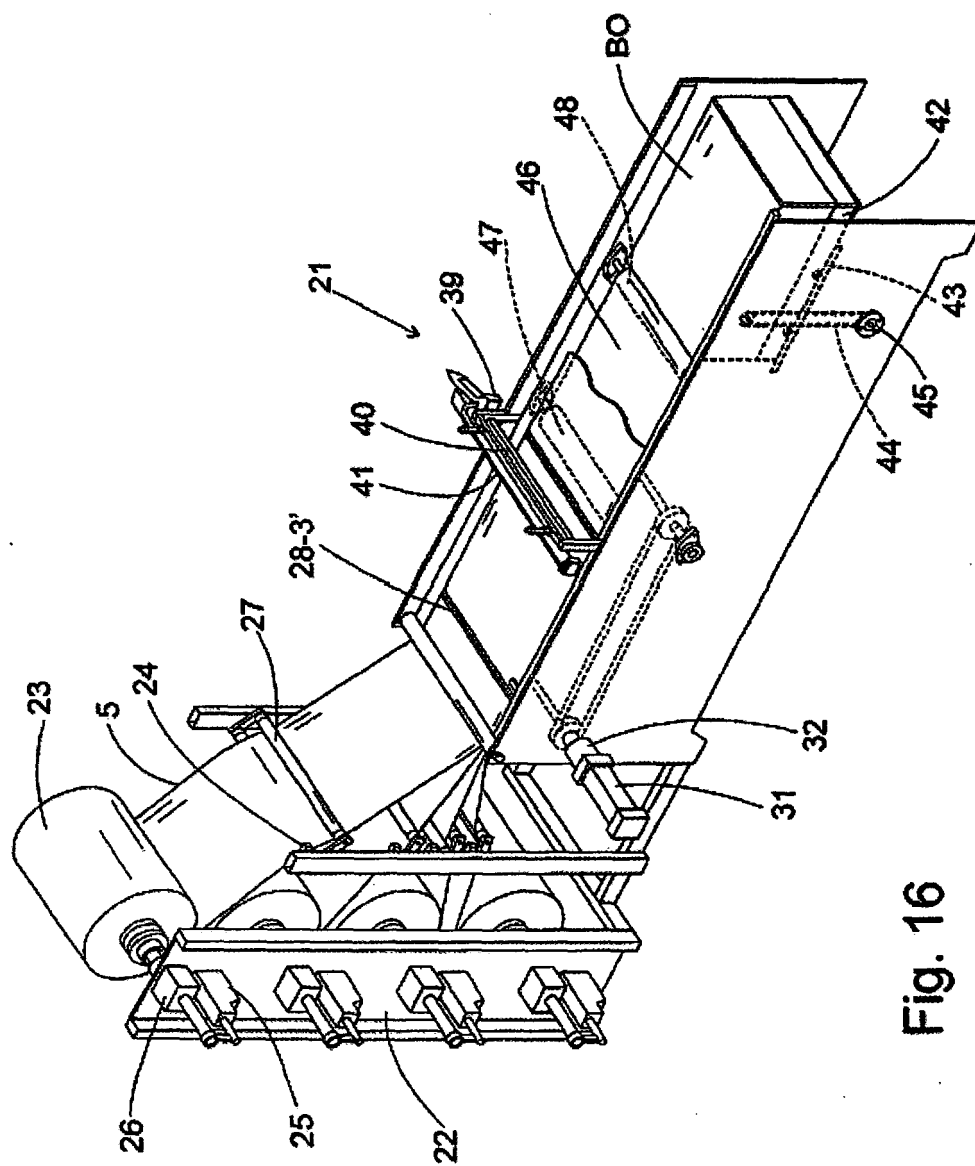
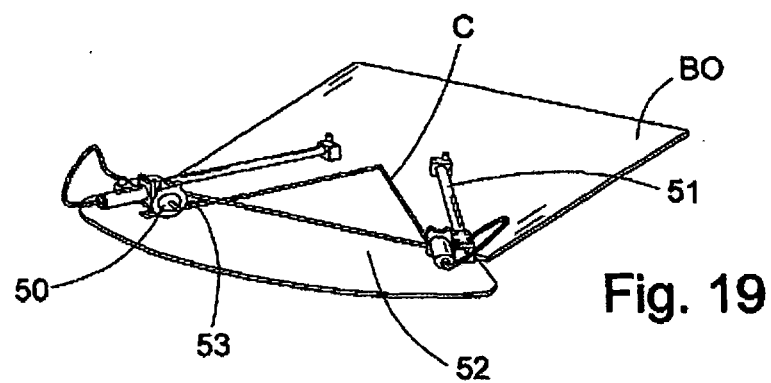
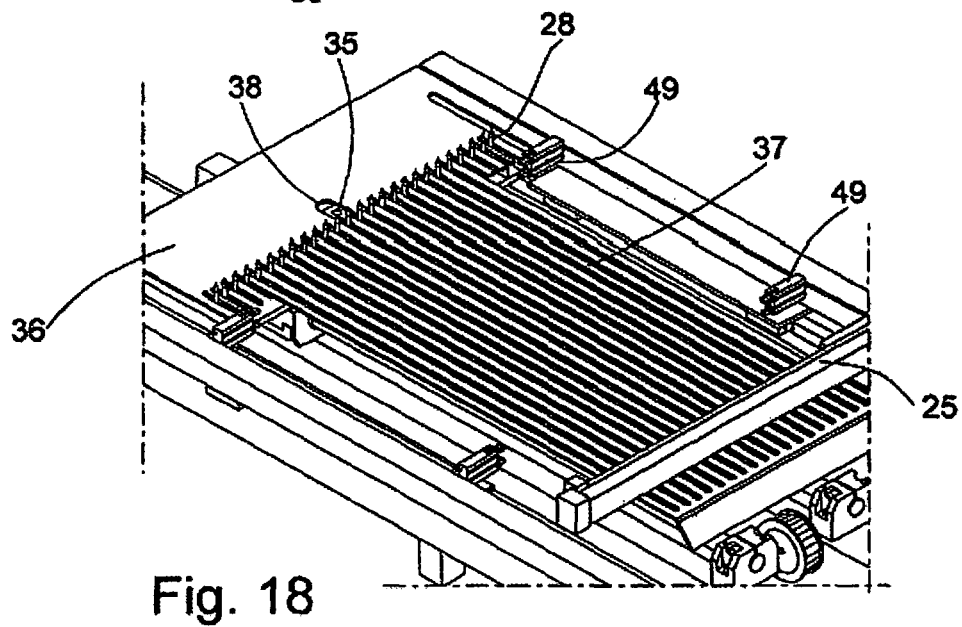
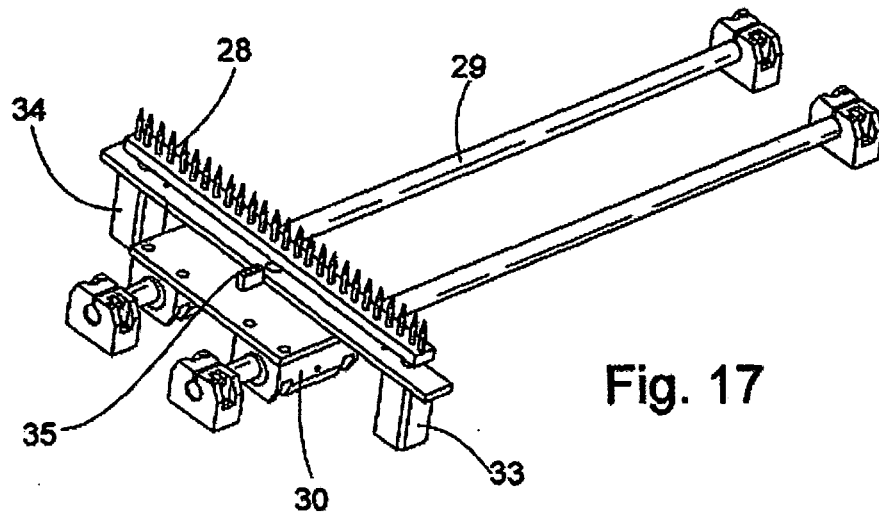


