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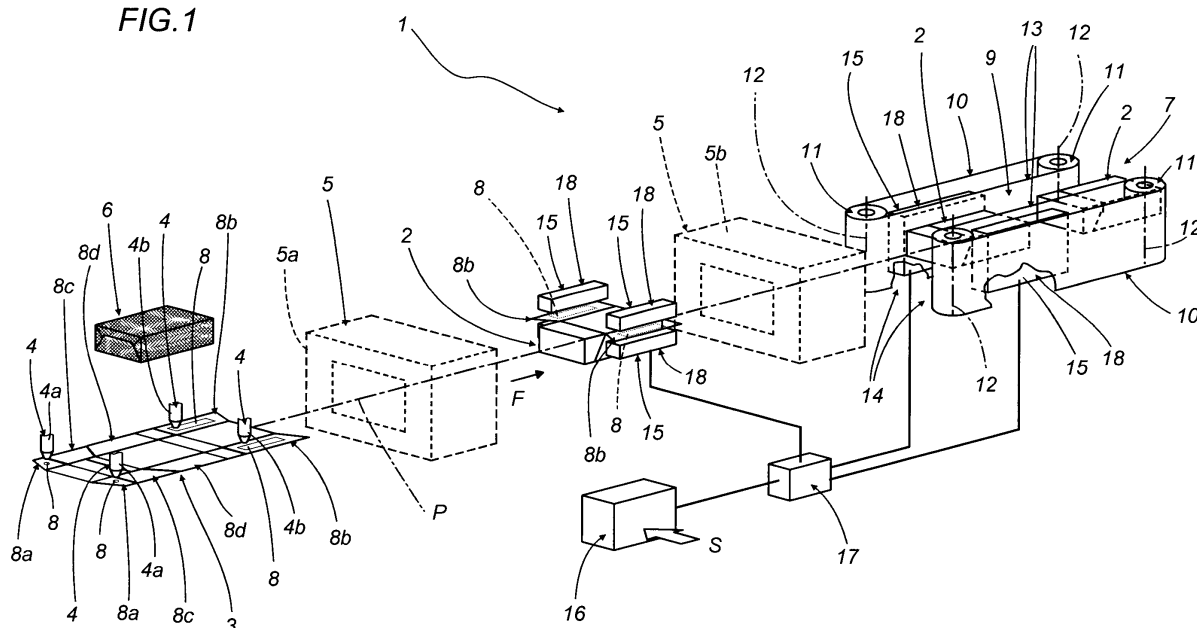
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(54) **A method and a device for the assembly of packets for tobacco products**

(57) Cigarette packets are assembled by a method that involves dabbing or spraying a cold-setting adhesive (8) onto selected areas (8a, 8b) of a blank (3) fed along the wrapping line (1) of a packaging machine, whereupon the blank (3) is folded to form a packet (2); should there be a break in operation of the machine following the application of the adhesive (8), persisting for a certain length of time (T), the method includes a heat-reactivation step whereby the adhesive (8) applied previously to the blank is warmed to a given temperature so as to restore its bonding properties and guarantee the ultimate stability of the assembled packet (2).

FIG.1



Description

[0001] The present invention relates to a method and a device for the assembly of packets for tobacco products.

[0002] Cigarette packets are composed conventionally of an inner wrapper, substantially parallelepiped in shape, fashioned generally from metal foil paper and enveloping a group of cigarettes, for example twenty in number, and an outer wrapper that can be either of rigid or of soft type.

[0003] In the case of a rigid packet, which typically has a hinged lid, the outer wrapper is fashioned from a flat diecut blank of paperboard prepared with longitudinal and transverse crease lines and cuts serving to delimit a plurality of panels and flaps that will combine, after a succession of folding operations, to form the structure of the outer wrapper.

[0004] In the case of a soft packet, the outer wrapper is again fashioned by completing a succession of folding operations, in this instance on a sheet of pliable paper separated by a cutting operation from a continuous strip decoiled from a respective roll.

[0005] Machines of prior art type able to manufacture such packets comprise a wrapping line equipped with infeed stations supplying the blanks or the sheets of paper, a station at which groups of cigarettes enveloped each in a relative inner wrapper of metal foil paper are taken up and paired with respective blanks or sheets of paper, a plurality of folding stations, and outfeed conveyor means from which the finished packets pass on to further machines.

