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

Verfahren und Vorrichtung zum Herstellen von Verpackungen für Tabakprodukte

Procédé et appareil pour assembler des paquets pour des produits du tabac

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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 conveyor 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.

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, and further including **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)**, wherein the heat-reactivation step is initiated following a break in the operation of the packaging machine lasting for a predetermined interval of time **characterised in that** the method further **includes the steps of measuring the length of time (T) elapsing during a break in operation of the packaging machine, and com-**

- paring the resulting stoppage time (T) with the predetermined interval of time (T1-T2) between a first predetermined critical time value (T1) and a second predetermined critical time value (T2), 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, the heat reactivation step initiating when the stoppage time (T) falls between the first and second predetermined critical time values T1 and T2, wherein the heat-reactivation step is implemented on all packets (2) assembled by the packaging machine.
2. A method as in claim 1, including a cooling step following the heat-reactivation step.
 3. A method as in claims 1 or 2 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.
 4. A method as in any one of claims 1 to 3, wherein the heat-reactivation step is implemented by means of heated restraint elements.
 5. A method as in claim 1, wherein the heat-reactivation step precedes the folding step.
 6. A method as in claim 1 or 5, wherein the heat-reactivation step occurs during the course of the folding step.
 7. A method as in claim 5 or 6, 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.
 8. A method as in any one of claims 1 to 7, wherein the heat-reactivation step occurs as the wrapping material (3) advances along the wrapping line (1).
 9. 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 by** further comprising 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), wherein it comprises 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 (T1) and a second predetermined critical time value (T2), 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, wherein the action of the heater means (15) is applied to all of the packets (2) assembled by the packaging machine when in operation.
 10. A device as in claim 9, 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).
 11. A device as in claims 9 or 10 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).
 12. A device as in claim 11, 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).
 13. A device as in claim 9, wherein the cold-setting adhesive (8) is heat-reactivated by means (15) positioned upstream of the folding means (5).
 14. A device as in claim 13, wherein the cold-setting adhesive (8) is heat-reactivated by means (15) comprising at least one convector heater or at least one radiator.
 15. A cigarette packer, comprising a device as in any one of claims 9 to 14 and implementing the method of any one of claims 1 to 8.

Patentansprüche

1. Verfahren zum Herstellen von Verpackungen für Tabakprodukte, die entlang einer Verpackungslinie (1) einer Verpackungsmaschine befördert werden, die mit Zufuhrmitteln ausgestattet ist, welche ein Verpa-

