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(54) **A method of conveying sheet material**

Verfahren zum Fördern von Bogenmaterial

Procédé de transport de feuilles.

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Description

[0001] The present invention relates to a method of conveying sheet material.

[0002] The method disclosed is employed to advantage in the tobacco industry, in particular for cigarette wrapping machines, to which specific reference is made herein albeit with no limitation in general scope implied. It is the conventional practice with wrapping machines of the type in question to utilize a sheet wrapping material in the form of a continuous strip decoiled from a roll and conveyed to a user or wrapping station by way of a cutting station, at which the strip is severed transversely into discrete segments or sheets each designed to envelop a relative product, in this instance a group or a packet of cigarettes.

[0003] As a general rule, the continuous wrapping material is decoiled from the relative roll by means of a set of pinch rollers located preceding the wrapping station in the conveying direction, and then advanced by one or more belt and/or roller conveyors usually of a type through which suction can be generated in such a way that the material is held and its position controlled until within the compass of the wrapping station.

[0004] Evidently, the wrapping material remains in contact with the conveyors as the result of creating a vacuum, so that a source of negative pneumatic pressure must be provided, along with complicated suction ducts that are normally difficult to incorporate and have a heavy negative impact both on the structure and therefore on the functional attributes of the machine, as well as on the cost of its manufacture.

[0005] Furthermore, it is known from US-A-5,121,170 a device for use in electrostatographic image recording equipment for retaining and transporting a paper sheet, document or similar sheet member. A transporting member is implemented as an endless belt. An AC voltage is applied to the belt to form a charge density pattern on the surface of the belt, while the charge density pattern sets up a non-uniform electric field in close proximity to the surface of the belt. The non-uniform electric field urges the sheet member against the belt and thereby allows it to be transported by the belt to a predetermined position without being dislocated.

[0006] The device according to US-A-5,121,170 is not advantageous for conveying sheet members toward a wrapping station.

[0007] The object of the present invention is to provide a method of conveying sheet material such as will allow of eliminating any form of negatively pressurized pneumatic circuit employed typically to retain the material in contact with a relative conveyor, at least along a part of the feed path followed by the sheet material toward a wrapping station.

[0008] The stated object is realized according to the present invention in a method of conveying sheet material, as in claim 1.

[0009] In a preferred embodiment of the method ac-

cording to the present invention, the conveying device comprises conveyor means positioned to interact with lateral portions of the sheet material separated by a given distance one from the other and extending preferably in a direction substantially parallel with the feed direction.

[0010] Preferably, moreover, with regard to the interaction between the conveyor means and the sheet material, the sheet material consists in a first material whilst the conveyor means consist in a second material, and an electrostatic charge is induced in at least the first material before bringing about the connection between the sheet material and the conveyor means. The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- fig 1 indicates a preferred embodiment of a machine suitable for implementing the method according to the present invention, illustrated in a side elevation with certain parts in section and others omitted for clarity;
- fig 2 shows a detail of fig 1, viewed in perspective with certain parts in section and others omitted for clarity.

[0011] With reference to fig 1 of the drawings, 1 denotes an overwrapping machine, in its entirety, comprising a central section 2 by which packets 3 of cigarettes are enveloped singly and in succession by relative sheets of wrapping material denoted 4.

[0012] The wrapping sheets 4 in question are fashioned from an electrostatically chargeable material.

[0013] The expression "electrostatically chargeable material" is intended here and throughout the specification as indicating a material in which an electrostatic charge can be induced whether simply by the rubbing action of a surrounding fluid such as the ambient air, by wiping with an element or pad of electrifying material, or by ionization, for example with a stream of ionized air, or by polarization under the influence of an electric field.

[0014] The aforementioned central section 2 of the machine comprises a first infeed line 5 and a second infeed line 6 carrying packets 3 and sheets 4 respectively, and a wrapping station 7 at which the first line 5 crosses the second line 6. In particular, the first infeed line 5 is designed to advance the packets 3 singly and in succession, proceeding transversely to their own longitudinal axes, along a first feed path 8 that crosses the second infeed line 6 at the point occupied by the wrapping station 7, whilst the second infeed line 6 is designed to advance the wrapping sheets 4 along a second feed path 9 in a predetermined direction 9a that extends transversely to the first feed path 8 at the wrapping station 7, and to time the arrival of the single sheets 4 at the station 7 with the approach of the packets 3 in such a way that each sheet will be engaged, folded into a U formation and diverted forcibly by a corresponding packet away from the second line 6 onto the first line 5.