[0006] Such machines are equipped with gluing devices, upstream of the folding means, that will spread or spray an adhesive substance onto selected portions of the wrapping material.

[0007] With the folding steps completed, the adhesive dries to the point of setting and the outer wrapper can thus be rendered stable.

[0008] Conventionally, where the adhesive employed is a cold-setting type, such as a vinyl or similar glue, it will require a certain length of time to dry to the point of setting, and accordingly, to ensure the outer wrapper can be properly stabilized during the course of this drying and setting interval, the packets must be subjected to the action of suitable restraint means, applied at least to the areas that have been glued.

[0009] To this end, the finished packets emerging from the aforementioned wrapping line can be directed, for example, along an outfeed channel consisting typically in pair of conveyor belts, each looped around two respective return pulleys of which one at least is power driven. The active branches of the two belts are offered in contact to the flank faces of the assembled packet and extend mutually parallel, delimiting the aforementioned outfeed channel and functioning as the restraint means. In addition, the machine will generally incorporate heated metal plates breasted with the reverse sides of the active branches, so that the flank faces of the packets, glued previously with the cold-setting adhesive, can be warmed in such a way as to bring about the curing process (evaporation of water) and the resulting stabilization of the outer wrapper more quickly.

[0010] In the event of a break in production occurring and the machine being brought to a standstill, so that the time elapsing from the moment when the adhesive is applied to the moment when the glued portions are bent and joined becomes long enough for the bonding properties of the adhesive to be degraded, the packets emerging from the restraint means may lose their stability and certain of the glued and joined parts may separate and lift, with the result that the packets are rendered defective and must be discarded.

[0011] The object of the present invention is to provide a method and a device for use in the assembly of packets containing tobacco products, such as will be unaffected by the drawbacks described above.

[0012] One particular object of the invention is to set forth a method and a device used in the assembly of packets for tobacco products such as will guarantee that all packets assembled are guaranteed free of gluing defects, regardless of any machine stoppages attributable, for example, to technical problems or maintenance requirements.

[0013] The stated object is realized in a method and a device according to the present invention for the assembly of packets for tobacco products, of which the features are as recited in one or more of the appended claims.

[0014] The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- figure 1 illustrates a portion of a wrapping line on which packets for tobacco products are assembled by the method according to the present invention, viewed schematically and in perspective;
- figure 2 shows a constructional example of the line in figure 1.

[0015] With reference to the drawings, numeral 1 denotes a portion of a wrapping line, in its entirety, on which packets 2 for tobacco products are assembled in a packaging machine.

[0016] The wrapping line follows a predetermined path P along which sheets 3 of wrapping material, referred to commonly as blanks, or diecuts, are caused to advance in succession by suitable feed means of conventional embodiment (not illustrated in the drawings), following a feed direction denoted F.

[0017] Located along the aforementioned wrapping path P are components 4 serving to apply a layer or dab of cold-setting adhesive, denoted 8, on selected areas of the wrapping material, and folding means 5 such as will fashion an

enclosed packet about a relative group 6 of cigarettes already enveloped, typically, in a leaf of metal foil paper.

[0018] In the example of figure 1, the wrapping line 1 passes through a first and a second folding station illustrated schematically as two blocks 5a and 5b, positioned in sequence along the line 1, and on toward an outfeed stage 7 from which the finished packet 2 emerges.

[0019] The components 4 serving to apply layers or dabs of adhesive 8, which might consist in contact or spray type gluing devices, are shown in the example of figure 1 as two pairs of gluing nozzles 4a and 4b positioned above the wrapping line and in such a way that a blank 3 passing beneath can be sprayed with adhesive on respective first lateral flaps 8a and second lateral flaps 8b that will be associated with further corresponding flaps 8c and 8d when the blank is folded.

[0020] After the nozzles 4a and 4b have deposited the cold-setting adhesive 8, the group 6 of cigarettes is placed on the blank 3 and directed thus into the first folding station 5a, whereupon the blank 3 is closed around the group 6 of cigarettes in familiar manner, neither described nor illustrated, except for the glued second lateral flaps 8b, which will be bent and secured to the corresponding flaps 8d at the second folding station 5b.