- ckungsmaterial (3) zuführen, aus dem die Packungen (2) hergestellt werden, beinhaltend den Schritt des Auftragens einer Schicht oder eines Tupfens von kaltabbindendem Klebstoff (8) auf vorbestimmte Bereiche (8a, 8b) des Verpackungsmaterials (3) und beinhaltend den Schritt des Faltens des Verpackungsmaterials (3) zur Formung einer Packung, und ferner zumindest einen Schritt des Reaktivierens des auf die vorbestimmten Bereiche (8a, 8b) aufgetragenen kaltabbindenden Klebstoffs (8), indem diese Bereiche bei einer vorbestimmten Reaktivierungstemperatur (t_r) Wärme ausgesetzt werden, wobei der Schritt der Wärmereaktivierung infolge einer Betriebsunterbrechung der Verpackungsmaschine eingeleitet wird, die für ein vorbestimmtes Zeitintervall andauert, **dadurch gekennzeichnet, dass** das Verfahren ferner folgende Schritte beinhaltet: Messen der Zeitdauer (T), die während einer Betriebsunterbrechung der Verpackungsmaschine verstreicht, und Vergleichen der sich daraus ergebenden Stoppzeit (T) mit dem vorbestimmten Zeitintervall (T_1 - T_2) zwischen einem ersten, vorbestimmten kritischen Zeitwert (T_1) und einem zweiten vorbestimmten kritischen Zeitwert (T_2), innerhalb dessen eine eventuelle Degradation des kaltabbindenden Klebstoffs (8) und der daraus folgende Verlust an Klebefähigkeit rückgängig gemacht werden kann, indem der Schritt der Wärmereaktivierung angewandt wird, wobei der Schritt der Wärmereaktivierung eingeleitet wird, wenn die Stoppzeit (T) zwischen den ersten und zweiten kritischen Zeitwert T_1 und T_2 fällt, wobei der Schritt der Wärmereaktivierung auf alle Packungen (2) angewandt wird, die von der Verpackungsmaschine hergestellt werden.
2. Verfahren nach Anspruch 1, das einen auf den Schritt der Wärmereaktivierung nachfolgenden Kühlungsschritt beinhaltet.
 3. Verfahren nach den Ansprüchen 1 oder 2, das einen auf den Schritt des Faltens nachfolgenden Schritt des Haltens der Packungen (2) beinhaltet, wobei der Schritt der Reaktivierung des kaltabbindenden Klebstoffs (8) durch Aussetzen von Wärme gleichzeitig, zumindest teilweise, mit dem Schritt des Haltens erfolgt.
 4. Verfahren nach einem der Ansprüche 1 bis 3, wobei der Schritt der Wärmereaktivierung durch beheizte Halteelemente angewandt wird.
 5. Verfahren nach Anspruch 1, wobei der Schritt der Wärmereaktivierung dem Schritt des Faltens vorangeht.
 6. Verfahren nach Anspruch 1 oder 5, wobei der Schritt der Wärmereaktivierung während der Ausführung des Faltschrittes erfolgt.
 7. Verfahren nach Anspruch 5 oder 6, wobei der Schritt der Wärmereaktivierung durch Abstrahlen von Wärme auf die vorbestimmten Bereiche (8a, 8b), auf die der kaltabbindende Klebstoff (8) aufgetragen wurde, angewandt wird.
 8. Verfahren nach einem der Ansprüche 1 bis 7, wobei der Schritt der Wärmereaktivierung während des Vorschubs des Verpackungsmaterials (3) entlang der Verpackungslinie (1) erfolgt.
 9. Vorrichtung zum Herstellen von Verpackungen für Tabakprodukte, umfassend Zufuhrmittel für den Vorschub eines Verpackungsmaterials (3) entlang einer Verpackungslinie (1) einer Verpackungsmaschine, Mittel (4) zum Auftragen einer Schicht oder eines Tupfens von kaltabbindendem Klebstoff (8) auf vorbestimmte Bereiche (8a, 8b) des Verpackungsmaterials (3) und Faltmittel zum Formen einer Packung aus dem Verpackungsmaterial (3), **gekennzeichnet dadurch, dass** sie ferner Heizmittel (15) umfasst, die dazu dienen, den auf die vorbestimmten Bereiche (8a, 8b) aufgetragenen kaltabbindenden Klebstoff (8) zu reaktivieren, indem diese Bereiche bei einer vorbestimmten Reaktivierungstemperatur (t_r) Wärme ausgesetzt werden, wobei sie Verarbeitungsmittel (16) umfasst, die in der Lage sind, eine Stoppzeit (T) zu messen, die sich aus einer Betriebsunterbrechung der Verpackungsmaschine ergibt, und die auf der Ausgangsseite an eine Steuereinheit (17) angeschlossen sind, welche ein Signal zur Aktivierung der Heizmittel (15) erzeugen wird, falls die sich aus der Betriebsunterbrechung der Verpackungsmaschine ergebende Stoppzeit (T) innerhalb eines gegebenen Zeitintervalls zwischen einem ersten vorbestimmten kritischen Zeitwert (T_1) und einem zweiten vorbestimmten kritischen Zeitwert (T_2) liegt, innerhalb dessen eine eventuelle Degradation des kaltabbindenden Klebstoffs (8) und der daraus folgende Verlust an Klebefähigkeit rückgängig gemacht werden kann, indem der Schritt der Wärmereaktivierung angewandt wird, wobei die Wirkung der Heizmittel (15) auf alle Verpackungen (2) angewandt wird, die von der Verpackungsmaschine während des Betriebs hergestellt werden.
 10. Vorrichtung nach Anspruch 9, umfassend Kühlmittel (28), welche entlang der von dem Verpackungsmaterial (3) verfolgten Zufuhrrichtung hinter den Heizmitteln (15) angeordnet sind und dazu dienen, zumindest die vorbestimmten Bereiche (8a, 8b) zu kühlen, die zuvor der Wirkung der Heizmittel (15) ausgesetzt wurden.
 11. Vorrichtung nach den Ansprüchen 9 oder 10, ferner umfassend Mittel (14) zum Halten der Packungen (2), die hinter den Faltmitteln (5) angeordnet sind, wobei die Wärmereaktivierung des kaltabbindenden

Klebstoffes (8) durch Mittel (15) erfolgt, die mit den Haltemitteln (14) verbunden sind.