[0015] In the example of fig 1, the first line 5 comprises two conveying devices 10 and 11 arranged in series along the relative feed path 8 on opposite sides of the second line 6, hence preceding and following the wrapping station 7, also a tubular alignment guide 12 positioned along the feed path 8 and interconnecting the initial device 10 with the wrapping station 7, of which the internal passage 13 is proportioned to admit the single packet 3. The passage 13 connects with the station 7 and with the successive conveying device 11 by way of an outlet 14 substantially coinciding with the station 7, which is disposed transversely to the first feed path 8 and facing the second feed path 9. The one conveying device 10 comprises a feed wheel 15 of conventional embodiment, affording a plurality of peripheral pockets or slots 16 of which one only is indicated, and an ejector device 17 of which the push rod 18 can be reciprocated along the first feed path 8 during operation in such a way as to dislodge each packet 3 in turn from the relative slot 16 and direct it through the passage 13 when the slot 16 is aligned with the guide 12 along the feed path 8. The other conveying device 11 consists likewise in a wheel 19, keyed to a power driven shaft 20 rotatable about a relative axis 21 in a clockwise direction, as viewed in fig 1. This wheel 19 similarly affords peripheral pockets or slots 22, each capable of movement through the station 7 and designed to admit a single packet 3 together with the relative sheet 4 when aligned with the first feed path 8.

[0016] Observing fig 1 and fig 2, the second infeed line 6 comprises a frame 23 afforded by a stationary part of the machine 1 and consisting in two mutually parallel walls 24 which extend along the second feed path 9, flanking the area occupied by the two paths 8 and 9. The second infeed line 6 further comprises a roller feed mechanism 25 carried by an upper portion of the frame 23, affording a pair of rollers 26 disposed in mutual opposition one on each side of the second feed path 9, between which a continuous strip 27 of sheet material is pinched and directed toward the wrapping station 7. The line 6 also comprises a first conveying device 28, supported by an intermediate portion of the frame 23 following the roller feed mechanism 25 in the direction of the feed path 9, by which the continuous strip 27 is taken up and cut transversely into single sheets 4. Lastly, the second infeed line 6 comprises a second conveying device 29 mounted to a lower portion of the frame 23, by which the sheets 4 are taken up singly from the first conveying device 28, indexed along the feed path 9 and brought to a halt at the wrapping station 7.

[0017] The first conveying device 28 comprises a roller 30 suspended between the two flank walls 24, keyed onto a transverse drive shaft 31 supported by the walls and rotatable thus intermittently about its own axis in an anticlockwise direction, as seen in fig 1. The body of the roller 30 is compassed by a cylindrical surface 32 of which the developable length is substantially equal to the length of the single sheet 4, and onto which a plu-

ality of suction ducts 33 emerge to interact both with the continuous strip 27 and with the sheets 4. The roller 30 carries a blade 34 of which the cutting edge extends lengthwise along and projects marginally from the cylindrical surface 32. This same blade 34 is positioned to interact during each revolution of the roller 30 with a further blade 35, supported between the walls 24 of the frame 23 in a fixed position above the second conveying device 29, in such a way that the strip 27 will be engaged and cut into single sheets 4. The second conveying device 29 in question comprises two substantially identical belt conveyors 36 and 37 disposed internally of the frame 23 adjacent to the walls 24 and on opposite flanks of the second path 9, separated one from the other by a distance marginally less than the width of the single sheet 4. Each such belt conveyor 36 and 37 comprises one live pulley 38, keyed to a power driven shaft 39 disposed transversely between the walls 24 parallel with the shaft 31 of the roller 30, and rotatable thus about the axis of the shaft 39 in a clockwise direction as viewed in fig 1, also a return pulley 40 keyed to a freely revolving shaft 41 disposed parallel with the roller shaft 31 and located on the opposite side of the first path 8 from the power driven shaft 39, and a jockey wheel 42 mounted rotatably to the respective wall 24.

[0018] The pulleys 38 and 40 of each belt conveyor 36 and 37 combine to establish a corresponding loop, of which the belt 43 is fashioned from an electrostatically chargeable material and affords a conveying branch 44 offered to the guide 12. The belts 43 are disposed at a distance one from the other sufficient for a single packet 3 advancing along the first feed path 8 to pass through the resulting space and across the second feed line 6. The portion of each belt 43 looped around the live pulley 38 is disposed substantially tangential to the roller 30, separated from the relative surface 32 by a relatively short distance and occupying what is in effect a transfer station 45, whilst the conveying branch 44 is disposed facing toward and substantially tangential to the outlet 14 of the alignment guide 12 and extends preferably in contact with a respective plate 46 of insulating material rigidly connected with the relative wall 24 (the plates 46 are not in fact essential, and might be omitted).

