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(54) Dryer of packets in a line for packaging tobacco products

Trockner von Paketen in einer Reihe zum Verbacken von Tabakprodukten

Sécheur de paquets dans une ligne d'emballage de produits de tabac

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Description

[0001] This invention relates to a dryer of packets in a line for packaging tobacco products

[0002] More specifically, the packets handled by the dryer according to this invention may consist of packets of cigarettes, to which reference is hereinafter made without thereby limiting the scope of the invention.

[0003] The use is known, in lines for packaging cigarettes and tobacco products

[0004] in general, of devices for drying the packets, usually referred to as "dryers", which dry the glue interposed between the reciprocally adjacent flaps of the packets.

[0005] These dryers generally dry the glue during the transport of the packets between the outfeed of a machine for packaging packets or packaging machine, and the infeed of a cellophaning machine designed to enclose the finished packets in wrappers of transparent material.

[0006] An example of prior art dryers (see e.g. document US-A-2006/0207224) comprises using two smooth belt conveyors, having respective conveying sections which are facing each other and parallel with one another, along which the packets to be dried are passed.

[0007] A heating plate is associated with each of the conveying sections.

[0008] A further prior art embodiment uses a rotary turret, equipped with circumferential seats within which the packets are dried during transport. These types of dryers have a number of drawbacks.

[0009] Firstly, these dryers are used in packaging lines characterised by high speeds of transit of the packets, in which very short periods of time are available for achieving a correct drying of the glue.

[0010] For that reason, the prior art dryers require a very long stretch for transport of the packets, and are therefore relatively bulky.

[0011] Any shortening of the drying stretch to reduce the overall size would result in an increase in the quantity of heat to be transmitted to the packets, with the risk of causing burns and damage.

[0012] Moreover, these prior art dryers, if equipped with a very long stretch for transport of the packets to prevent damaging the packets, require a high energy consumption.

[0013] The aim of this invention is therefore to provide a dryer of packets wherein the transmission of heat to the packets is made more efficient, allowing a correct and complete drying of the glue without the risk of burning the packets and at the same time allowing a saving from the energy point of view.

[0014] A further aim of this invention is to provide a dryer of packets which can be used in high speed lines for packaging packets and which is characterised by reduced dimensions.

[0015] According to this invention a dryer of packets in a line for packaging tobacco products is provided as described in the appended claims.

[0016] The dryer of packets according to this invention will now be described with reference to the accompanying drawing which illustrates a schematic side view of a non-limiting embodiment of it.

5 **[0017]** With reference to the drawing, the numeral 1 denotes in its entirety a dryer of packets 2, made according to this invention and operating in a line 3 for packaging tobacco products.

10 **[0018]** The dryer 1 comprises at least one section 4 for transporting packets 2 from a first infeed station 5 to a second outfeed station 6 of the packaging line 3.

[0019] Purely by way of an example, the first station 5 is formed by the outfeed portion of a machine for packaging packets 2, whilst the second station 6 is formed by the infeed portion of a cellophaning machine for applying transparent overwrapping sheets on the packets 2.

15 **[0020]** The transport and drying section 4 is formed by a first belt conveyor 7 and by a second belt conveyor 8, each having respective active portions 17a, 18a of belt 17, 18, facing each other and spaced at a sufficient distance for allowing the packets 2 to be retained during the transport.

20 **[0021]** The transport and drying section 4 has a substantially horizontal path P and the active portions 17a, 18a of the belts 17, 18 are rectilinear and parallel to each other.

25 **[0022]** The belts 17, 18 are moved by respective rotatable pulleys 15 in different directions about respective horizontal axes, and on each belt 17, 18 there is a plurality of half-housings 9, 10. Each half-housing 9 of the first conveyor 7 is facing and synchronised, in use, with a respective half-housing 10 of the second conveyor 8 in such a way as to form a housing 12 for receiving a respective packet 2.

30 **[0023]** The half-housings 9, 10 of each conveyor 7, 8 are formed by a plurality of wedges 11 integral with the respective belts 17, 18. More specifically, each half-housing 9, 10 of the conveyors 7, 8 is formed by a pair of wedges 11 adjacent to each other.

35 **[0024]** The wedges 11 are made of a thermally insulating material. More specifically, the wedges 11 are made of rubber or the like.

40 **[0025]** The wedges 11 can preferably have, according to an embodiment not illustrated, a substantially trapezoidal profile, so as to facilitate the introduction of the packets 2 in the respective housings 12 upon entry into the dryer 1.

45 **[0026]** The dryer 1 comprises heating means 13, positioned inside each conveyor 7, 8 and designed to generate the heat necessary for drying the packets 2, and more specifically the glue interposed between the flaps, not illustrated, of opposite faces 2a of the packets 2 positioned in contact with the conveyors 7, 8.