Fig. 16



INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 2009/000361

A. CLASSIFICATION OF SUBJECT MATTER

see extra sheet

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)

B65D, D03D, B31B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

INVENES, EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ES 2043333 T3 (SACHERIE BORDENOUD SARL) 16.12.1993, column 2, line 35 - column 6, line 11; claim 1; figures	1, 3, 7
Y		2,4,5,6
A		10
Y	US 2005259892 A1 (TAN et al.) 24.11.2005, Paragraph 10 - paragraph 60. figures 2,5.	2,4
Y	US 4909636 A (DE et al.) 20.03.1990, column 2, line 40 - column 6, line 30. figures.	5,6
X	ES 8308259 A1 (INTERMAS SA) 16.11.1983, Description. claim 1. figure 1.	10,11,15
A		1,3
A	FR 802430 A (M. GRAWITZ) 04.09.1936, the whole document.	1

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.		
"E" earlier document but published on or after the international filing date		
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O" document referring to an oral disclosure use, exhibition, or other means	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed		
	"&"	document member of the same patent family

Date of the actual completion of the international search

21 December 2009 (21.12.2009)

Date of mailing of the international search report

(23/12/2009)

Name and mailing address of the ISA/
O.E.P.M.Paseo de la Castellana, 75 28071 Madrid, España.
Facsimile No. 34 91 3495304

Authorized officer

P. I. López Unceta

Telephone No. +34 913495535

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 2009/000361

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BE 531575 A0 (A. DE WOLF) 30.09.1954, the whole document	1
A	ES 1003058 U (Juan Mitjans Horta y Miguthe Comas Pujol) 01.07.1988, Description	1
A	AT 392806 B (CHEMIEFASER LENZING AG ; HARRIS EDWARD STEPHEN) 25.06.1991, the whole document.	10

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2009/000361

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US 2005259892 A	24.11.2005	US 7093978 B US 2006194684 A	22.08.2006 31.08.2006
US 4909636 A	20.03.1990	US 5011466 A CA 1312847 C	30.04.1991 19.01.1993
FR 802430 A	04.09.1936	NONE	-----
BE 531575 A	00-00-0000	NONE	-----
ES 8308259 A	16.11.1983	NONE	-----
ES 1003058 U U	01.07.1988	NONE	-----
AT 392806 B	25.06.1991	AT 221089 A AU 4279589 A ZA 9007528 A	15.11.1990 28.03.1991 31.07.1991
ES 2043333 T	16.12.1993	EP 0408467 AB EP 19900420299 FR 2649728 AB DE 69002710 T	16.01.1991 26.06.1990 18.01.1991 25.11.1993 25.11.1993 25.11.1993

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 2009/000361

CLASSIFICATION OF SUBJECT MATTER

B65D 30/04 (2006.01)

D03D 1/04 (2006.01)

B31B 21/14 (2006.01)