12. Vorrichtung nach Anspruch 11, wobei die Haltemittel (14) einen Ausgabekanal (9) umfassen, der durch die aktiven Abschnitte (13) zweier Förderbänder (10) begrenzt wird, die in Kontakt mit den Seitenflächen der Packungen (2) stehen, und die Wärmereaktivierung des kaltabbindenden Klebstoffes (8) durch Mittel (15) erfolgt, welche erwärmte Platten (18) umfassen, die den Rückseiten der aktiven Abschnitte (13) gegenüberliegen.
13. Vorrichtung nach Anspruch 9, wobei die Wärmereaktivierung des kaltabbindenden Klebstoffes (8) durch Mittel (15) erfolgt, die vor den Faltmitteln (5) angeordnet sind.
14. Vorrichtung nach Anspruch 13, wobei die Wärmereaktivierung des kaltabbindenden Klebstoffes (8) durch Mittel (15) erfolgt, die zumindest einen Konvektor-Heizkörper oder zumindest einen Radiator umfassen.
15. Zigarettenverpackungsmaschine, die eine Vorrichtung nach einem der Ansprüche 9 bis 14 umfasst und in der das Verfahren nach einem der Ansprüche 1 bis 8 angewandt wird.

Revendications

1. Procédé pour assembler des paquets pour des produits du tabac acheminés le long d'une ligne d'emballage (1) d'une empaqueteuse équipée de moyens d'alimentation fournissant un matériau d'emballage (3) à partir duquel sont fabriqués les paquets (2), comprenant l'étape consistant à appliquer une couche ou un point d'adhésif durcissable à froid (8) sur des zones prédéterminées (8a, 8b) du matériau d'emballage (3), ainsi que l'étape consistant à plier le matériau d'emballage (3) pour former un paquet, et comprenant de plus au moins une étape consistant à réactiver l'adhésif durcissable à froid (8) appliqué sur les zones prédéterminées (8a, 8b), en exposant les mêmes zones à la chaleur à une température de réactivation (t_r) prédéterminée, dans lequel l'étape de réactivation à chaud a lieu suite à une interruption du fonctionnement de l'empaqueteuse pendant un intervalle de temps prédéterminé, **caractérisé en ce que** le procédé comprend de plus les étapes consistant à mesurer le temps (T) écoulé durant une interruption du fonctionnement de l'empaqueteuse et à comparer un temps d'interruption (T) résultant avec l'intervalle de temps prédéterminé (T1-T2) entre une première valeur de temps critique prédéterminée (T1) et une deuxième valeur de temps critique prédéterminée (T2), dans les limites

duquel une dégradation éventuelle de l'adhésif durcissable à froid (8) et une perte conséquente de ses propriétés adhésives peuvent être réversibles en mettant en oeuvre l'étape de réactivation à chaud, l'étape de réactivation à chaud ayant lieu lorsque le temps d'interruption (T) tombe entre les première et seconde valeurs de temps critique prédéterminés T1 et T2, où l'étape de réactivation à chaud est mise en oeuvre sur tous les paquets (2) assemblés par l'empaqueteuse.