50 **[0027]** Preferably, the heating means 13 extend substantially for the entire length of the transport and drying section 4, and comprise at least one electrical resistance 14.

[0028] According to a first embodiment, the heating

means 13 comprise a single electrical resistance 14 which extends substantially for the entire length of the transport and drying section 4.

[0029] According to a further embodiment, the heating means 13 comprise a plurality of electrical resistances 14, positioned side by side in succession for forming a set of electrical resistances 14 which extend substantially for the entire length of the transport and drying section 4.

[0030] Each half-housing 9, 10 is equipped, at a respective lower end 9a, 10a, with a plate 16 made of conductive material, designed to transfer to the packets 2, by conduction, the heat generated by the heating means 13. Preferably, the plates 16 are made of aluminium or an aluminium alloy. The plates 16 are connected to the belts 17, 18 of the conveyors 7, 8, for example, by at least one screw (not shown).

[0031] The plates 16 come into contact, in use, with two opposite faces 2a of the packets 2 to be dried, have dimensions at least equal to the dimensions of the faces 2a, and their contact with the faces 2a of the packets 2 is made through respective heating faces 16a having profiles which match with respective profiles of the faces 2a.

[0032] According to a possible embodiment, the profiles of the surfaces 16a are curved towards the inside of the conveying channel of the packets 2, formed by the conveyors 7 and 8.

[0033] In use, each packet 2 leaving the first station 5 is introduced inside a respective housing 12 formed by the conveyors 7, 8 of the dryer 1.

[0034] Next, the packet 2 to be dried is retained and transported by the conveyors 7, 8 from the first infeed station 5 to the second outfeed station 6.

[0035] During transport, the packet 2 is heated at the faces 2a positioned in contact with the respective ends 9a, 10a of the half-housings 9, 10 forming the housings 12 of respective packets 2. The faces 2a of the packet 2 are positioned, in particular, in direct contact with the conductive plates 16 integral with the end 9a, 10a of the half-housings 9, 10, the plates 16 transferring to the packet 2, by conduction, the heat generated by the heating means 13 positioned inside each conveyor 7, 8.

[0036] The packet 2 therefore undergoes, from the first infeed station 5 to the second outfeed station 6, a progressive heating of the faces 2a in contact with the plates 16, in such a way as to dry the glue interposed between the flaps forming the faces 2a of the packet 2.

[0037] The invention described above allows an efficient closing of the faces 2a of the packet 2 to be performed, reducing the overall dimensions of the dryer 1.

[0038] Moreover, the use of conductive plates 16 optimises the transfer of the heat from the heating means 13 to the packet 2.

[0039] At the same time, the dryer 1 described above requires a relatively small quantity of heat, and therefore allows a saving to be made from an energy point of view and prevents the risk of burning the faces 2a of the packets 2 to be dried.

[0040] Lastly, the dryer 1 has a low structural complex-

ity, which translates into low production costs, and it can also be implemented in existing dryers.

5 Claims

1. A dryer of packets in a line for packaging tobacco products comprising at least one section (4) for transporting packets (2) from a first (5) to a second (6) station of the packaging line (3); the section (4) being formed by a first belt conveyor (7) and by a second belt conveyor (8), each having respective active portions (17a, 18a) of belt (17, 18), facing each other and spaced at a sufficient distance for allowing the packets (2) to be retained during the transport; the dryer (1) also comprising heating means (13), positioned inside each conveyor (7, 8) and designed to generate the heat necessary for drying the packets (2); **characterised in that** each conveyor (7, 8) has on the respective belt (17, 18) a plurality of half-housings (9, 10); each half-housing (9) of the first conveyor (7) facing and synchronised, in use, with a respective half-housing (10) of the second conveyor (8) for forming a housing (12) for receiving a respective packet (2); and each half-housing (9, 10) being equipped, at a respective lower end (9a, 10a), with a plate (16) made of conductive material, designed to transfer to the packages (2), by conduction, the heat generated by the heating means (13).
2. The dryer according to claim 1, **characterised in that** the heating means (13) extend substantially for the entire length of the transport section (4).
3. The dryer according to claim 1 or 2, **characterised in that** the heating means (13) comprise at least one electrical resistance (14).
4. The dryer according to any one of claims 1 to 3, **characterised in that** the half-housings (9, 10) of each conveyor (7, 8) are formed by a plurality of wedges (11) integral with the respective belts (17, 18) of each conveyor (7, 8).
5. The dryer according to claim 4, **characterised in that** each half-housing (9, 10) of the conveyors (7, 8) is formed by a pair of wedges (11) adjacent to each other.
6. The dryer according to any one of the preceding claims, **characterised in that** the transport and drying section (4) has a substantially horizontal path and the active portions (17a, 18a) of the belts (17, 18) are rectilinear and parallel to each other.
7. The dryer according to any one of the preceding claims is **characterised in that** the plates (16) are made of aluminium or an aluminium alloy.

