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(54) System for separation, distribution and packaging of piles of paper sheets

(57) The invention is applicable to sheets susceptible to being made from paper. It has one manufacturing roller of said sheets (6). It has one table (1) that receives blocks of sheets of paper by means of parallel channels (8) in which at least two pluralities of blocks of sheets of paper are guided, each one of these with blocks of sheets of paper adjacently positioned, towards the end area of a table (1) from which they are deposited onto a transportation machine (7) that receives blocks of sheets of paper (3) with a predeterminable number of sheets of paper; this transportation machine (7) having a longitudinal series of pushers (4) that displace various blocks of sheets of paper (3) by means of dragging on a surface of said transportation machine (7) carrying them to the packaging machine (5).

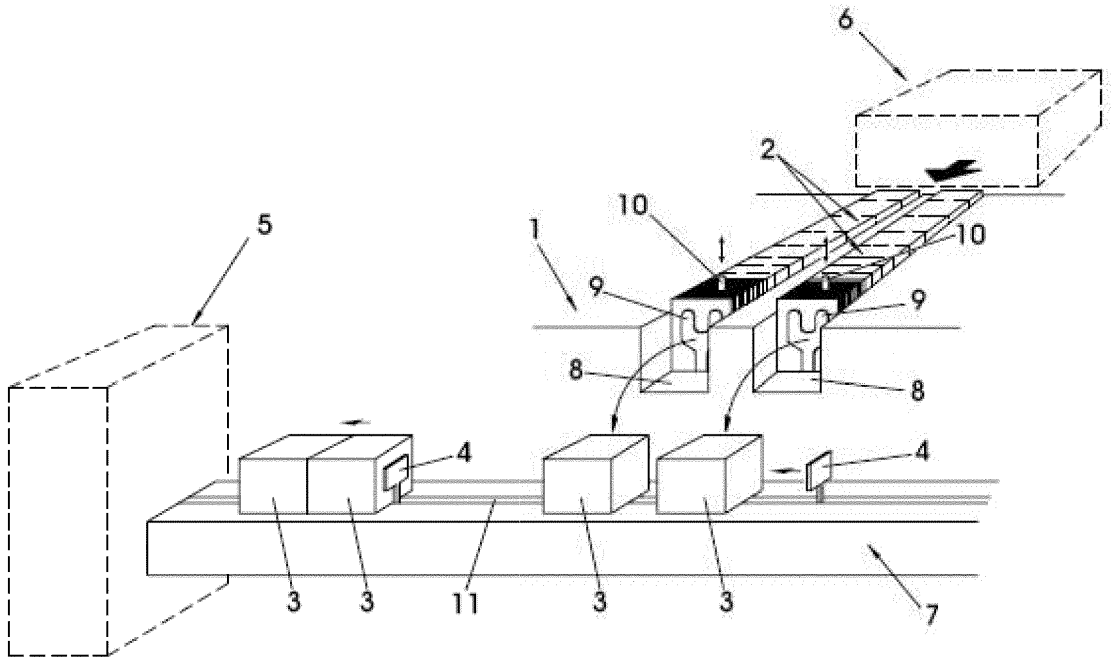

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention, as expressed in the title of this specification, relates to a system for the separation, distribution and packaging of sheets of paper, which is especially applicable to tissue paper bodies, such as serviettes, paper handkerchiefs, wipes, not ruling out the application to bodies of other types of paper, such as laminated paper, labels of various nature, and others whose sizes and material characteristics allow for incorporation into the device or prototype provided by the system of the invention; the main purpose of this system being to allow many different sizes and groupings on the bodies of paper that are to be organized, for which, the invention groups the sheets of paper of different and programmable shapes, allowing to create packages from one or more blocks of sheets, each block having a predeterminable number of sheets of paper, all of this with packaging machines and rollers, either conventional or forecoming, for manufacturing sheets of paper, for which the invention features a grouping table of blocks of sheets of paper and a block transportation machine placed in connection with said table, so that the rollers for manufacturing sheets and the packaging machine are positioned at the ends of the assembly that said table and transportation machine form.