2. Procédé selon la revendication 1, comprenant une étape de refroidissement suivant l'étape de réactivation à chaud.
3. Procédé selon les revendications 1 ou 2, comprenant une étape, suivant celle de pliage, consistant à retenir les paquets (2), dans lequel l'étape de réactivation de l'adhésif durcissable à froid (8) par exposition à la chaleur a lieu, au moins en partie, simultanément avec l'étape de retenue.
4. Procédé selon l'une quelconque des revendications de 1 à 3, dans lequel l'étape de réactivation à chaud est mise en oeuvre au moyen d'éléments de retenue chauffés.
5. Procédé selon la revendication 1, dans lequel l'étape de réactivation à chaud précède celle de pliage.
6. Procédé selon la revendication 1 ou 5, dans lequel l'étape de réactivation à chaud a lieu au cours de l'étape de pliage.
7. Procédé selon la revendication 5 ou 6, dans lequel l'étape de réactivation à chaud est mise en oeuvre par rayonnement de chaleur sur les zones prédéterminées (8a, 8b) sur lesquelles l'adhésif durcissable à froid (8) a été appliqué.
8. Procédé selon l'une quelconque des revendications de 1 à 7, dans lequel l'étape de réactivation à chaud a lieu alors que le matériau d'emballage (3) avance le long de la ligne d'emballage (1).
9. Appareil pour assembler des paquets pour des produits du tabac, comprenant des moyens d'alimentation servant à faire avancer un matériau d'emballage (3) le long d'une ligne d'emballage (1) d'une empaqueteuse, des moyens (4) servant à appliquer une couche ou un point d'adhésif durcissable à froid (8) sur des zones prédéterminées (8a, 8b) du matériau d'emballage (3) et des moyens de pliage servant à conférer au matériau d'emballage (3) la forme d'un paquet, ledit appareil étant **caractérisé en ce qu'il** comprend de plus des moyens réchauffeurs (15) servant à réactiver l'adhésif durcissable à froid (8) appliqué sur les zones prédéterminées (8a, 8b) par ex-

- position de ces mêmes zones à la chaleur, à une température de réactivation (t_r) prédéterminée, dans lequel il comprend des moyens de traitement (16) destinés à mesurer un temps d'interruption (T) résultant d'une interruption de fonctionnement de l'em-
 5
 paquetteuse, et reliés en sortie à une unité de contrôle (17) de manière à générer un signal pour activer les moyens réchauffeurs (15) si le temps d'interruption (T) résultant de l'interruption de fonctionnement
 10
 de l'empaquetteuse est compris dans un intervalle de temps donné, entre une première valeur de temps critique prédéterminée (T1) et une deuxième valeur de temps critique prédéterminée (T2), dans les limites duquel une dégradation éventuelle de l'adhésif
 15
 durcissable à froid (8) et une perte conséquente de ses propriétés adhésives peuvent être réversibles en mettant en oeuvre l'étape de réactivation à chaud, dans lequel l'action des moyens réchauffeurs (15) est appliquée sur tous les paquets (2) assemblés
 20
 par l'empaquetteuse lors de son fonctionnement.
- 10.** Appareil selon la revendication 9, comprenant des moyens de refroidissement (28) situés en aval des
 25
 moyens réchauffeurs (15) le long de la direction d'alimentation suivie par le matériau d'emballage (3) et servant à refroidir au moins les zones prédéterminées (8a, 8b) précédemment exposées à l'action des
 moyens réchauffeurs (15).
- 11.** Appareil selon les revendications 9 ou 10, comprenant de plus des moyens (14) destinés à retenir les
 30
 paquets (2) positionnés en aval des moyens de pliage (5), dans lequel l'adhésif durcissable à froid (8) est réactivé à chaud par des moyens (15) associés aux moyens de retenue (14).
 35
- 12.** Appareil selon la revendication 11, dans lequel les moyens de retenue (14) comprennent un canal de
 40
 sortie (9) délimité par les branches actives (13) de deux bandes transporteuses (10) placées en contact avec les faces latérales des paquets (2), et l'adhésif durcissable à froid (8) est réactivé à chaud par des
 moyens (15) comprenant des plaques chauffées (18) mises en contact avec le revers des branches
 45
 actives (13).
- 13.** Appareil selon la revendication 9, dans lequel l'adhésif durcissable à froid (8) est réactivé à chaud par
 50
 des moyens (15) positionnés en amont des moyens de pliage (5).
- 14.** Appareil selon la revendication 13, dans lequel l'adhésif durcissable à froid (8) est réactivé à chaud par
 55
 des moyens (15) comprenant au moins un appareil de chauffage par convection ou au moins un radiateur.
- 15.** Empaquetteuse de cigarettes, comprenant un appa-

reil selon l'une quelconque des revendications de 9 à 14 et mettant en oeuvre le procédé selon l'une quelconque des revendications de 1 à 8.