Patentansprüche

1. Trockner von Packungen in einer Linie zum Verpacken von Tabakprodukten, umfassend mindestens einen Teil (4) zum Transportieren von Packungen (2) von einer ersten (5) zu einer zweiten (6) Station der Verpackungslinie (3); wobei der Teil (4) aus einem ersten Förderband (7) und aus einem zweiten Förderband (8) gebildet wird, die jeweils entsprechende aktive Abschnitte (17a, 18a) des Bands (17, 18) aufweisen, einander zugewandt sind und bei einer Entfernung beabstandet sind, die ausreichend ist, um ein Halten der Packungen (2) während des Transports zu ermöglichen; wobei der Trockner (1) ferner Erhitzungsmittel (13) umfasst, die innerhalb eines jeden Förderers (7, 8) positioniert und dazu konzipiert sind, die Hitze, die zum Trocknen der Packungen (2) notwendig ist, zu erzeugen; **dadurch gekennzeichnet, dass** jeder Förderer (7, 8) auf dem entsprechenden Band (17, 18) eine Vielzahl von Halbaufnahmen (9, 10) aufweist, wobei jede Halbaufnahme (9) des ersten Förderers (7) während der Verwendung einer entsprechenden Halbaufnahme (10) des zweiten Förderers (8) zugewandt und mit ihr synchronisiert ist, um eine Aufnahme (12) zum Empfang einer jeweiligen Packung (2) zu bilden; und wobei jede Halbaufnahme (9, 10) an einem jeweiligen unteren Ende (9a, 10a) mit einer Platte (16) ausgestattet ist, die aus konduktivem Material hergestellt ist, die dazu konzipiert ist, die von den Erhitzungsmitteln (13) erzeugte Hitze zu den Packungen (2) durch Konduktion zu übertragen.
2. Trockner nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die Erhitzungsmittel (13) im Wesentlichen über die gesamte Länge des Transportteils (4) erstrecken.
3. Trockner nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Erhitzungsmittel (13) mindestens einen elektrischen Widerstand (14) umfassen.
4. Trockner nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Halbaufnahmen (9, 10) eines jeden Förderers (7, 8) aus einer Vielzahl von Keilen (11) gebildet werden, die einstückig mit den entsprechenden Bändern (17, 18) eines jeden Förderers (7, 8) verbunden sind.
5. Trockner nach Anspruch 4, **dadurch gekennzeichnet, dass** jede Halbaufnahme (9, 10) der Förderer (7, 8) aus einem Paar benachbarter Keile (11) gebildet wird.
6. Trockner nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Transport- und Trocknungsteil (4) eine im Wesentlichen horizontale Bahn aufweist und die aktiven Abschnitte

te (17a, 18a) der Bänder (17, 18) geradlinig und parallel zueinander sind.

7. Trockner nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Platten (16) aus Aluminium oder einer Aluminiumlegierung hergestellt sind.

Revendications

1. Sécheur de paquets dans une ligne d'emballage de produits de tabac comprenant au moins une section (4) destinée au transport des paquets (2) d'un premier (5) à un second (6) poste de la ligne d'emballage (3); la section (4) étant formée d'un premier tapis transporteur (7) and d'un second tapis transporteur (8) chacun disposant de portions actives correspondantes (17a, 18a) de tapis (17, 18) orientées l'une vers l'autre et espacées à une distance suffisante pour permettre aux paquets (2) d'être retenus lors du transport; le sécheur (1) comprenant aussi des moyens de chauffage (13) positionnés à l'intérieur de chaque transporteur (7, 8) et conçus pour générer la chaleur nécessaire pour sécher les paquets (2); **caractérisé en ce que** chaque transporteur (7, 8) possède sur le tapis respectif (17, 18) une pluralité de demi-logements (9, 10); chaque demi-logement (9) du premier transporteur (7) étant, en fonctionnement, orienté vers et synchronisé avec un demi-logement correspondant (10) du second transporteur (8) pour former un logement (12) destiné à recevoir un paquet correspondant (2); et chaque demi-logement (9, 10) étant équipé, au niveau d'une extrémité inférieure correspondante (9a, 10a) d'une plaque (16) fabriquée dans un matériau conducteur conçu pour transférer aux emballages (2), par conduction, la chaleur générée par les moyens de chauffage (13).
2. Sécheur selon la revendication 1, **caractérisé en ce que** les moyens de chauffage (13) se développent substantiellement sur toute la longueur de la section de transport (4).
3. Sécheur selon les revendications 1 ou 2, **caractérisé en ce que** les moyens de chauffage (13) comprennent au moins une résistance électrique (14).
4. Sécheur selon l'une quelconque des revendications de 1 à 3, **caractérisé en ce que** les demi-logements (9, 10) de chaque transporteur (7, 8) sont formés d'une pluralité de coins (11) solidaires des tapis correspondants (17, 18) de chaque transporteur (7, 8).
5. Sécheur selon la revendication 4, **caractérisé en ce que** chaque demi-logement (9, 10) des transporteurs (7, 8) est formé d'une paire de coins (11) ad-

jacents réciproquement.