[0019] In operation, the strip 27 is decoiled from a roll (not illustrated) by the pinching action of the feed mechanism 25 and directed forward over the successive roller 30, clinging to the relative surface 32 as a result of the suction generated through the ducts 33 preceding the transfer station 45. Assuming that a leading portion of the strip 27 becomes attached to the revolving surface 32 of the roller 30 over an area immediately preceding the blade 34 in the direction of rotation of the roller 30, the roller will advance the strip 27 toward the next conveying device 29 through a distance equal to the developable length of its own circumference, whereupon the revolving blade 34 meets the fixed blade 35 and a single sheet 4 is cut. Before the cut is made, the leading portion of the strip 27 will have separated from the cylindrical

surface 32 at the transfer station 45 and become attached to the two conveying branches 44 of the belts 43, making contact along two longitudinal portions 47 coinciding with two respective longitudinal margins of the strip material; now separated entirely from the strip 27 by the action of the blades 34 and 35, the sheet 4 continues forward suspended between the two branches 44 of the belts 43 and draws to a halt at the wrapping station 7.

[0020] The sheet is caused to separate from the surface 32 of the roller 30 in conventional manner by deactivating the suction, generated hitherto through the relative ducts 33, as the ducts rotate into alignment with the transfer station 45. Suction is shut off by means of a directional control valve (conventional and therefore not illustrated), which will occupy a fixed position internally of the roller 30.

[0021] The leading portion of the strip 27 is caused to cling initially to the conveying branches 44 of the belts 43 without any vacuum assistance whatever, but simply by electrostatic attraction. Indeed given that both belt conveyors 36 and 37 and strip 27 are fashioned from an electrostatically chargeable material, it suffices to induce a charge in at least the strip material in order to bring about an electrostatically sustained connection between the longitudinal portions 47 of the sheet material and the belt conveyors 36 and 37.

[0022] Where the strip 27 is fashioned from a relatively thin transparent synthetic material, there will be no need to utilize any particular device for the purpose of inducing an electrostatic charge in the sheet 4, as a charge is induced naturally through frictional contact with the surrounding air. At all events, moisture in the air could have the effect of reducing either an existing electrostatic charge or the propensity of the strip 27 to charge initially, in which case it may be advantageous to position heater elements 48 anywhere along the path followed by the strip 27 and/or the sheets 4, for example on the roller 30 and/or on the pulleys 38 and/or on the plates 46 (if fitted). Such heater elements 48 would be particularly advantageous when utilizing a strip 27 of heat-sealable material, since the time taken to heat-seal a preheated sheet 4 will be less and the operating speed of the machine 1 thus increased.

[0023] In an alternative solution, not illustrated in the drawings, the heater elements 48 might be replaced by a source of hot air such as will direct a warming jet over the strip 27 and/or the sheets 4.

[0024] Alternatively, by fashioning at least the peripheral part of the roller 30 from an insulating material, it will be possible to charge the sheet electrostatically by placing an electrifying pad 49 in contact with the strip 27 at a point preceding the roller 30.

[0025] Similarly, by fashioning the pulleys 38 and 40, the jockey wheel 42 and the plates 46 (if fitted) from an insulating material, an electrostatic charge could be induced in each of the belt conveyors 36 and 37 by placing an electrifying pad 49 in contact with the belts 43.

[0026] A further alternative, available where the strip 27 is fashioned at least in part from a suitable conductive material (foil paper, for example), would be that of charging the strip 27 and/or the conveyors 36 and 37 electrostatically by investing the relative surface with jets of an ionized fluid, such as air, delivered by respective nozzles 50 and 51.

[0027] Finally, there is the alternative of simply polarizing the strip 27 and/or the conveyors 36 and 37, setting up an electric field in the vicinity of the transfer station 45 and the second conveying device 29 by means of suitable metallic plates 52 carrying positive and negative charges of equal value.

[0028] Naturally enough, in a situation where requirements so dictate, two or more of the systems described above might be utilized in combination.

[0029] Having come to a halt at the wrapping station 7, the sheet 4 will be invested by a relative packet 3 caused forcibly by the ejector device 17 to advance along the first feed line 8, and thereupon separates from the belts 43; the sheet is now carried forward between the belt conveyors 36 and 37 and folded into a U formation around the advancing packet 3 as the two move together as one toward the relative slot 22 waiting motionless at the station 7.

[0030] In an alternative embodiment of the central section 2, the suction ducts 33 might be dispensed with, and the strip 27 retained on the surface 32 of the roller by electrostatic attraction.

[0031] Likewise in this instance, the connection produced as a result of electrostatic attraction is brought about by inducing an electrostatic charge in the material of the strip 27 and/or of the roller 30. To facilitate the separation of the strip 27 from the cylindrical surface 32 at the transfer station 45, the feed line 6 might usefully incorporate either a scraper blade (not illustrated) disposed in contact with the surface 32 at a point adjacent to the transfer station 45, or a nozzle 53 located near the station 45 and delivering a jet of ionizing fluid. Naturally the ionizing jet will carry a charge of polarity opposite to that carried by the strip 27. Alternatively, and likewise to the end of facilitating the separation of the strip 27 from the cylindrical surface 32 at the transfer station 45, charges of opposite polarity might be maintained in the areas of the surface 32 respectively preceding and following the station 45; in particular, a portion of the revolving surface 32 that precedes the station 45 might carry a charge of polarity opposite to that of the charge induced in the strip 27, whilst a portion of the surface 32 following the station would carry a charge of the same polarity as the charge induced in the strip 27.