BACKGROUND OF THE INVENTION

[0002] The use of rollers for manufacturing sheets of paper such as serviettes and others is known, where the sheets of paper are dispensed already folded to be deposited on a hand work table, where operators manipulate the corresponding serviettes or sheets of paper for grouping them into sales packages performed with different blocks and different numbers of units of sheets per block. This has the major drawback of having to employ people for very monotonous tasks for which the majority of the useful working life population does not take part in, apart from the excessive costs and errors that occur in the packaging performed with operators.

[0003] On the other hand, a registered device known as utility model with application number ES 20030002186 U that provides a roller for manufacturing sheets of paper, said register entitled "TRANSFER DEVICE BETWEEN A SERVIETTE CUTTER AND A PACKAGER"; the same consisting, as expressed in its first claim, in a "device for the transfer between a serviette cutter and a packager", which being especially used in the serviettes used in bars and similar establishments, obtained in a cutting machine at the expense of a continuous paper roll that is fragmented both lengthways and transversely, it is **characterized in that** it consists in a spiral roller, located at the exit of the cutting machine and duly synchronized with the cutting rollers of the latter, defining in said roller, a plurality of radial and spirally arched bearings, receivers of respective transversal alignments of serviettes, while below said spiral roller a stacking stopper is located for various blocks of transversally aligned serviettes, the stopper being vertically displaceable and which, receiving the serviettes from the spiral roller, transfers them once counted, to a conveyor belt that supplies them to the packaging machine.

[0004] Said register, utility model ES 20030002186 U is the closest background to the invention that we know and provides a good system for transferring the serviettes from a production roller of serviettes to a packaging machine; However, presenting drawbacks as far as versatility and flexibility are concerned in the organization of the sheets of paper or serviettes as great as those provided by the system of the invention, thus not being applicable to many models of manufacturing or packaging machines for sheets of paper, on account of these models being very old, very modern or simply incompatible with this transfer device.

[0005] There are no known systems in the current state of the art for separation, distribution and packaging of sheets of paper that has a table which receives blocks of sheets of paper and is connected with a transportation machine, as does the system of the present invention.

DESCRIPTION OF THE INVENTION

[0006] The invention relates to a system for the separation, distribution and packaging of sheets of paper applicable to serviettes, labels, tissues, wipes and other sheets susceptible to be made from paper. The present invention has a manufacturing roller for manufacturing sheets of paper located at the exit of a cutting machine and synchronized with said cutting machine, whereby said manufacturing roller feeds sheets of paper that are aligned and divided into blocks of predeterminable amounts by introducing multiple dividers, and are released upon depositing said blocks onto a conveyor belt or transportation machine that carries the blocks to a packaging machine.

[0007] As a novelty, according to the invention, the system itself has a table that receives blocks of sheets of paper by means of parallel channels wherein at least two pluralities of blocks of sheets of paper, each one of these with blocks of sheets of paper positioned adjacently, are guided towards an end area of the table from being deposited on a transportation machine that receives blocks of sheets of paper with a predeterminable number of sheets of paper; this transportation machine has a longitudinal series of pusher elements that displace several blocks of paper sheets by dragging, on a surface of said transportation machine carrying them towards the packaging machine.

[0008] According to a preferred embodiment of the invention, each block of sheets of paper is formed by means of a separator or divider element in the mentioned end area of the table; in such a way that by elevation of said pivot, it is positioned at the exit of said sheets of

paper of the manufacturing roller, thus, once the predetermined number of sheets of paper that form the desired unit has been deposited, the divider element is horizontally displaced from its initial position towards the transportation table being intercalated between the sheets of paper, forming blocks with the predetermined number of sheets of paper, received on a table with parallel channels wherein at least two pluralities of blocks of sheets of paper adjacently positioned, are guided, towards the end area of the table where the said block of sheets of paper is detected and, by means of unloading arms, is deposited on the transportation machine, providing said divider elements and arms of regulation means synchronized with the pusher elements of the transportation machine.

