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(54) PAPER MACHINE AND METHOD OF MANUFACTURING A PAPER WEB

PAPIERMASCHINE UND VERFAHREN ZUR HERSTELLUNG EINER PAPIERBAHN

MACHINE A PAPIER ET PROCEDE DE PRODUCTION D'UNE BANDE PAPIER

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EP-A- 0 930 392
EP-A1- 0 159 280
EP-A1- 0 598 991
DE-U1- 29 701 382
US-A- 4 976 821

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Description

[0001] The present invention relates to a paper machine for manufacturing a continuous paper web, comprising:

- a wet section,
- a press section having at least two consecutive first and second double-felted presses, each of which comprises an upper press member, a lower press member, said press members forming first and second press nips, respectively, with each other, an upper press felt which runs in a loop through the first press nip and second press nip, respectively, and a lower press felt which runs in a loop through the first press nip and second press nip, respectively,
- a drying section,
- a clothing disposed upstream of the first press,
- a clothing disposed downstream of the second press,
- a first transfer zone arranged between said clothing disposed upstream and the first press,
- a second transfer zone arranged between the first press and the second press, and
- a third transfer zone arranged between the second press and said clothing disposed downstream.

[0002] According to conventional technology the paper web is forced in a press section to accompany the clothing, which does not act as pick-up felt. This applies particularly to press sections having at least two presses. Only exceptionally is the paper web permitted to accompany the pick-up felt in a press section with two presses. However, according to one suggestion the pick-up felt of the first press also passes through the second press, also provided with an impermeable belt (see US-4,976,821, for instance), and according to another suggestion only the second press is provided with a pick-up felt which also carries the web after the press nip, but the transfer must then be ensured with the help of a suction shoe (see EP-B1-0 159 280, for instance).

[0003] A press section is thus known through US-4,976,821, where the paper web is picked up from the forming wire with the help of the upper press felt of the first press and is permitted to accompany this pick-up felt after the first press nip. The known press section has only one double-felted press and said upper press felt is also used in the second press, i.e. it passes through both press nips. If the extremely long press felt were to be replaced by two press felts - which is neither proposed not intimated in the patent specifications and which would be contrary to the inventive concept of the known configurations - the principle of web movement according to the first press could not be used since this would mean that the impermeable belt in the following shoe press would be replaced by a press felt - which is neither suggested nor intimated in the patent specifications and would also be contrary to the inventive concept of the known configurations.

[0004] Through said EP-B1-0 159 280 (preamble of ind. claims 1 and 21) for instance, a press section is thus also known comprising two double-felted presses, of which the upper press felt of the second press picks up the paper web from the lower press felt of the first press, the latter felt not having been utilized as pick-up felt, and carries the paper web after the press nip where it is transferred to the upper press felt with the aid of a suction shoe. The patent specification offers no suggestion or intimation that the paper web could be allowed to accompany the pick-up felt of the first press - which would in any case be impossible in view of the configuration of the second press as described and illustrated therein where, furthermore, the press shoe is arranged in the loop formed by the felt not used as pick-up felt. The use of a press shoe with a smooth shoe press belt has also proved to have a tendency to draw the paper web towards it, partly because the shoe felt becomes clogged more quickly than the felt opposite it, the roll felt.

[0005] A press section is previously known through EP-A1-0 598 991 which comprises a double-felted shoe press and a single-felted shoe press in which the upper press felt of the first press picks up the paper web from the forming wire and carries the paper web after the press nip, the paper web being transferred to the upper press felt with the aid of a suction shoe. In the second shoe press the paper web accompanies the counter roll of the shoe press which has a smooth surface, ensuring that the paper web does not accompany the lower press felt after the second press nip.