[0021] The wrapping line 1 further comprises an outfeed channel 9 placed to take up the finished packets 2 downstream of the folding means 5 and embodied as a pair of conveyor belts 10 each looped around two respective return pulleys 11 turning on vertical axes 12, of which one at least is power driven.

[0022] The active branches 13 of the two belts 10 placed in contact with the flanks of the packets 2 extend parallel one with another, delimiting the outfeed channel 9 and functioning as restraint means 14 by which the packets 2 are held firmly in such a way as to stabilize the outer wrapper satisfactorily.

[0023] The device according to the present invention comprises heater means 15 of which the function is to reactivate the cold-setting adhesive 8 applied to the aforementioned predetermined areas of the blank, in particular when the operating cycle of the packaging machine is interrupted for a given interval of time T, long enough for the bonding properties of the cold-setting adhesive to be lost yet short enough for the loss to be reversible by means of a heat-reactivation step.

[0024] With this end in view, the adhesive is warmed up to a predetermined reactivation temperature t_r , at which it regains the bonding properties lost during the break in the operating cycle of the machine.

[0025] More precisely, the device disclosed comprises processing means 16 such as will measure the time T elapsing in the event of a machine stoppage, when in receipt of a warning signal S from a device (not shown in the drawings) connected to the packaging machine and able to generate a start signal and a stop signal indicating the start and finish of a break in the operating cycle of the machine.

[0026] The processing means 16 consist in metering means able to measure the duration of the stoppage when the machine is idle, and are connected to the heat reactivation means 15 by way of a control unit 17 governing the operation of these same means 15.

[0027] In particular, the stoppage time T is compared by the processing means 16 with a first predetermined critical time value T1 indicating that the adhesive will have lost its bonding properties and needs to be reactivated, and with a second predetermined critical time T2 indicating that the adhesive will have deteriorated beyond recovery and even the heat-reactivation step is no longer of any use.

[0028] Should the measured stoppage time T fall between the first and second predetermined critical time values T1 and T2, then the processing means 16 will respond by piloting the control unit 17 to initiate the heat reactivation step.

[0029] In the preferred solution of figure 1, the step of heat-reactivating the cold-setting adhesive 8 is initiated after the folding step and concurrently, at least in part, with the restraint step. To this end, the heat-reactivation means 15 are associated with the restraint means 14.

[0030] In particular, the heat-reactivation means 15 comprise heated metal plates 18 breasted with the active branches 13 of the two belts 10, on the reverse side. Thus, the heat-reactivation step is brought about by associating heated restraining elements with each of the formed packets 2.

[0031] The method according to the invention might also include a cooling step, implemented following the step of reactivating the cold-setting adhesive 8 by the application of heat so as to avoid degrading the packet 2 and the warmed adhesive, through the agency of cooling plates installed in series with the heated plates 18 and breasted with the reverse faces of the active branches 13. The plates could operate at ambient temperature, by way of example, or could be suitably cooled.

[0032] Finally, the wrapping line could also incorporate means by which to dry the packets 2, downstream of the heat-reactivation means 15.

[0033] The drying means, conventional in embodiment and therefore not illustrated, will comprise further plates dedicated to the drying step, located beyond the heated plates 18 and, if installed, the cooling plates.

[0034] Such drying plates would be breasted likewise with the active branches 13 of the belts 10 dedicated to heat-reactivation of the adhesive, on the reverse side, or alternatively mounted to other belts located further along the wrapping line.

[0035] The drying plates operate at a temperature t_d lower than the reactivation temperature t_r of the heated plates 18.

[0036] In an alternative solution, not illustrated, the drying plates and the heated plates 18 could be one and the same, operating at different temperatures controllable selectively according to whether the plates are being utilized at a given moment to dry or to reactivate the adhesive 8.

[0037] Alternatively, or in addition, to the elements described above, the means 15 for heat-reactivation of the adhesive can be positioned upstream of the folding means 5, coming into operation before the folding step, or, if the folding means 5 comprise a plurality of folding stations 5a and 5b as in the example of figure 1, the heat-reactivation means 15 can be positioned, additionally or alternatively, between one folding station 5a and the next folding station 5b.