[0009] On the other hand, according to the previous embodiment of the invention or others, the transportation machine has a plurality of pusher elements that displace by protruding through a slot made in a flat surface, facilitating said dragging of the blocks of sheets of paper; the existing separation between every two of said pusher elements being greater than the width with which the blocks coming from said, at least two pluralities are deposited in the mentioned transportation machine.

[0010] According to diverse embodiments of the invention, the forward direction of the pusher elements of the transportation machine may be arranged orthogonal to the forward direction of the sheets of paper via the mentioned channels.

[0011] With the structure described, the invention presents advantages relative to the fact that it allows a much more flexible and versatile distribution and separation of the corresponding sheets of paper, whether they are labels, serviettes, paper handkerchiefs or others, providing sales units with different sizes with respect to the number of blocks and number of sheets of paper per block according to the requirements of the diverse purchasers, companies or others interested in the acquisition of said sheets of paper.

[0012] Another very significant advantage of the present invention is that very diverse rollers for manufacturing sheets of paper can be used, both those that are almost obsolete as well as those that are more modern and possible future and novel rollers for manufacturing sheets of paper; the invention being equally applicable to almost obsolete packaging machines, the most recent provided by current technology, and other possible future packaging machines that may arise, since the invention is not limited to specific models, but rather is an architecture, not only theoretic, but with a developed prototype, of the separation, distribution and preparation for packaging of sheets of paper.

[0013] In order to facilitate a better understanding of this specification and forming an integral part of the same, below are some figures, which, by way of non-limitative example, represent the object of the invention.

BRIEF DESCRIPTION OF THE FIGURES

[0014]

Figure 1.- Shows a schematic diagram of the system for the separation, distribution and packaging of sheets of paper, embodying the present invention.

Figure 2.- Shows a side view of a possible roller for manufacturing sheets of paper that can be applied to the system of the invention.

Figure 3.- Shows different views of the design of the divider element of the sheets of paper that is applied to the system of the invention.

DESCRIPTION OF AN EMBODIMENT OF THE INVENTION

[0015] The following is a description of an embodiment of the invention making reference to the figures.

[0016] First, in the text of this section, is a list of the aforementioned references with their meanings:

1. Table.
2. Transportation lines of blocks of sheets of paper.
3. Block of sheets of paper.
4. Pusher element for blocks of sheets of paper.
5. Packaging machine.
6. Manufacturing Roller for manufacturing sheets of paper.
7. Transportation machine.
8. Transportation machine channel.
9. Unloading arms.
10. Transporter Divider element, transporter of sheets of paper.
11. Slots for the crossing of the pusher elements 4.

[0017] Thus, as observed in figure 1, the system of the embodiment of the invention that is shown in this section has a packaging machine 5 and a manufacturing roller for manufacturing sheets of paper 6 that are represented by a dotted line in said figure 1 and by way of functional blocks since they are not elements that have been fully defined previously in the present invention, it is possible to use different manufacturing rollers 6 and packaging machines 5 applied to the elements of the invention that are schematically shown in the references in figure 1.

[0018] The invention that is represented in figure 1, according to one of the possible embodiments, has a table 1 that receives blocks of sheets of paper by means of parallel channels 8 in which two pluralities of blocks of sheets of paper are guided, each one of these with blocks of sheets of paper positioned adjacently, towards an end area of the table 1 from which they are deposited onto a transportation machine 7 that receives blocks of sheets of paper 3 with a predeterminable number of sheets of paper, as shown in figure 1.

[0019] Furthermore, in the transportation machine 7, there is a longitudinal series of pusher elements 4 that

displace a number of blocks of sheets of paper 3 by means of dragging on a surface of the transportation machine 7 to carry them towards the corresponding packaging machine 5.