FIG.1

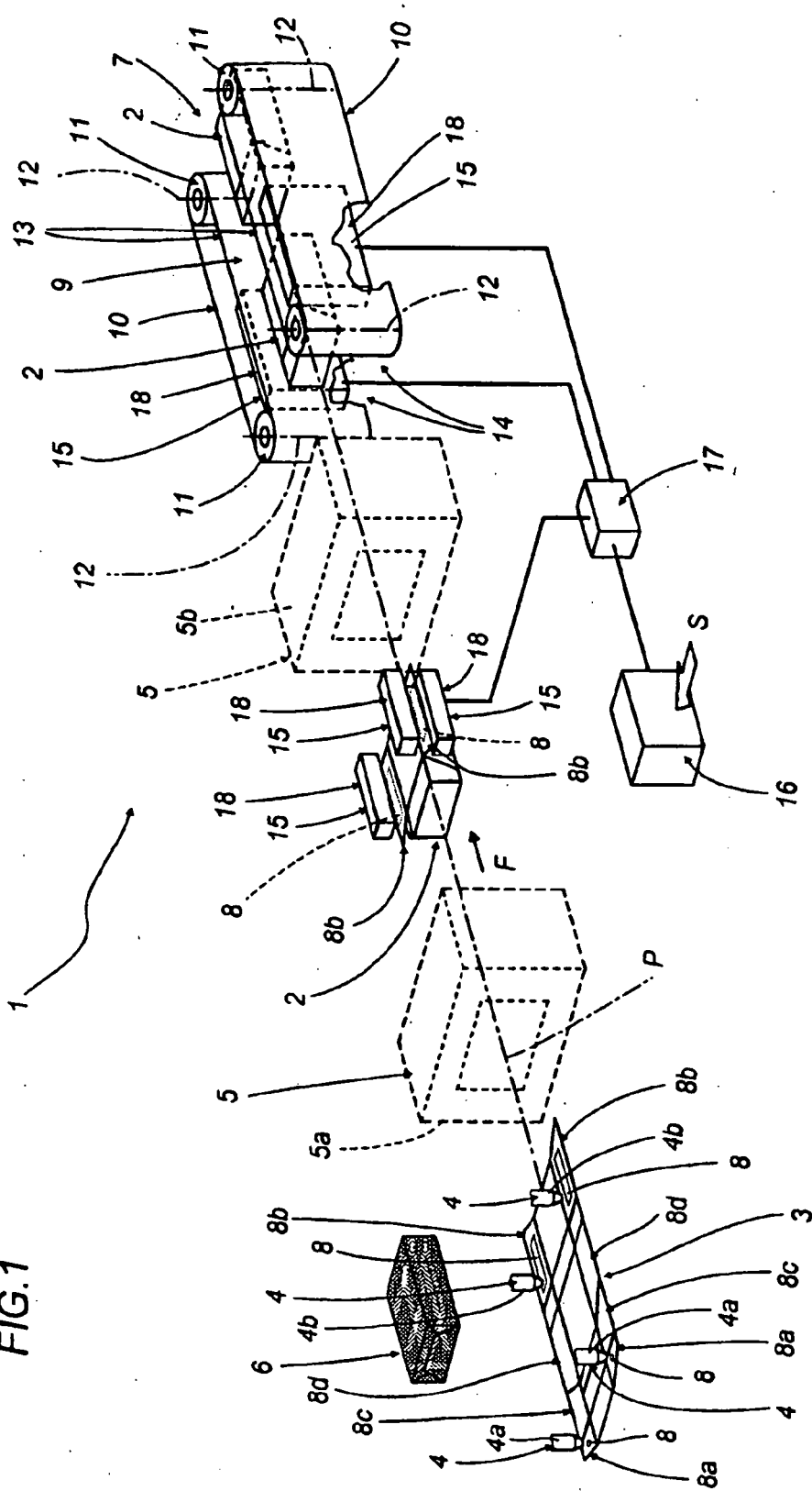


FIG. 2