[0032] Finally, to guarantee easier handling of the sheets 4 conveyed away from this same central section 2 of the machine 1, the sheets 4 can be rendered substantially devoid of any electrostatic charge when inside or in the region of the guide 12, by means of a conventional device such as that disclosed in DD 237 048, or by causing them to pass in close proximity to a grounded

element.

Claims

1. A method for conveying sheet material (27, 4) along a predetermined feed path (9) and in a predetermined direction (9a) which leads to a wrapping station (7), comprising the steps of:
causing the sheet material (27,4) to enter into and remain in stable connection with a conveying device (29) at least along a part of the feed path (9) by electrostatic attraction,
characterized in that
said sheet material (27, 4) enters into and remains in connection with said conveying device (29) along two lateral portions (47) of the sheet material (27, 4) bordering two respective longitudinal margins of the sheet material (27,4), said sheet material (27, 4) will be electrostatically charged before bringing about the connection between the sheet material (27, 4) and the conveying device (29).
2. A method as in claim 1, wherein the conveying device (29) comprises conveyor means (36, 37) with which the sheet material (27, 4) is caused to enter into and remain in stable connection along lateral portions (47) afforded by the longitudinal margins of the selected material and disposed at a predetermined distance one from the other.
3. A method as in claim 2, wherein the marginal lateral portions (47) extend longitudinally in a direction substantially parallel to the feed direction (9a).
4. A method as in preceding claims, wherein the conveying device (29) with which the sheet material (27, 4) is brought into association comprises relative conveyor means (36, 37), the sheet material (27, 4) comprises a first material, the conveyor means (36, 37) comprise a second material, and at least the first material is charged electrostatically before bringing about the connection between the sheet material (27, 4) and the conveyor means (36, 37).
5. A method as in claim 4, wherein at least the first materials is charged electrostatically by the direct frictional action of an electrifying medium.
6. A method as in claim 5, wherein the electrifying medium is a fluid medium.
7. A method as in claim 6, wherein the electrifying fluid medium is the ambient air surrounding the conveying device (29).
8. A method as in claim 6, wherein the electrifying fluid

medium is a stream of ionized air.

9. A method as in claim 5, wherein the electrifying medium consists in a pad element (49) designed to electrify at least the first material by means of a wiping action.
10. A method as in claims 4 to 9, comprising the further step of heating at least one of the two materials.
11. A method as in claims 3 to 10, wherein the sheet material (27, 4) consists in a continuous strip (27) that is cut transversely into single sheets (4) at a point preceding the part of the feed path (9) along which the material (27, 4) is caused to be connected with the conveyor means (36, 37).
12. A method as in claim 11, wherein the sheets (4) are wrapping sheets advanced by the conveying device (29) singly and in succession toward a wrapping station (7) effectively coinciding with the intersection between the relative feed path (9) and a further feed path (8) extending between the conveying means (36, 37), along which articles (3) for wrapping are advanced toward the wrapping station (7).
13. A method as in claim 11 or 12, comprising the further step of feeding the continuous strip (27) to the conveying device (29) via an initial conveying and cutting device (28), disposed preceding the conveying device (29) along the feed direction (9a), by which the strip (27) is cut into the single sheets (4).
14. A method as in claim 13, wherein the conveying and cutting device (28) occupies a position substantially tangential to the conveying device (29), and the further feeding step comprises the secondary steps of associating a leading portion of the strip (27) with the conveying and cutting device (28), advancing the leading portion toward the conveying device (29), causing the leading portion to separate from the conveying and cutting device (28) and to enter into and remain in stable contact with the conveying device (29), and thereupon cutting the strip (27) to produce a single sheet (4) that remains connected with the conveying device (29).
15. A method as in claim 14, wherein the strip (27) is associated with the conveying and cutting device (28) by suction.
16. A method as in claim 14, wherein the strip (27) is connected with the conveying and cutting device (28) by electrostatic attraction.
17. A method as in claim 16, wherein the strip (27) is caused to separate from the conveying and cutting device (28) by eliminating the electrostatic attrac-

tion with an ionized stream of fluid.