[0020] With respect to those elements that may be very diverse and that are previously mentioned, that is, the manufacturing roller of the sheets of paper 6 and the packaging machine 5, it should be noted that the manufacturing roller of the sheets of paper may be used for wipes, paper handkerchiefs, serviettes and other tissue paper, as with the manufacturing roller for manufacturing sheets of paper 6 shown in figure 2, this manufacturing roller 6 being placed at the exit of a cutting machine and synchronized with cutting rollers of said cutting machine, in such a way that the manufacturing roller 6 supplies blocks of sheets of paper that are aligned and held by means of stoppers that are released upon dispensing said blocks onto the parallel channels 8 of the table 1, instead of the conveyor belt, which, according to the state of the art carries them towards the packaging machine 5.

[0021] In the embodiment of the present example, it is foreseen that each block of sheets of paper 3 be resized by means of a transporter divider element 10, which is inserted between the sheets of paper as soon as they are delivered by the manufacturing roller 6 in the mentioned end area of the table 1, as shown in figure 1. Through the positioning of said element 10 the mentioned predeterminable number of sheets of paper is created, receiving them from the manufacturing roller 6, prior to producing the deposition of each block of sheets of paper 3, by means of folding of the plate 10b of the said divider element 10, and unloading arms 9 that deposit each block of sheets of paper 3 onto the transportation machine 7.

[0022] In the present example, the mentioned divider element 10 and arms 9 have regulation measures synchronized with the pusher elements 4 of the transportation machine 7 which are governable from a control screen.

[0023] Furthermore, in this present example, the transportation machine 7 has a plurality of pusher elements 4 which are displaced protruding through a slot 11 made in the flat surface facilitating said dragging of the blocks of sheets of paper 3, in such a way that the small space that remains between every two blocks 3 due to the separate channels 8, is mechanically eliminated in the dragging upon pressing the corresponding pusher element 4 to the first block 3 it comes into contact with.

[0024] The existing separation between every two pusher elements 4 is greater than the width with which the blocks 3 coming from the channels 8 are deposited on the transportation machine 7, so that each pusher element 4 drags two adjacent blocks 3 towards the packaging machine; allowing to establish a variable number of pusher elements 4, according to the length sizes that the transportation machine 7 requires.

[0025] Furthermore, in the embodiment shown in this section, the forward direction of the pusher elements 4 of the transportation machine 7 is arranged orthogonal to the forward direction of the sheets of paper via the mentioned channels 8.

Claims

1. System for the separation, distribution and packaging of sheets of paper, applicable to serviettes, labels, tissues, wipes and other sheets susceptible to be made from paper, having a manufacturing roller for manufacturing sheets of paper (6) located at the exit of a cutting machine and synchronized with said cutting machine, whereby said manufacturing roller (6) feeds sheets of paper that are aligned and held by means of transporter divider elements (10) that are released upon creating said blocks onto a conveyor belt or transportation machine that carries the blocks towards a packaging machine (5); **characterized in that** it has a table (1) which receives blocks of sheets of paper via parallel channels (8) wherein at least two pluralities of blocks of sheets of paper, each one of these pluralities having blocks of sheets of paper adjacently positioned, are guided towards an end area of the table (1) from which they are deposited onto the transportation machine (7) that receives blocks of sheets of paper (3) with a predeterminable number of sheets of paper; the transportation machine (7) having a longitudinal series of pusher elements (4) that displace several blocks of sheets of paper (3) by dragging, on a surface of said transportation machine (7) carrying them towards the packaging machine (5).

2. System for the separation, distribution and packaging of sheets of paper, according to claim 1, **characterized in that** each of the blocks of sheets of paper (3) is elaborated with the help of a divider element (10) of the mentioned end area of the table (1); in a way that by elevation of said element (10) to the position of the reception of the manufacturing roller (6) the mentioned predeterminable number of sheets of paper is received, prior to unloading arms (9) deposit each resized block (3) onto the transportation machine (7); said transporter divider elements (10) and unloading arms (9), being provided with regulation means which are synchronized with the pusher elements (4) of the transportation machine (7) and are governable from a control screen.