[0038] The positioning and number of heat-reactivation means 15 will depend in any event on the effective structure of the device and the interval of time elapsing between application of the cold-setting adhesive to the predetermined areas of the blank, and subsequent association of these same areas with the respective areas to which they are bonded.

[0039] The heat-reactivation step could also be brought about by exposing the areas dabbed or sprayed with adhesive to convection, directing hot air from a convector heater, for example, or to radiated heat issuing from a suitable source.

[0040] In the example of figure 2, the final part of the wrapping line is equipped with a wrapping wheel 19 set in rotation about a first horizontal axis 20, a conveyor and reject wheel 21 located substantially tangential to the wrapping wheel 19 and rotatable about a second horizontal axis 22, also a drying wheel 23 rotatable about a third horizontal axis 24 and an outfeed channel 9a similar in all respects to the outfeed channel 9 of figure 1.

[0041] The channel 9a in question extends substantially parallel to the third horizontal axis 24 and is positioned on the same side of the drying wheel 23 as the wrapping and reject wheels 19 and 21.

[0042] The wrapping wheel 19 is supplied with diecut blanks 3 advanced singly and in succession by feed means indicated schematically by an arrow 26, each slotted radially into a respective radial cavity or pocket (not illustrated) of the wheel 19, together with a respective group 6 of cigarettes.

[0043] Advancing on the wrapping wheel 19, the blanks 3 are directed from an infeed station 27 through a plurality of folding stations 5, at which each one is bent by steps around the respective group 6 of cigarettes and secured in the folded position by means of the cold-setting adhesive, applied by two pairs of gluing nozzles 4a and 4b similar to those already described above with reference to figure 1.

[0044] In the example of figure 2, the nozzles 4a and 4b are positioned beneath the predetermined path P and designed thus to spread the adhesive 8 on a blank 3 as it passes above.

[0045] The folding steps performed on the blank 3 are completed in such a way that the packet arrives at the outfeed channel 9 in the finished state.

[0046] The wrapping, reject and drying wheels 19, 21 and 23 are set in rotation by an indexing device not illustrated in the drawings, and the transfer of the packets 2 from one wheel to another takes place with the two wheels motionless.

[0047] The aforementioned heat-reactivation means 15 are positioned next to the wrapping wheel 19 and/or to the outfeed channel 9a.

[0048] The wrapping line of figure 2 is equipped with cooling plates 28 of the type mentioned previously, though not indicated in figure 1, installed along the outfeed channel 9a in sequence with the heated plates 18.

[0049] Also illustrated in figure 2, by way of example, are a plurality of heating elements 15a located at several points along the circumferential path of the wrapping wheel 19, albeit in practice a limited number of such elements could be adopted, according to requirements, shaped and proportioned to match the glued areas of the blank 3 that need heating. The heating elements 15a are placed in such a way that, as the blank 3 advances and folds partially around the group 6 of cigarettes, the predetermined areas on which adhesive 8 has been deposited will pass in close proximity to the positions occupied by the elements 15a and receive the heat emitted by them.

[0050] It will be evident from the foregoing that the method and the device according to the invention are able to guarantee the successful gluing and stabilization of packets even in the event of breaks in production occurring.

[0051] In effect, by warming the glued portions of the outer wrapper, after the formation of the packet, or between the step of applying the adhesive and the subsequent folding step, it becomes possible to recover the bonding properties of the adhesive when lost due to a break in production and thus ensure that all of the packets are securely bonded.

[0052] With the method and the device according to the invention, accordingly, the proportion of defective packets rejected as presenting unstuck folds can be considerably reduced, if not totally eliminated.

[0053] In an alternative embodiment of the invention, the adhesive 8 could be heat-reactivated utilizing means 15 that remain permanently in operation, even during normal operation of the packaging machine, in such a manner that all packets 2 turned out by the machine can be conditioned at the reactivation temperature t_r . In this instance the wrapping line will be set up so that all the packets 2 have time to cool sufficiently, following the application of heat, before being distanced from the elements (the belts 10, for example) that serve to stabilize the glued outer wrapper.