[0006] A common problem with configurations in accordance with known technology as represented by the above-mentioned patent specifications, for instance, is that there is a risk of the paper web not accompanying the desired clothing or roll surface after the press nip and instead being picked up by the other clothing in the same press. This results in web rupture which causes stoppage and loss of production. This may occur, for instance, in a double-felted press in which a suction device, e.g. a suction shoe, intended to ensure that the paper web accompanies the press felt which is not the pick-up felt after the press nip, is for some reason put out of function so that the paper web instead accompanies the pick-up felt which has no physical connection with the second press, see for instance EP-B1-0 159 280, mentioned above. Other measures for ensuring that the paper web accompanies the desired felt have been to have a denser and wetter lower felt if the upper felt is the pick-up felt, or to select some special felt separation to reduce the risk of the paper web accompanying the pick-up felt.

[0007] The object of the present invention is to provide a paper machine with an improved press section as regards conveying the web through at least two consecutive presses so that the risk of "web theft", i.e. the paper web not accompanying the desired press felt, is greatly reduced and in certain cases, even in most cases of operation, is eliminated.

[0008] The paper machine according to the invention exhibits the features of claim 1.

[0009] The press section thus has at least two double-felted presses disposed one after the other. The first press has an upper press member and a lower press member, said press members forming a press nip with each other which is the first press nip of the press section. The first press also has an upper press felt which runs in a loop through the first press nip and a lower press felt which runs in a loop through the first press nip. These upper and lower press felts run only through this first press nip, i.e. they do not run through the press nip of the second press. The second press has an upper press member and a lower press member, said two press members forming a press nip with each other, which is the second press nip in the press section. The second press also has an upper press felt which runs in a loop through the second press nip, and a lower press felt which runs in a loop through the second press nip. These upper and lower press felts run only through this second press nip, i.e. they do not run through the press nip of the first press.

[0010] The invention is described in more detail in the following with reference to the drawings.

[0011] Figure 1 shows schematically parts of a paper machine according to a presently preferred embodiment.

[0012] Figure 1 shows schematically parts of a paper machine for manufacturing a paper web 1. The paper machine comprises a wet section 2, a press section 3 and a drying section 25.

[0013] The wet section 2, of which only the downstream part is shown in the drawing, comprises a forming wire 4 running in a loop around guide rolls 5 and a forming roll (not shown).

[0014] The drying section 25 comprises one or more drying cylinders 26.

[0015] In the embodiment shown the press section comprises a first double-felted press 6 and a second double-felted press 7.

[0016] The first double-felted press 6 comprises an upper press member 8 and a lower press member 9, said press members 8, 9 cooperating with each other to define a first press nip N1 between them. In the embodiment shown the first double-felted press 6 comprises a shoe press in which the upper press member 8 consists of a shoe press roll and the lower press member 9 consists of a counter roll which can be a smooth roll, a grooved roll or a blind-drilled roll. Said first press nip N1 is thus an extended press nip.

[0017] The first double-felted shoe press 6 comprises an upper, endless press felt 10 which runs in a loop through the first press nip N1, around a plurality of guide rolls 11 and around a pick-up suction roll 12 arranged close to the forming wire 4 in order to form a first transfer zone T1 with this. The upper press felt 10 thus also functions as pick-up felt to pick up and transfer the paper web 1 from the forming wire 4 to the upper press felt 10. The guide roll 5, which is situated upstream and nearest the transfer zone T1, may be a suction roll if so desired.

[0018] Further, the first double-felted shoe press 6 comprises a lower, endless press felt 13 which runs in a loop through the first press nip N1 around a plurality of guide rolls 14. The loop of the lower press felt 13 is free from suction devices at the points where the press felt 13 is in contact with or substantially in contact with the paper web, at least in and after the press nip N1.

[0019] The second double-felted press 7 comprises an upper press member 15 and a lower press member 16, said press members 15, 16 cooperating with each other to define a second press nip N2 between them. In the embodiment shown the second double-felted press 7 also comprises a shoe press in which the lower press member 16 consists of a shoe press roll and the upper press member 15 consists of a counter roll which can be a smooth roll, a grooved roll or a blind-drilled roll. Said second press nip N2 is thus also an extended press nip.