3. System for the separation, distribution and packaging of sheets of paper, according to claim 1 or 2, **characterized in that** the transportation machine (7) has a plurality of pusher elements (4) that are displaced by protruding through a slot (11) made in a flat surface, facilitating the mentioned dragging of the blocks of sheets of paper (3); the existing separation between every two of said pusher elements (4) being greater than the width with which the blocks

(3) coming from said, at least two pluralities are deposited onto the mentioned transportation machine (7).

4. System for the separation, distribution and packaging of sheets of paper,
according to any combination of the previous claims, **characterized in that** the forward direction of the pusher elements (4) of the transportation machine (7) is positioned, via the mentioned channels (8), orthogonal to the forward direction of the sheets of paper.

5. System for the separation, distribution and packaging of sheets of paper,
according to any combination of the previous claims, **characterized in that** the divider element (10) is formed by two plates (10a) and (10b), joined together, the tab (10a) being fixed and the tab (10b)folding at 90° with respect to the former.

6. System for the separation, distribution and packaging of sheets of paper, according to any combination of the previous claims, **characterized in that** each one of the divider elements (10) have means, after depositing the sheets of paper (3) onto the packaging belt (7), to be carried backwards to the initial position of the separation cycle for sheets of paper (3), by means of a lower channel, parallel to its first forward direction, until it arrives to the position of reception of new sheets of paper (3) from the manufacturing roller (6).