Claims

1. A method of assembling packets for tobacco products directed along a wrapping line (1) of a packaging machine

equipped with feed means supplying a wrapping material (3) from which the packets (2) are made, including the step of applying a layer or dab of cold-setting adhesive (8) to predetermined areas (8a, 8b) of the wrapping material (3), and the step of folding the wrapping material (3) to form a packet,

characterized

in that it further includes at least one step of reactivating the cold-setting adhesive (8) applied to the predetermined areas (8a, 8b), by exposing the selfsame areas to heat, at a predetermined reactivation temperature (t_r).

2. A method as in claim 2, including a cooling step following the heat-reactivation step.

3. A method as in claim 1 or 2, wherein the heat-reactivation step is implemented on all packets (2) assembled by the packaging machine.

4. A method as in claims 1 to 3, wherein the heat-reactivation step is initiated following a break in the operation of the packaging machine lasting for a predetermined interval of time (T_1 - T_2).

5. A method as in claims 1 to 4 including a step, following the folding step, of restraining the packets (2), wherein the step of reactivating the cold-setting adhesive (8) by exposure to heat occurs concurrently, at least in part, with the restraining step.

6. A method as in claims 1 to 5, wherein the heat-reactivation step is implemented by means of heated restraint elements.

7. A method as in claim 1, wherein the heat-reactivation step precedes the folding step.

8. A method as in claim 1 or 7, wherein the heat-reactivation step occurs during the course of the folding step.

9. A method as in claim 7 or 8, wherein the heat-reactivation step is implemented by radiating heat on the predetermined areas (8a, 8b) to which the cold-setting adhesive (8) has been applied.

10. A method as in claims 1 to 9, wherein the heat-reactivation step occurs as the wrapping material (3) advances along the wrapping line (1).

11. A method as in claims 1 to 10, further including the steps of measuring the length of time (T) elapsing during a break in operation of the packaging machine, and comparing the resulting stoppage time (T) with the predetermined interval of time (T_1 - T_2) between a first predetermined critical time value (T_1) and a second predetermined critical time value (T_2), within which any degradation of the cold-setting adhesive (8) and consequent loss of bonding properties can be reversed by implementing the heat-reactivation step.

12. A device for the assembly of packets for tobacco products, comprising feed means by which a wrapping material (3) is advanced along a wrapping line (1) of a packaging machine, means (4) by which to apply a layer or a dab of cold-setting adhesive (8) to predetermined areas (8a, 8b) of the wrapping material (3), and folding means by which the wrapping material (3) is formed into a packet,

characterized

in that it further comprises heater means (15) serving to reactivate the cold-setting adhesive (8) applied to the predetermined areas (8a, 8b), by exposure of the selfsame areas to heat, at a predetermined reactivation temperature (t_r).

13. A device as in claim 12, comprising cooling means (28) located downstream of the heater means (15) along the feed direction followed by the wrapping material (3) and serving to cool at least the predetermined areas (8a, 8b) exposed previously to the action of the heater means (15).

14. A device as in claim 12 or 13, wherein the action of the heater means (15) is applied to all of the packets (2) assembled by the packaging machine when in operation.

15. A device as in claim 12 or 13, comprising processing means (16) able to measure a stoppage time (T) resulting from a break in operation of the packaging machine and connected on the output side to a control unit (17) such as will generate a signal to activate the heater means (15) in the event that the stoppage time (T) resulting from the break in operation of the packaging machine is within a given interval of time between a first predetermined critical time value (T_1) and a second predetermined critical time value (T_2), within which any degradation of the cold-setting

adhesive (8) and consequent loss of bonding properties can be reversed by implementing the heat-reactivation step.

5 **16.** A device as in claims 12 to 15, further comprising means (14) by which to restrain the packets (2), positioned downstream of the folding means (5), wherein the cold-setting adhesive (8) is heat-reactivated by means (15) associated with the restraint means (14).

10 **17.** A device as in claim 16, wherein the restraint means (14) comprise an outfeed channel (9) delimited by the active branches (13) of two conveyor belts (10) offered in contact to the flank faces of the packets (2), and the cold-setting adhesive (8) is heat-reactivated by means (15) comprising heated plates (18) breasted with the reverse faces of the active branches (13).

18. A device as in claim 12, wherein the cold-setting adhesive (8) is heat-reactivated by means (15) positioned upstream of the folding means (5).