[0020] The second double-felted shoe press 7 comprises an upper, endless press felt 17 which runs in a loop through the second press nip N2 around a plurality of guide rolls 18. The loop of the upper press felt 17 is also free from suction devices at the points where the press felt 17 is in contact with or substantially in contact with the paper web, at least in and after the press nip N2.

[0021] Further, the second double-felted shoe press 7 comprises a lower, endless press felt 19 which runs in a loop through the second press nip N2 around a plurality of guide rolls 20 and around a pick-up suction roll 21 disposed close to the upper press felt 10 of the first double-felted shoe press to form a second transfer zone T2 with this. The lower press felt 19 thus also functions as pick-up felt to pick up and transfer the paper web 1 from the upper press felt 10 of the first double-felted shoe press 6 to the lower press felt 19.

[0022] An endless clothing 22 is arranged downstream of the second double-felted shoe press 7 and runs in a loop around a plurality of guide rolls (not shown) and around a pick-up suction roll 23 arranged close to the lower press felt 19 of the second double-felted shoe press 7 to form a third transfer zone T3 with this.

[0023] The reference number 24 denotes a suction device, such as a suction box or suction shoe, arranged in the loop of the upper press felt 10 of the first press 6 downstream of the press nip N1. It is represented by broken lines to indicate that it is not necessary under normal operating circumstances, or in most operating circumstances, in order to achieve the object of the invention, which is for the paper web 1 to accompany the pick-up felt 10 also after the press nip N1 without external measures such as suction devices. The suction device 24 may be operated temporarily during the initial stage after changing a press felt, for instance, until the press felt has become sealed resulting in increased adhesion ability of the paper web thereto. It may also be used under difficult production circumstances entailing low grammage and high speeds.

[0024] The shoe press roll 8, 16 is arranged in the loop formed by the press felt 10 or 19, respectively, which also

functions as pick-up and transfer felt since this avoids the problem discussed in the introduction, viz. the paper web having a tendency to be drawn towards the opposite press felt when the shoe press roll is arranged in the loop of this press felt.

[0025] To prevent re-wetting of the paper web, the felts 10, 13 and 17, 19 are separated from each other immediately after the press nip N1 and press nip N2, respectively. It is also preferred that the press felt 10 used as both pick-up felt and transfer felt in the first press 6 is guided away from the paper web at the end of the transfer zone T2 or immediately thereafter. The same applies to the press felt 19 at its transfer zone T3.

[0026] The terms "first" and "second" in the expression "first and second double-felted presses" and similar expressions are intended only to indicate the mutual relationship between the at least two consecutive presses 6, 7 and are not intended to exclude at least one additional press before the first double-felted press 6 and at least one additional press after the second double-felted press 7. Each such additional press may consist of a press of any kind suitable for combining with the press configurations according to the invention. However, the additional press or presses is/are preferably of the same configuration as the first press 6 and/or the second press 7, depending on its/their position(-s) in the press section.

[0027] In other words, the press section according to the invention has what is known as inverted web run, where the paper web in all presses is allowed to accompany the pick-up felt even after the press nip so that alternately one side of the paper web (the upper side in Figure 1) is in contact with the pick-up felt of a certain press and its other side (the lower side in Figure 1) is in contact with the pick-up felt of a preceding or subsequent press.

[0028] In the paper machine according to the invention, therefore, the first press has a separate upper press felt and a separate lower press felt, these press felts running through the first press nip, and the second press has a separate lower press felt and a separate upper press felt, which two latter press felts run through the second press nip. In other words, there are a first press felt and a second press felt which run through the first press nip, and a third press felt and a fourth press felt which run through the second press nip, and so on if more than two presses are used. Expressed differently, the lower press felt in the second press nip is a different felt from the lower press felt in the first press nip. The same applies to the two upper press felts. Each press felt thus runs through only one press nip.