6. Sécheur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la section de transport et de séchage (4) possède une trajectoire substantiellement horizontale et les portions actives (17a, 18a) des tapis (17, 18) sont rectilignes et parallèles réciproquement. 5
7. Sécheur selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les plaques (16) sont en aluminium ou fabriquées dans un alliage d'aluminium. 10

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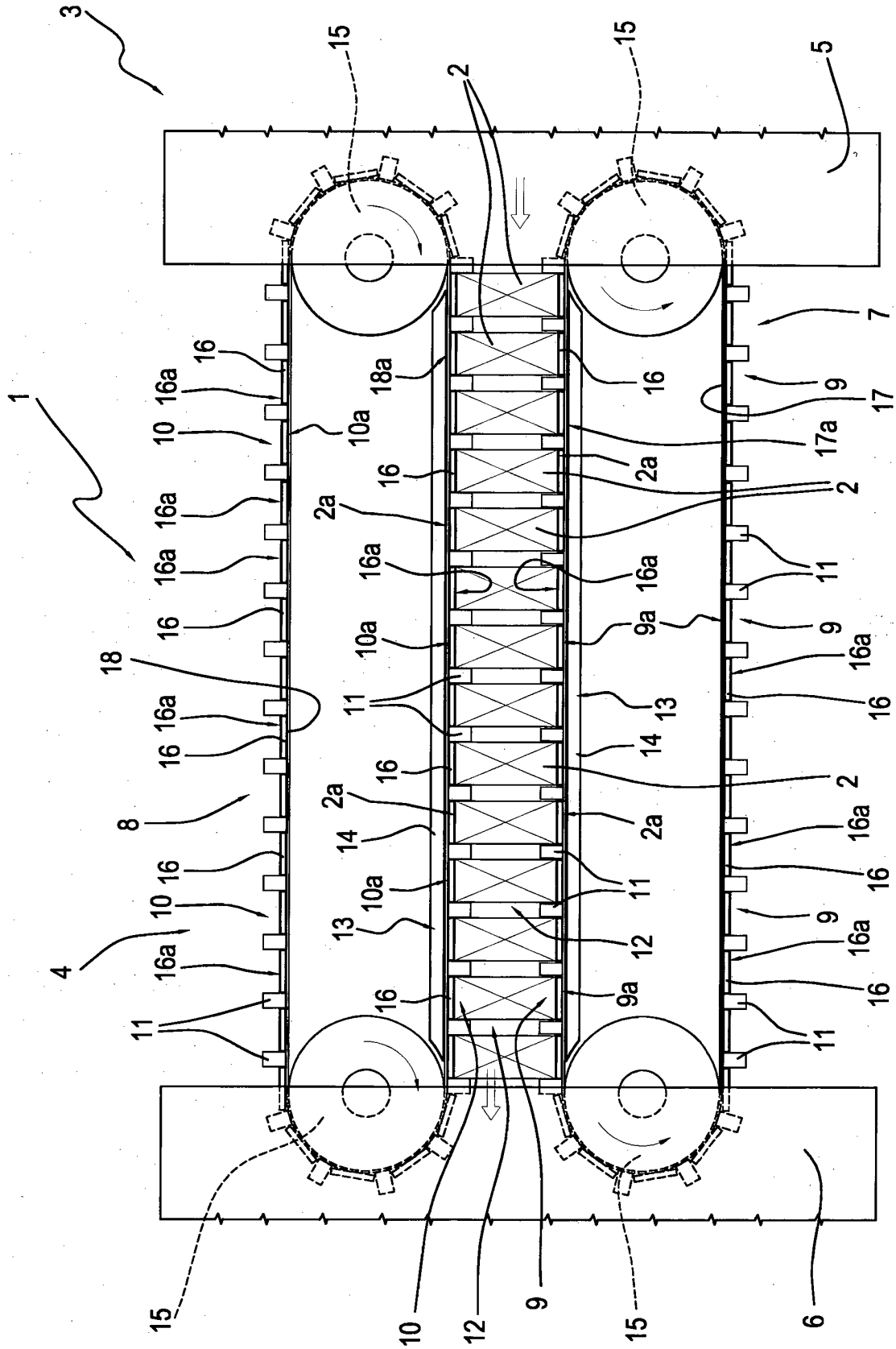
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REFERENCES CITED IN THE DESCRIPTION

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