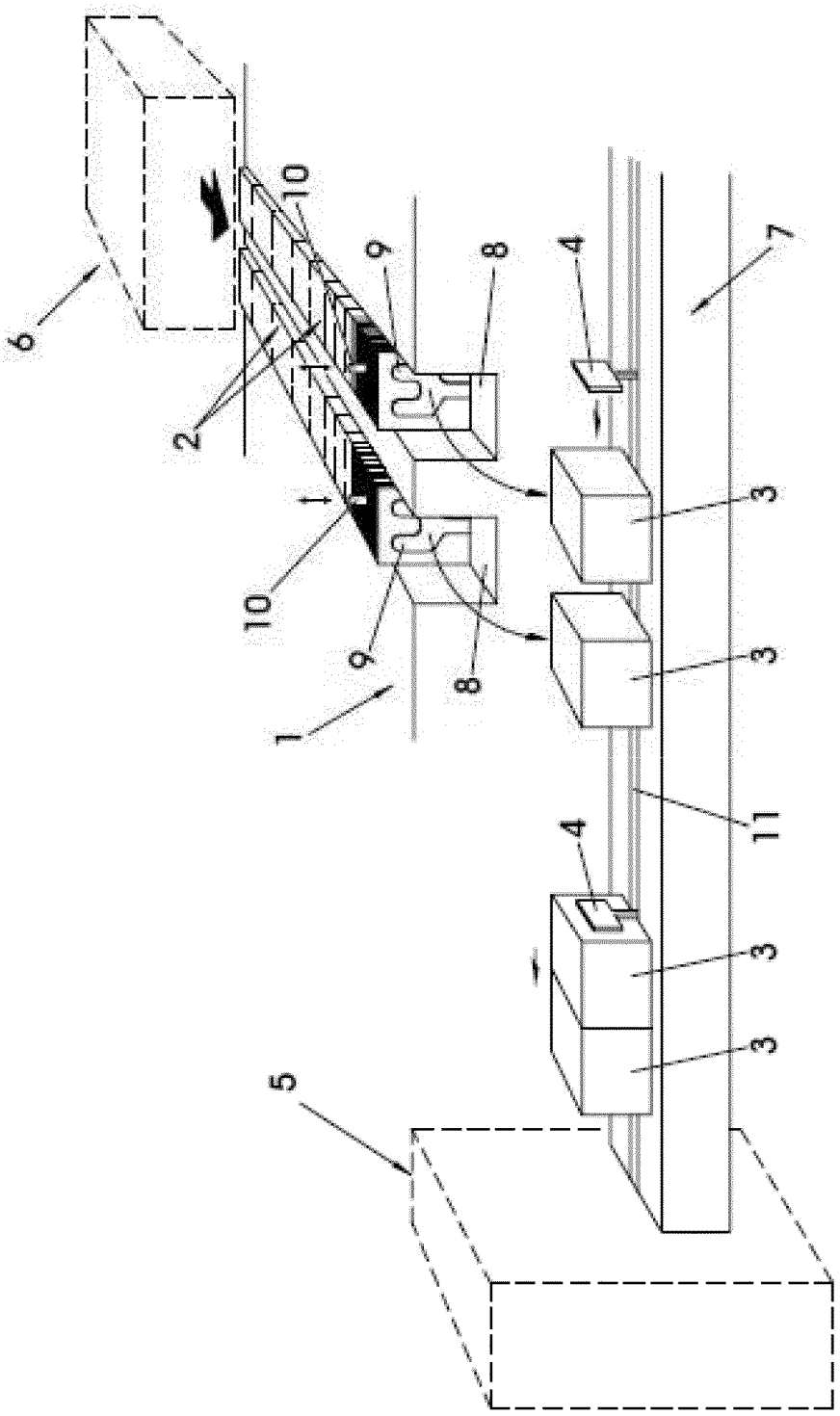

FIG. 1

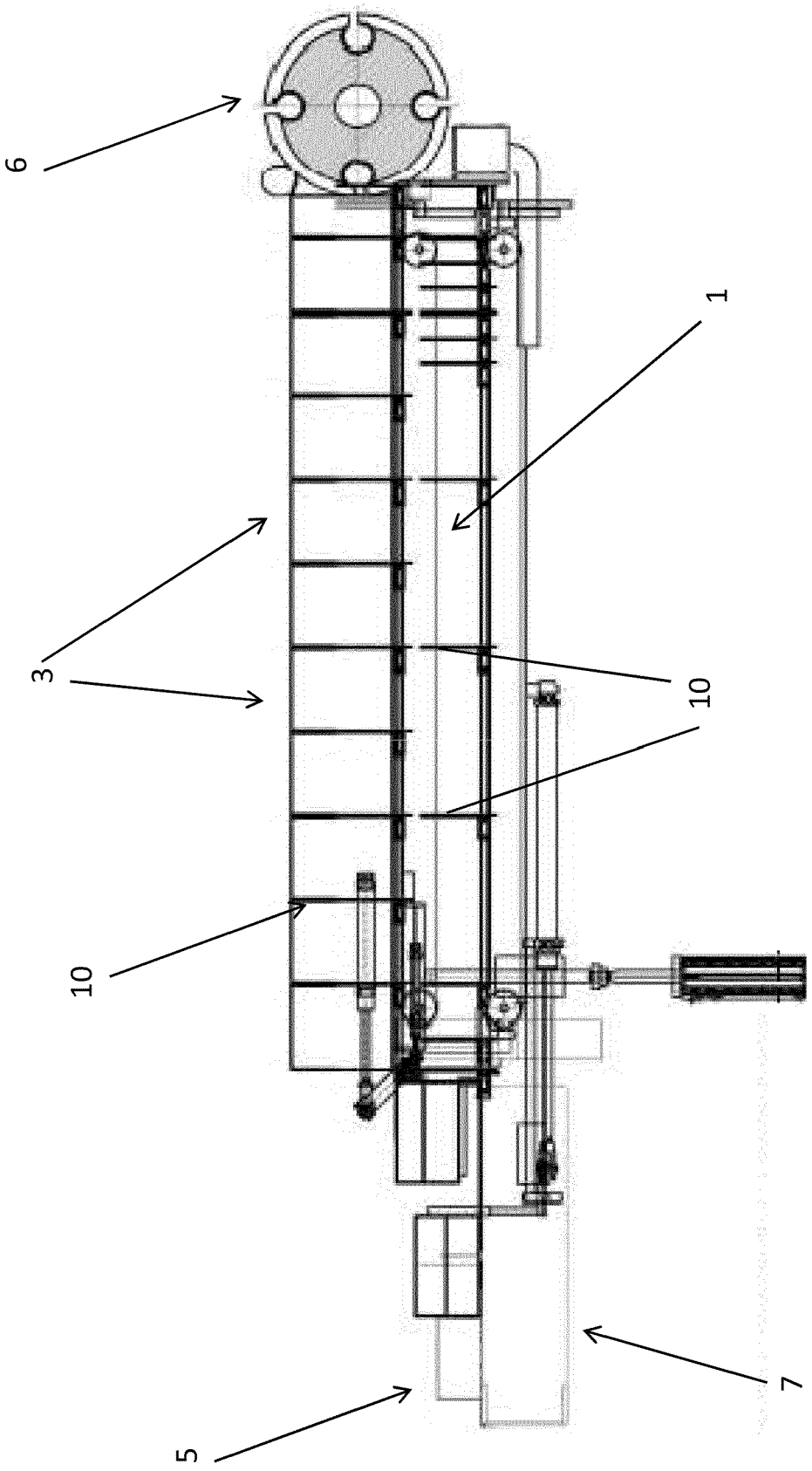

FIG. 2

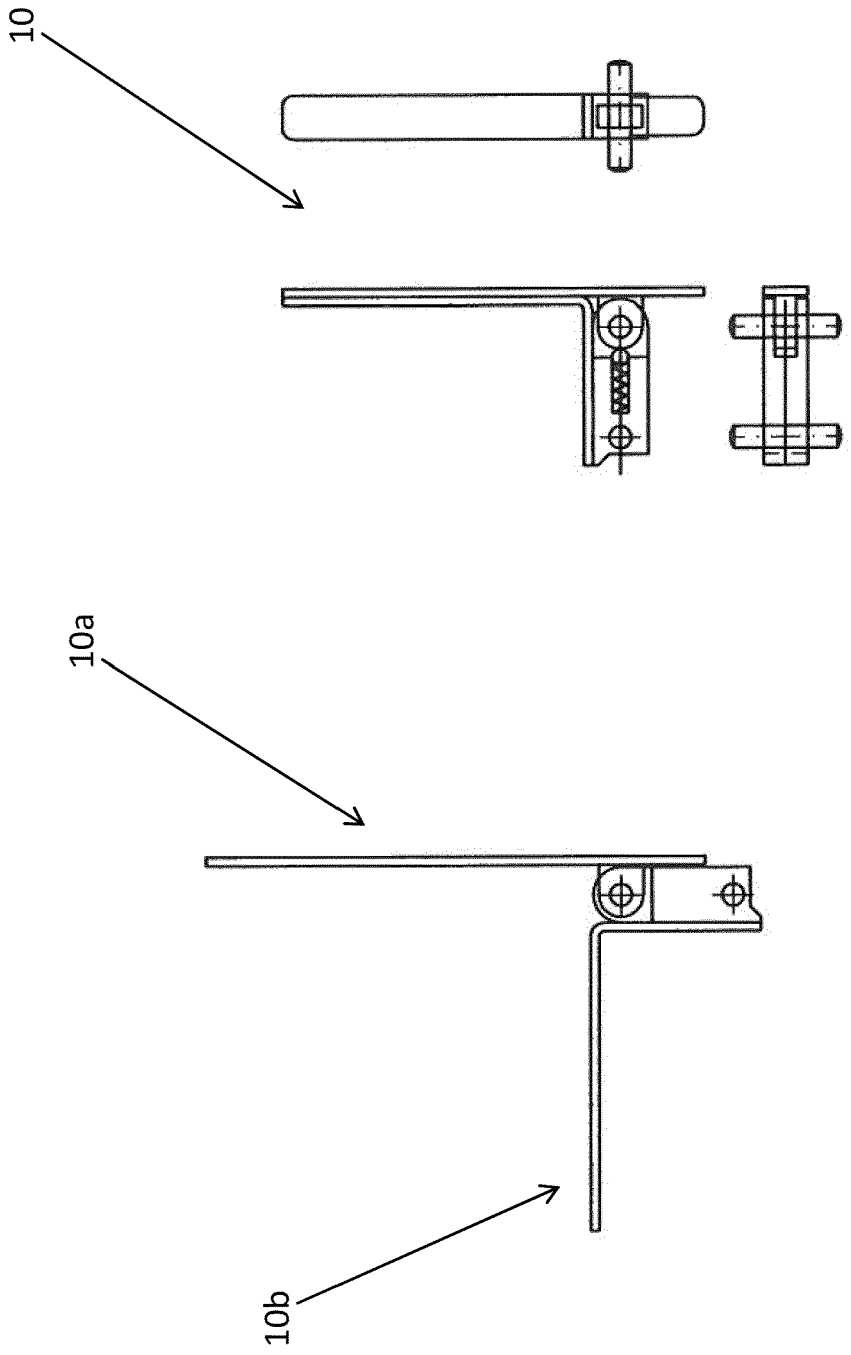

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 12 19 8364

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 148 014 A2 (OPTIMA FILLING & PACKAGING [DE]) 24 October 2001 (2001-10-24) * the whole document *	1,3,4,6	INV. B65B25/14 B65H31/06 B65H33/02 B65H33/18
Y	EP 0 371 931 A1 (OMT COSTR MECC SRL [IT]) 6 June 1990 (1990-06-06) * the whole document *	1,3,4,6	B65H31/30
Y	US 4 481 751 A (UJHELYI GASPAR [US]) 13 November 1984 (1984-11-13) * column 2, line 39 - column 3, line 10; figures 1-3A,3B *	1,3,4,6	
A	US 5 692 877 A (SIXTENSSON ROLAND [SE]) 2 December 1997 (1997-12-02) * abstract; figure 1 *	2	