Claims

1. A paper machine for manufacturing a continuous paper web (1), comprising:

- a wet section (2),
- a press section (3) having at least two consecutive first and second double-felted presses (6,7), each of which comprises an upper press member (8, 15), a lower press member (9,16), said press members (8, 9; 15, 16) forming first and second press nips, respectively, (N1, N2) with each other, an upper press felt (10, 17) which runs in a loop through the first press nip (N1) and second press nip (N2), respectively, and a lower press felt (13, 19) which runs in a loop through the first press nip (N1) and second press nip (N2), respectively,
- a drying section (25),
- a clothing (4) disposed upstream of the first press (6),
- a clothing (22) disposed downstream of the second press (7),
- a first transfer zone (T1) arranged between said clothing (4) disposed upstream and the first press (6),
- a second transfer zone (T2) arranged between the first press (6) and the second press (7), and
- a third transfer zone (T3) arranged between the second press (7) and said clothing (22) disposed downstream, one of the press felts (10, 13, 17, 19) in each of said first and second presses (6, 7), in an alternating relationship between the presses (6, 7), being arranged to pick up the paper web (1) in the transfer zone (T1, T2) situated upstream of the press nip (N1, N2) belonging to it, and said press felts (10, 19) used as pick-up felts also being arranged to carry and transfer the paper web (1) from the press nip (N1, N2) belonging to it to the following transfer zone (T2, T3), both the first and the second presses (6, 7) being shoe presses (6, 7) and one press member (8, 16) of both shoe presses (6, 7) being a shoe press roll (8, 16), **characterized in that** the shoe press roll (8, 16) of both the first and the second shoe press (6, 7) is arranged in the loop formed by the press felt (10, 19) which also functions as pick-up and transfer felt.

2. A paper machine as claimed in claim 1, **characterized in that** the press felt (10) of at least the first press (6), used as both pick-up felt and transfer felt, is arranged to be guided away from the paper web at a point upstream of and at a distance from said second press nip (N2).

3. A paper machine as claimed in claim 1 or 2, **characterized in that** said clothing (4) disposed upstream of the first press (6) constitutes a forming wire in said wet section (2).

4. A paper machine as claimed in any of claims 1-3, **characterized in that** the first transfer zone (T1) comprises a pick-up suction device (12) arranged in

the loop of the press felt (10) being used as pick-up felt.

5. A paper machine as claimed in claim 4, **characterized in that** said pick-up suction device (12) is a pick-up suction roll or shoe.

6. A paper machine as claimed in any of claims 1-5, **characterized in that** said clothing (22) disposed downstream of the second press consists of a pick-up and transfer clothing for picking up and transferring the paper web (1) to said drying section (25) of the paper machine.

7. A paper machine as claimed in claim 6, **characterized in that** the third transfer zone (T3) comprises a pick-up suction device (23) arranged in the loop of said pick-up and transfer clothing (22).

8. A paper machine as claimed in claim 7, **characterized in that** the pick-up suction device (23) is a pick-up suction roll or shoe.

9. A paper machine as claimed in any of claims 1-8, **characterized in that** the second transfer zone (T2) comprises a pick-up suction device (21) arranged in the loop of the press felt (19) used as pick-up felt, at which pick-up suction device (21) the two press felts (10, 19) used as transfer felts converge, to subsequently again diverge from each other at the end of or immediately after the transfer zone (T2).

10. A paper machine as claimed in claim 9, **characterized in that** said pick-up suction device (21) is a pick-up suction roll or shoe.

11. A paper machine as claimed in claim 9 or 10, **characterized in that** the paper web (1) is arranged to be carried in a linear or substantially linear run between said two press nips (N1, N2), the paper web (1) being tangential or substantially tangential to the radius of curvature of the pick-up suction device (21) within the transfer zone (T2) before and after this.

12. A paper machine as claimed in claim 1, **characterized in that** the second press member (9, 15) of the shoe presses (6, 7) is a counter roll in the form of a smooth roll, a grooved roll or a blind-drilled roll.