Patentansprüche

1. Verfahren zum Fördern von Bogenmaterial (27,4) entlang einer bestimmten Zuführbahn (9) und in einer bestimmten Richtung (9a), welche zu einer Umwickelstation (7) führt, enthaltend die folgenden Phasen:
Einführen des Bogenmaterials (27, 4) in eine Fördervorrichtung (29) und verbleiben in stabiler Verbindung mit derselben durch elektrostatische Anziehungskraft, wenigstens entlang einem Teil der Zuführbahn (9), **dadurch gekennzeichnet**, dass das genannte Bogenmaterial (27, 4) in die genannte Fördervorrichtung (29) eintritt und mit dieser in Verbindung bleibt, und zwar entlang von zwei seitlichen Abschnitten (47) des Bogenmaterials (27, 4), die zwei jeweiligen, längsverlaufenden Randstreifen des Bogenmaterials (27, 4) entsprechen, wobei das genannte Bogenmaterial (27, 4) elektrostatisch aufgeladen wird, bevor die Verbindung zwischen dem Bogenmaterial (27, 4) und der Fördervorrichtung (29) erfolgt.
2. Verfahren nach Patentanspruch 1, bei welchem die Fördervorrichtung (29) Fördermittel (36, 37) enthält, mit denen das Bogenmaterial (27, 4) eingeführt wird und in stabiler Verbindung entlang seitlichen Abschnitten (47) bleibt, die durch die längsverlaufenden Randstreifen des gewählten Materials gebildet werden und in einem bestimmten Abstand voneinander angeordnet sind.
3. Verfahren nach Patentanspruch 2, bei welchem sich die seitlichen Randabschnitte (47) längsverlaufend in einer Richtung im wesentlichen parallel zu der Zuführrichtung (9a) erstrecken.
4. Verfahren nach den vorstehenden Patentansprüchen, bei welchem die Fördervorrichtung (29, mit welcher das Bogenmaterial (27, 4) in Verbindung gebracht wird, entsprechende Fördermittel (36, 37) enthält, wobei das Bogenmaterial (27, 4) ein erstes Material enthält und die Fördermittel (36, 37) ein zweites Material enthalten, und wobei wenigstens das erste Material elektrostatisch aufgeladen wird, bevor die Verbindung zwischen dem Bogenmaterial (27, 4) und den Fördermitteln (36, 37) erfolgt.
5. Verfahren nach Patentanspruch 4, bei welchem wenigstens das erste Material elektrostatisch aufgeladen wird, und zwar durch die Reibwirkung eines elektrisierenden Mittels.
6. Verfahren nach Patentanspruch 5, bei welchem das elektrisierende Mittel ein Strömungsmittel ist.
7. Verfahren nach Patentanspruch 6, bei welchem das elektrisierende Strömungsmittel die Umluft ist, welche die Fördervorrichtung (29) umgibt.
8. Verfahren nach Patentanspruch 6, bei welchem das elektrisierende Strömungsmittel ein Strom ionisierter Luft ist.
9. Verfahren nach Patentanspruch 5, bei welchem das elektrisierende Mittel aus einem tamponartigen Element (49) besteht, dazu bestimmt, wenigstens das erste Material mit Hilfe einer Schleifwirkung zu elektrisieren.
10. Verfahren nach den Patentansprüchen von 4 bis 9, enthaltend eine weitere Phase des Erwärmens von wenigstens einem der beiden Materialien.
11. Verfahren nach den Patentansprüchen von 3 bis 10, bei welchem das Bogenmaterial (27, 4) aus einer kontinuierlichen Bahn (27) besteht, welche quer durch in einzelne Bögen (4) geschnitten ist, und zwar an einem Punkt, der dem Teil der Zuführbahn (9) vorausgeht, entlang welchem das Material (27, 4) mit den Fördermitteln (36, 37) in Verbindung gebracht wird.
12. Verfahren nach Patentanspruch 11, bei welchem die Bögen (4) nun Einwickelbögen sind, einzeln und aufeinanderfolgend durch die Förderstation (29) in Richtung der Umwickelstation (7) weitergeleitet, welche sich tatsächlich mit der Kreuzung zwischen der entsprechenden Zuführbahn (9) und einer weiteren Zuführbahn (8) befindet, wobei letztere sich zwischen den Fördermitteln (36, 37) erstreckt, entlang welchen die Artikel (3) zum Einwickeln in Richtung der Umwickelstation (7) vorlaufen.
13. Verfahren nach Patentanspruch 11 oder 12, enthaltend die weitere Phase des Zuführens der kontinuierlichen Bahn (27) an die Fördervorrichtung (29) über eine vorangehende Förder- und Schneidvorrichtung (28), angeordnet vor der Fördervorrichtung (29) entlang der Zuführrichtung (9a), durch welche die Bahn (27) zu einzelnen Bögen (4) geschnitten wird.
14. Verfahren nach Patentanspruch 13, bei welchem die Förder- und Schneidvorrichtung (28) eine Position im wesentlichen tangential zu der Fördervorrichtung (29) belegt und die weitere Zuführphase die folgenden sekundären Phasen enthält: Verbinden eines Führungsabschnittes der Bahn (27) mit der Förder- und Schneidvorrichtung (28); Vorlaufen des Führungsabschnittes zu der Fördervorrichtung (29) hin; Trennen des Führungsabschnittes von der Förder- und Schneidvorrichtung (28) und Einführen in die Fördervorrichtung (29) und in stabiler Verbin-