A	EP 1 195 324 A1 (RENT SRL [IT]) 10 April 2002 (2002-04-10) * paragraph [0017]; figure 8 *	1,4	
			TECHNICAL FIELDS SEARCHED (IPC)
A	US 1 586 544 A (WINSLOW WHITE HENRY) 1 June 1926 (1926-06-01) * page 2, line 76 - line 37; figure 1 *	1	B65B B65H
A	DE 35 13 354 A1 (POLYGRAPH LEIPZIG [DD]) 2 January 1986 (1986-01-02) * the whole document *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 March 2013	Schelle, Joseph

CATEGORY OF CITED DOCUMENTS

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22-03-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1148014 A2	24-10-2001	AT 457285 T	15-02-2010
		DE 10019069 A1	25-10-2001
		EP 1148014 A2	24-10-2001
		ES 2340570 T3	07-06-2010
EP 0371931 A1	06-06-1990	DE 68906864 D1	08-07-1993
		EP 0371931 A1	06-06-1990
		ES 2042069 T3	01-12-1993
		IT 1225326 B	06-11-1990
US 4481751 A	13-11-1984	NONE	
US 5692877 A	02-12-1997	CA 2156053 A1	18-08-1994
		EP 0684930 A1	06-12-1995
		SE 500847 C2	19-09-1994
		SE 9300487 A	16-08-1994
		US 5692877 A	02-12-1997
		WO 9418105 A1	18-08-1994
EP 1195324 A1	10-04-2002	AT 266568 T	15-05-2004
		DE 60103223 D1	17-06-2004
		DE 60103223 T2	04-05-2005
		DK 1195324 T3	20-09-2004
		EP 1195324 A1	10-04-2002
		ES 2220642 T3	16-12-2004
		IT FI20000199 A1	03-04-2002
		PT 1195324 E	30-09-2004
US 1586544 A	01-06-1926	NONE	
DE 3513354 A1	02-01-1986	DD 224569 A1	10-07-1985
		DE 3513354 A1	02-01-1986
		IT 1183885 B	22-10-1987

EPO FORM P0459

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 20030002186 U **[0003] [0004]**