13. A paper machine as claimed in any of claims 1-12, **characterized in that** at least the first press (6) comprises a suction device (24) disposed downstream of the press nip (N1) in the loop formed by the press felt (10) which also acts as pick-up and transfer felt.

14. A paper machine as claimed in any of claims 1-13, **characterized in that** said press felts (10, 19) which also act as pick-up and transfer felts consist of the upper press felt (10) of the first press (6) and of the lower press felt (19) of the second press (7).

15. A paper machine as claimed in any of claims 1-14 **characterized in that** the upper press member of the first press (6) constitutes said shoe press roll (8), and the lower press member of the second press (7) constitutes said shoe press roll (16).

Patentansprüche

1. Papiermaschine zum Herstellen einer kontinuierlichen Papierbahn (1) mit:

- einer Nasspartie (2),
- einer Pressenpartie (3) mit zumindest zwei aufeinanderfolgenden d. h. einer ersten und einer zweiten Doppelfilzpresse (6, 7), von denen jede ein oberes Pressenelement (8, 15) und ein unteres Pressenelement (9, 16) aufweist, wobei die Pressenelemente (8, 9; 15, 16) jeweils einen ersten beziehungsweise einen zweiten Pressenspalt (N1, N2) miteinander ausbilden, einem oberen Pressfilz (10, 17), der in einer Schleife durch den ersten Pressenspalt (N1) beziehungsweise den zweiten Pressenspalt (N2) jeweils läuft, und einem unteren Pressfilz (13, 19), der in einer Schleife durch den ersten Pressenspalt (N1) beziehungsweise den zweiten Pressenspalt (N2) jeweils läuft,
- einer Trockenpartie (25),
- einem Gewebe (4), das stromaufwärtig von der ersten Presse (6) angeordnet ist,
- einem Gewebe (22), das stromabwärtig von der zweiten Presse (7) angeordnet ist,
- einer ersten Übertragungszone (T1), die zwischen dem stromaufwärtig angeordneten Gewebe (4) und der ersten Presse (6) angeordnet ist,
- einer zweiten Übertragungszone (T2), die zwischen der ersten Presse (6) und der zweiten Presse (7) angeordnet ist, und
- einer dritten Übertragungszone (T3), die zwischen der zweiten Presse (7) und dem stromabwärtig angeordneten Gewebe (22) angeordnet ist, wobei einer der Pressfilze (10, 13, 17, 19) bei sowohl der ersten als auch der zweiten Presse (6, 7) in einer abwechselnden Beziehung zwischen den Pressen (6, 7) so eingerichtet ist, dass er die Papierbahn (1) in der Übertragungszone (T1, T2,) aufnimmt, die sich stromaufwärtig von dem Pressenspalt (N1, N2) befindet, der zu ihm gehört, und die Pressfilze (10, 19), die als Aufnahmefilze verwendet werden, auch so eingerichtet sind, dass sie die Papierbahn (1) von dem Pressenspalt (N1, N2), der zu ihm gehört, zu der folgenden Übertra-

gungszone (T2, T3) befördern und übertragen, sowohl die erste als auch die zweite Presse (6, 7) Schuhpressen (6, 7) sind und ein Pressenelement (8, 16) von den beiden Schuhpressen (6, 7) eine Schuhpresswalze (8, 16) ist,

dadurch gekennzeichnet, dass
die Schuhpresswalze (8, 16) von sowohl der ersten als auch der zweiten Schuhpresse (6, 7) in der Schleife angeordnet ist, die durch den Pressfilz (10, 19) ausgebildet ist, der auch als Aufnahme- und Übertragungsfilz wirkt.

2. Papiermaschine gemäß Anspruch 1,
dadurch gekennzeichnet, dass
der Pressfilz (10) von zumindest der ersten Presse (6), der sowohl als Aufnahmefilz als auch als Übertragungsfilz verwendet wird, so eingerichtet ist, dass er von der Papierbahn an einer Stelle stromaufwärtig von und bei einem Abstand von dem zweiten Pressenspalt (N2) weg geführt wird.