duction mit dieser bleibend; und anschliessend das Schneiden der Bahn (27) zwecks Herstellung einzelner Bögen (4), die mit der Fördervorrichtung (29) in Verbindung verbleiben.

15. Verfahren nach Patentanspruch 14, bei welchem die Bahn (27) durch Saugkraft mit der Förder- und Schneidvorrichtung (28) verbunden ist.
16. Verfahren nach Patentanspruch 14, bei welchem die Bahn (27) durch elektrostatische Anziehungskraft mit der Förder- und Schneidvorrichtung (28) verbunden ist.
17. Verfahren nach Patentanspruch 16, bei welchem die Bahn (27) durch Beseitigung der elektrostatischen Anziehungskraft mit einer ionisierten Strömung von der Förder- und Schneidvorrichtung (28) getrennt wird.

Revendications

1. Procédé de transport de feuilles (27, 4) le long d'un parcours d'avance (9) prédéterminé et dans une direction donnée (9a) jusqu'à une station d'emballage (7), comprenant les phases suivantes : contraindre la feuille (27, 4) à être et à rester en contact stable avec un dispositif de transport (29), au moins le long d'une partie du parcours d'avance (9), par attraction électrostatique, caractérisé en ce que ladite feuille (27, 4) est mise et reste en contact avec ledit dispositif de transport (29) le long de deux portions latérales (47) de cette même feuille (27, 4) bordant les deux marges longitudinales respectives de ladite feuille (27, 4), ladite feuille (27, 4) étant chargée électrostatiquement avant d'être mise en contact avec le dispositif de transport (29).
2. Procédé selon la revendication 1, caractérisé en ce que le dispositif de transport (29) comprend des moyens de transport (36, 37) avec lesquels la feuille (27, 4) est contrainte à entrer et à rester en contact stable, le long de deux portions latérales (47) présentées par les marges longitudinales du matériau sélectionné et se trouvant à une distance prédéfinie l'une de l'autre.
3. Procédé selon la revendication 2, caractérisé en ce que les portions latérales (47) des marges s'étendent longitudinalement dans une direction en substance parallèle à la direction d'avance (9a).
4. Procédé selon les revendications précédentes, caractérisé en ce que le dispositif de transport (29) avec lequel la feuille (27, 4) est mise en contact comprend des moyens de transport (36, 37) correspondants, ladite feuille (27, 4) consistant en un premier matériau, lesdits moyens de transport (36, 37) consistant en un deuxième matériau, et au moins ledit premier matériau étant chargé électrostatiquement avant d'établir le contact entre la feuille (27, 4) et les moyens de transport (36, 37).
5. Procédé selon la revendication 4, caractérisé en ce qu'au moins le premier matériau est chargé électrostatiquement par frottement direct avec un moyen électrisant.
6. Procédé selon la revendication 5, caractérisé en ce que le moyen électrisant est un moyen fluide.
7. Procédé selon la revendication 6, caractérisé en ce que le moyen fluide électrisant est l'air ambiant qui entoure le dispositif de transport (29).
8. Procédé selon la revendication 6, caractérisé en ce que le moyen fluide électrisant est un flux d'air ionisé.
9. Procédé selon la revendication 5, caractérisé en ce que le moyen électrisant consiste en une plaquette (49) destinée à électriser au moins le premier matériau par frottement continu.
10. Procédé selon les revendications de 4 à 9, caractérisé en ce qu'il comprend aussi la phase de chauffage de l'un au moins des deux matériaux.
11. Procédé selon les revendications de 3 à 10, caractérisé en ce que la feuille (27, 4) consiste en une bande continue (27) qui est coupée transversalement en feuilles simples (4), en amont de ladite partie du parcours d'avance (9) le long de laquelle la feuille (27, 4) est mise en contact avec les moyens de transport (36, 37).
12. Procédé selon la revendication 11, caractérisé en ce que les feuilles (4) sont des feuilles d'emballage qui avancent par l'intermédiaire du dispositif de transport (29), séparément et les unes à la suite des autres, vers une station d'emballage (7) qui coïncide de fait avec la zone au niveau de laquelle le parcours d'avance (9) correspondant coupe un autre parcours d'avance (8), lequel parcours d'avance (8) s'étend entre les moyens de transport (36, 37) et le long duquel des articles à emballer (3) avancent vers cette même station d'emballage (7).
13. Procédé selon la revendication 11 ou 12, caractérisé en ce qu'il comprend aussi la phase d'alimentation de la bande continue (27) au dispositif de transport (29) qui s'effectue par l'intermédiaire d'un dispositif de transport et de coupe (28), placé en amont du dispositif de transport (29) dans la direction

d'avance (9a) et destiné à couper la bande (27) en feuilles simples (4).