15 **19.** A device as in claim 18, wherein the cold-setting adhesive (8) is heat-reactivated by means (15) comprising at least one convector heater or at least one radiator.

20. A cigarette packer, comprising a device as in claims 12 to 19 and implementing the method of claims 1 to 11.

FIG.1

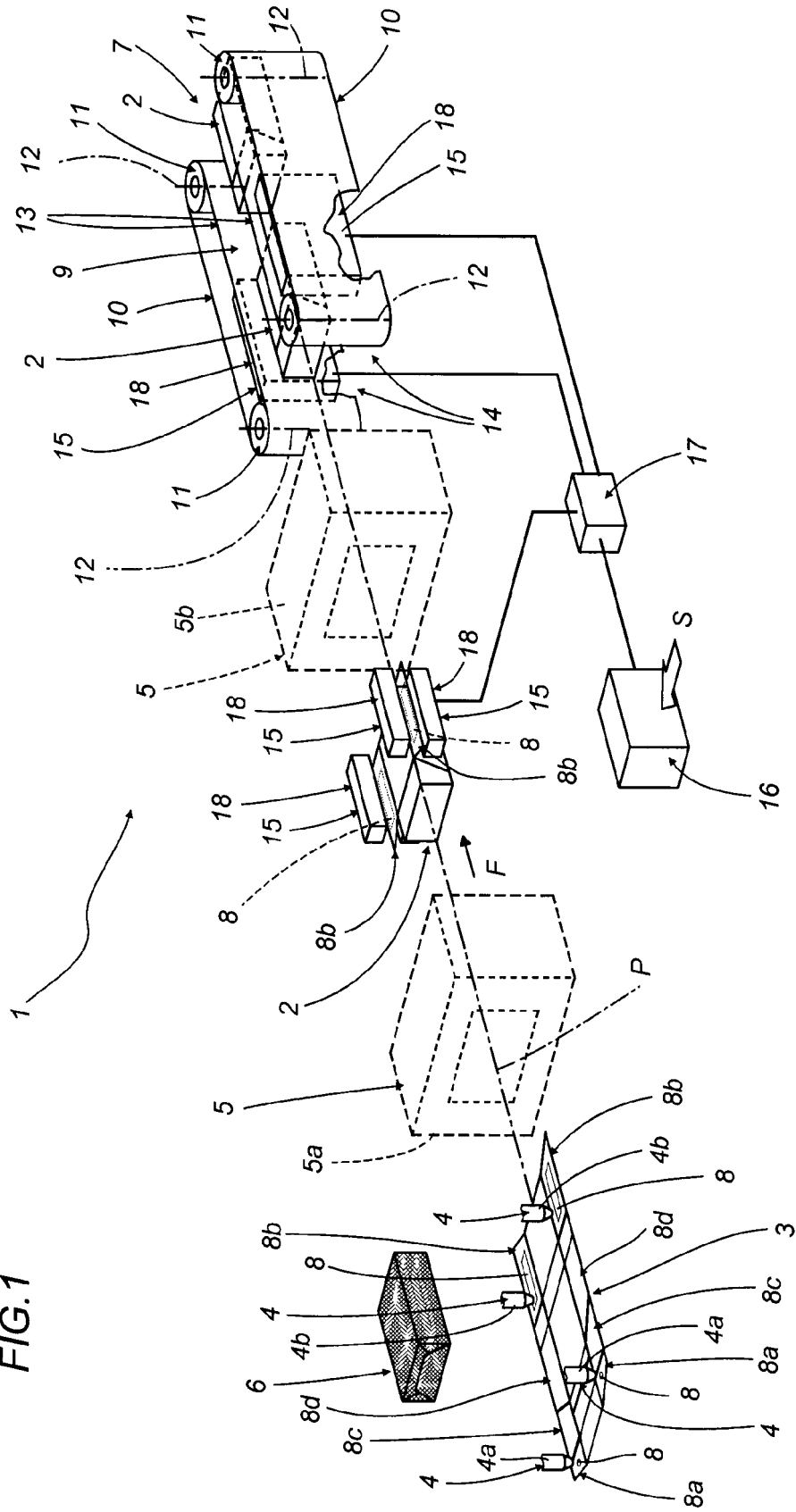
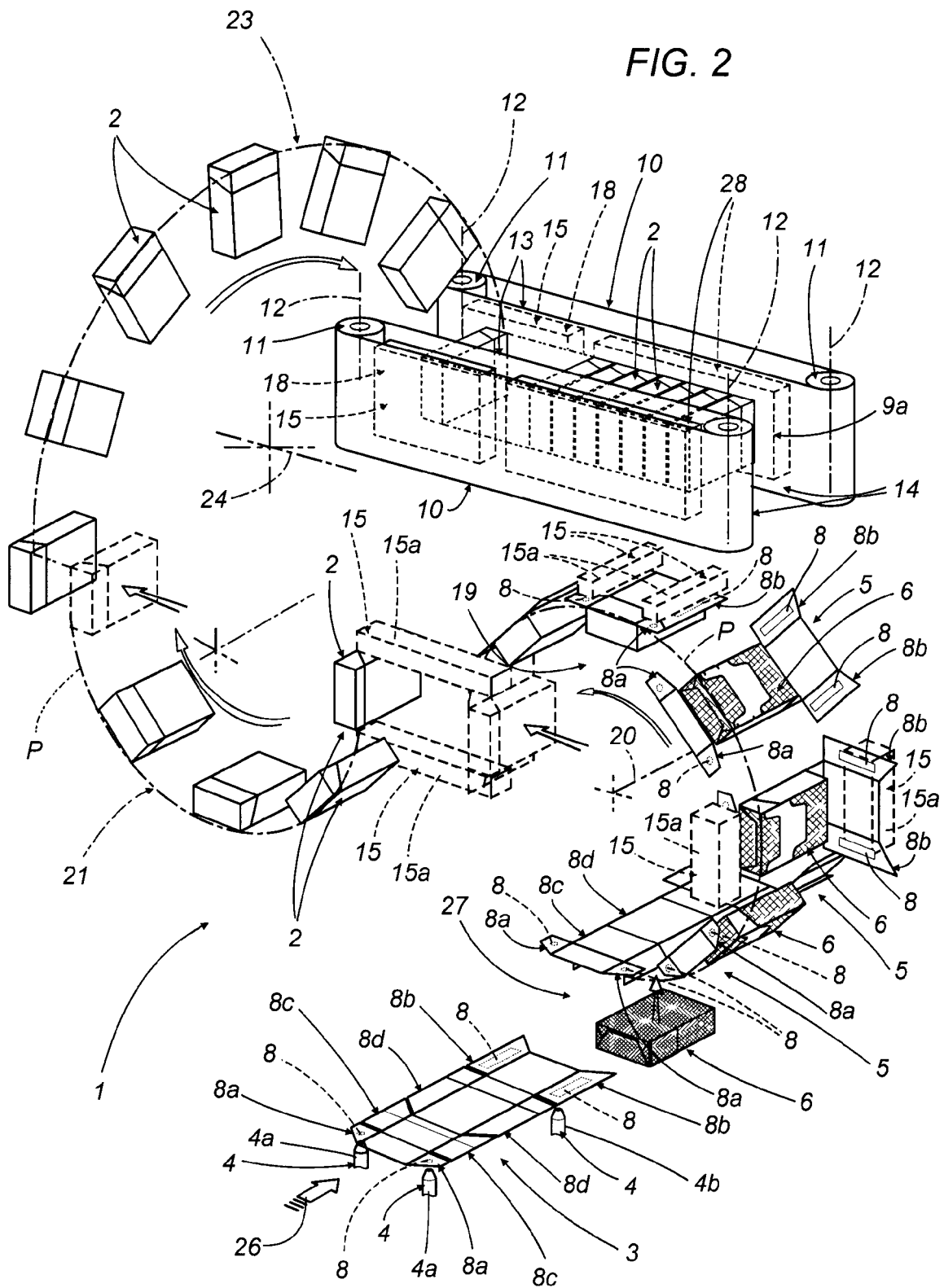


FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 11 0800

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 341 474 B1 (FÖCKE HEINZ ET AL) 29 January 2002 (2002-01-29) * column 3, line 4 - column 6, line 30; figures *	1-3,5-8, 12-14, 16,18,20	INV. B65B61/00 B65B51/02 B65B19/22
X	US 5 425 218 A (ADAMS ET AL) 20 June 1995 (1995-06-20) * column 4, line 48 - column 6, line 17; figures *	1-3,5,6, 12-14, 16,17, 19,20	
X	US 6 722 109 B1 (FÖCKE HEINZ ET AL) 20 April 2004 (2004-04-20) * column 3, line 20 - column 6, line 32; figures *	1,3,5,6, 12,14, 16,20	
X	DE 102 09 682 A1 (FÖCKE & CO) 25 September 2003 (2003-09-25) * column 2, line 59 - column 4, line 53; figures *	1,3,4,6, 7,9,10, 12,14, 18-20	TECHNICAL FIELDS SEARCHED (IPC) B65B B31B
X	EP 0 917 947 A (FÖCKE & CO.) 26 May 1999 (1999-05-26) * column 3, line 44 - column 7, line 52; figures *	1,10,12	
A	EP 0 747 289 A (SASIB S.P.A; SASIB TOBACCO S.P.A) 11 December 1996 (1996-12-11)		
A	EP 0 514 203 A (PHILIP MORRIS PRODUCTS INC) 19 November 1992 (1992-11-19)		
-/--			
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 June 2006	Examiner Jagusiak, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 11 0800

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 732 533 A (FÖCKE ET AL) 31 March 1998 (1998-03-31) -----		
A	US 5 447 014 A (ADAMS ET AL) 5 September 1995 (1995-09-05) -----		
A	US 4 559 758 A (GAMBERINI ET AL) 24 December 1985 (1985-12-24) -----		
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 June 2006	Examiner Jagusiak, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2
EPO FORM 1503 03.82 (P04C01)

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

EP 06 11 0800

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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14-06-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6341474	B1	29-01-2002	BR 9902216 A 04-01-2000
		CN 1232769 A 27-10-1999	
		DE 19814932 A1 11-01-2001	
		EP 0947445 A1 06-10-1999	
		ES 2229571 T3 16-04-2005	
		JP 11314691 A 16-11-1999	
US 5425218	A	20-06-1995	US 5447014 A 05-09-1995
US 6722109	B1	20-04-2004	AU 1382100 A 05-06-2000
		BR 9915400 A 07-08-2001	
		CN 1326410 A 12-12-2001	
		DE 19852693 A1 18-05-2000	
		WO 0029292 A1 25-05-2000	
		EP 1131246 A1 12-09-2001	
		JP 2002529291 T 10-09-2002	
DE 10209682	A1	25-09-2003	EP 1361160 A2 12-11-2003
EP 0917947	A	26-05-1999	BR 9805025 A 16-11-1999
		CN 1220941 A 30-06-1999	
		DE 19751484 A1 27-05-1999	
		JP 11222205 A 17-08-1999	
EP 0747289	A	11-12-1996	DE 69603231 D1 19-08-1999
		DE 69603231 T2 16-12-1999	
		IT GE950064 A1 09-12-1996	
		US 5766121 A 16-06-1998	
EP 0514203	A	19-11-1992	AT 149127 T 15-03-1997
		AU 656960 B2 23-02-1995	
		AU 1627092 A 19-11-1992	
		BR 9201832 A 05-01-1993	
		CA 2068568 A1 16-11-1992	
		CN 1069948 A 17-03-1993	
		DE 69217577 D1 03-04-1997	
		DE 69217577 T2 24-07-1997	
		DK 514203 T3 14-07-1997	
		ES 2097874 T3 16-04-1997	
		GR 3022721 T3 30-06-1997	
		JP 5213310 A 24-08-1993	
		KR 233230 B1 01-12-1999	
		US 5249416 A 05-10-1993	
US 5732533	A	31-03-1998	DE 19535649 A1 27-03-1997
		EP 0765811 A1 02-04-1997	

EPO FORM P0459

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

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

EP 06 11 0800

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The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-06-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5732533 A		JP 9169312 A	30-06-1997
US 5447014 A	05-09-1995	US 5425218 A	20-06-1995
US 4559758 A	24-12-1985	BR 8307264 A	13-11-1984
		DE 3347368 A1	09-08-1984
		FR 2540461 A1	10-08-1984
		GB 2134870 A	22-08-1984
		IT 1169163 B	27-05-1987
		JP 59162866 A	13-09-1984