14. Procédé selon la revendication 13, caractérisé en ce que le dispositif de transport et de coupe (28) est en substance tangent au dispositif de transport (29) ; ladite phase d'alimentation comprenant les sous-phases suivantes : associer une extrémité avant de la bande (27) au dispositif de transport et de coupe (28), faire avancer cette extrémité vers le dispositif de transport (29), contraindre l'extrémité à se séparer du dispositif de transport et de coupe (28) et à entrer et rester en contact stable avec le dispositif de transport (29), puis couper la bande (27) pour obtenir une feuille simple (4) qui reste en contact avec le dispositif de transport (29).
15. Procédé selon la revendication 14, caractérisé en ce que la bande (27) est mise en contact avec le dispositif de transport et de coupe (28) par aspiration.
16. Procédé selon la revendication 14, caractérisé en ce que la bande (27) est mise en contact avec le dispositif de transport et de coupe (28) par attraction électrostatique.
17. Procédé selon la revendication 16, caractérisé en ce que la bande (27) est séparée du dispositif de transport et de coupe (28) en éliminant l'attraction électrostatique au moyen d'un flux de fluide ionisé.

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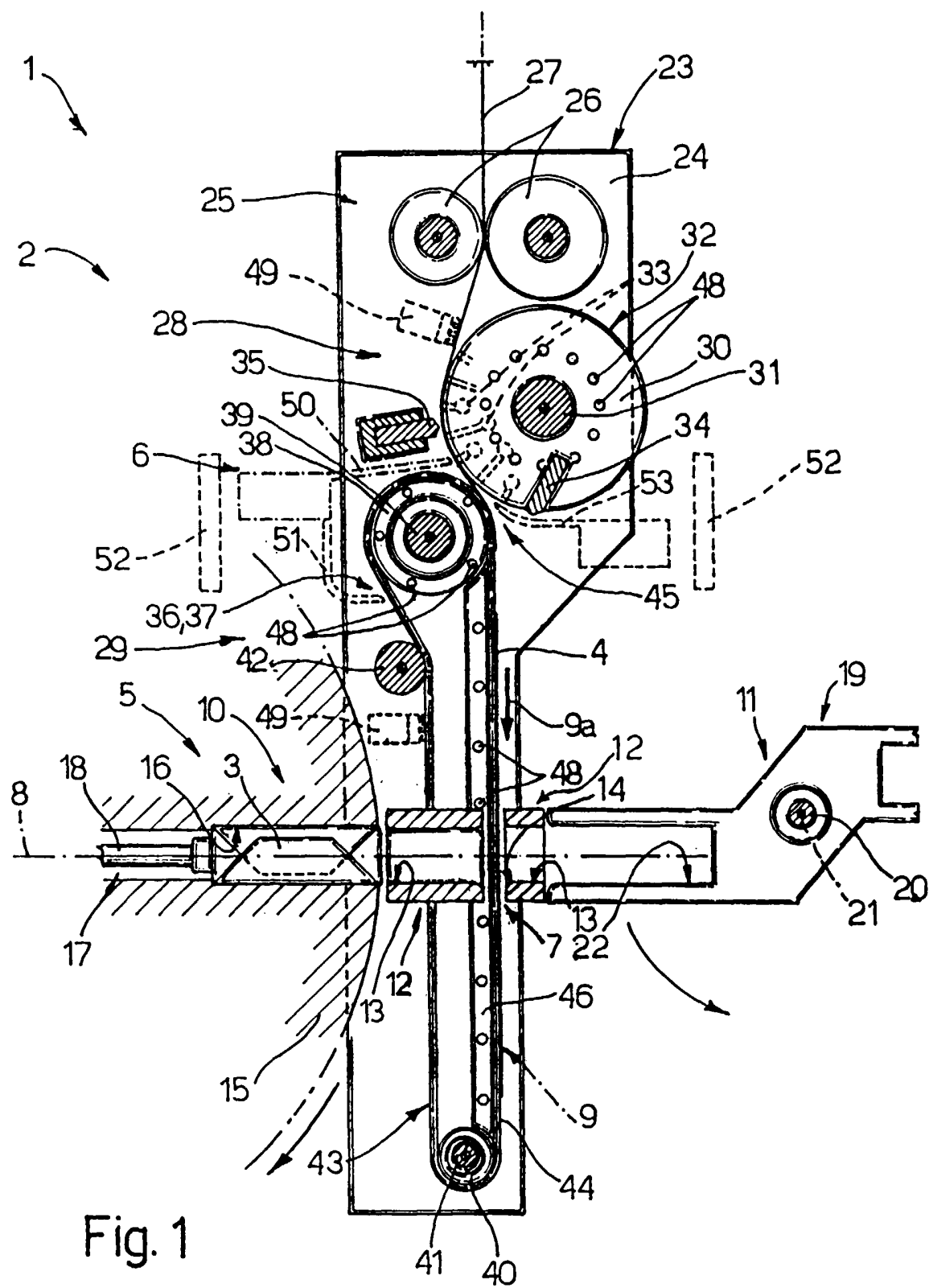


Fig. 1

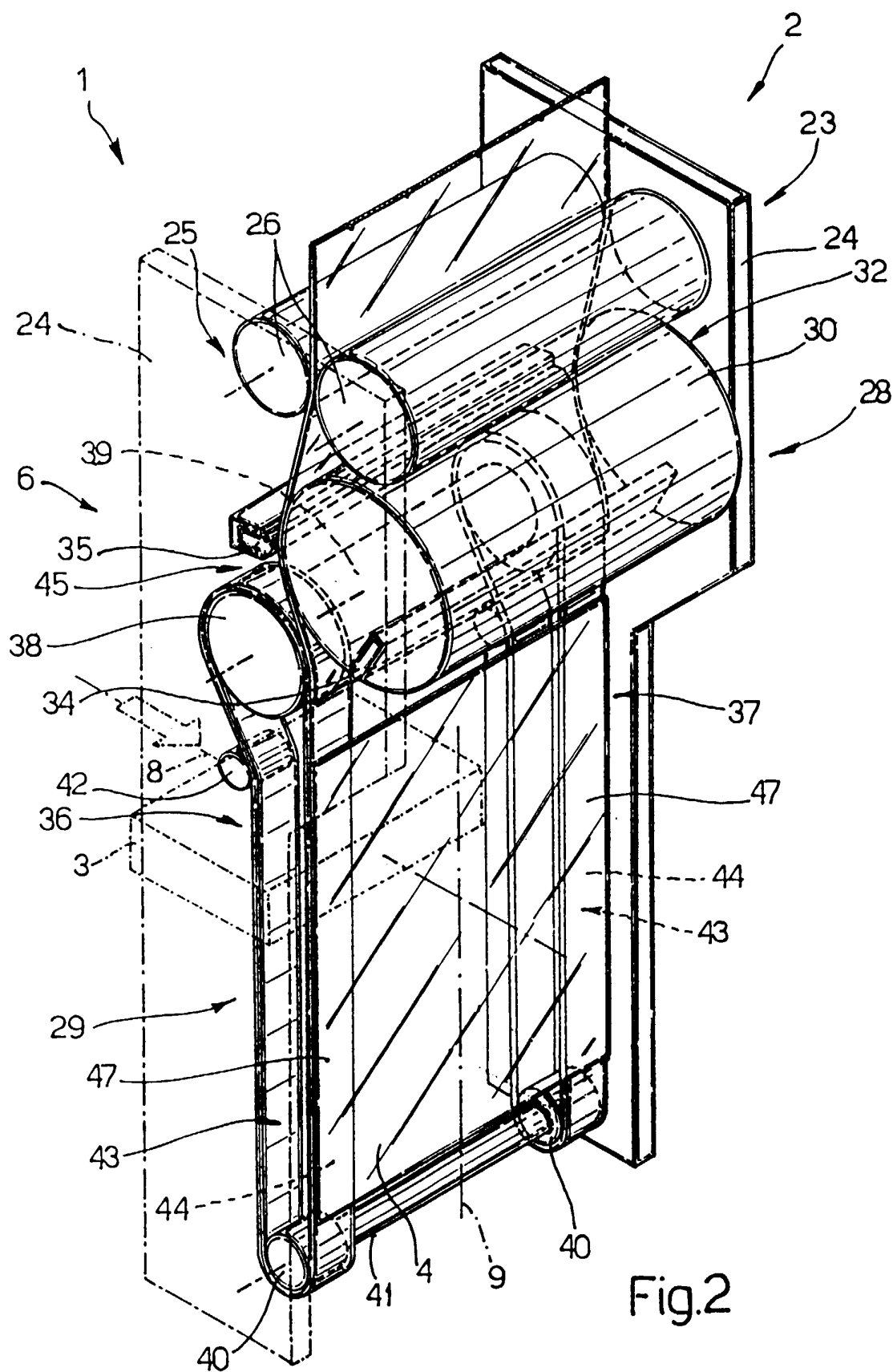


Fig.2