3. Papiermaschine gemäß Anspruch 1 oder 2,
dadurch gekennzeichnet, dass
das Gewebe (4), das stromaufwärtig von der ersten Presse (6) angeordnet ist, ein Bahnbildungssieb bei der Nasspartie (2) bildet.

4. Papiermaschine gemäß einem der Ansprüche 1 bis 3,
dadurch gekennzeichnet, dass
die erste Übertragungszone (T1) eine Aufnahmesaugvorrichtung (12) aufweist, die in der Schleife des Pressfilzes (10) angeordnet ist, der als ein Aufnahmefilz verwendet wird.

5. Papiermaschine gemäß Anspruch 4,
dadurch gekennzeichnet, dass
die Aufnahmesaugvorrichtung (12) eine Aufnahmesaugwalze oder ein -schuh ist.

6. Papiermaschine gemäß einem der Ansprüche 1 bis 5,
dadurch gekennzeichnet, dass
das Gewebe (22), das stromabwärtig von der zweiten Presse angeordnet ist, aus einem Aufnahme- und Übertragungsgewebe zum Aufnehmen und Übertragen der Papierbahn (1) zu der Trockenpartie 25 der Papiermaschine besteht.

7. Papiermaschine gemäß Anspruch 6,
dadurch gekennzeichnet, dass
die dritte Übertragungszone (T3) eine Aufnahmesaugvorrichtung (23) aufweist, die in der Schleife des Aufnahme- und Übertragungsgewebes (22) angeordnet ist.

8. Papiermaschine gemäß Anspruch 7,
dadurch gekennzeichnet, dass
die Aufnahmesaugvorrichtung (23) eine Aufnahmesaugwalze oder ein -schuh ist.

9. Papiermaschine gemäß einem der Ansprüche 1 bis 8,
dadurch gekennzeichnet, dass
die zweite Übertragungszone (T2) eine Aufnahmesaugvorrichtung (21) aufweist, die in der Schleife des als Aufnahmefilz verwendeten Pressfilzes (19) angeordnet ist, wobei an der Aufnahmesaugvorrichtung (21) die beiden Pressfilze (10, 19), die als Übertragungsfilze verwendet werden, zusammenlaufen, um anschließend an dem Ende der oder sofort nach der Übertragungszone (T2) erneut voneinander auseinanderzulaufen.

10. Papiermaschine gemäß Anspruch 9,
dadurch gekennzeichnet, dass
die Aufnahmesaugvorrichtung (21) eine Aufnahmesaugwalze oder ein -schuh ist.

11. Papiermaschine gemäß Anspruch 9 oder 10,
dadurch gekennzeichnet, dass
die Papierbahn (1) so eingerichtet ist, dass sie bei einem linearen oder im wesentlichen linearen Lauf zwischen den beiden Pressspalten (N1, N2) befördert wird, wobei die Papierbahn (1) tangential oder im wesentlichen tangential zu dem Krümmungsradius der Aufnahmesaugvorrichtung (21) innerhalb der Übertragungszone (T2) vor und nach dieser ist.

12. Papiermaschine gemäß Anspruch 1,
dadurch gekennzeichnet, dass
das zweite Pressenelement (9, 15) der Schuhpressen (6, 7) eine Gegenwalze in der Form einer glatten Walze, einer mit Nuten versehenen Walze oder einer mit Sacklöchern versehenen Walze ist.

13. Papiermaschine gemäß einem der Ansprüche 1 bis 12,
dadurch gekennzeichnet, dass
zumindest die erste Presse (6) eine Saugvorrichtung (24) aufweist, die stromabwärtig von dem Pressspalt (N1) in der Schleife angeordnet ist, die durch den Pressfilz (10) ausgebildet ist, der auch als Aufnahme- und Übertragungsfilz wirkt.

14. Papiermaschine gemäß einem der Ansprüche 1 bis 13,
dadurch gekennzeichnet, dass
die Pressfilze (10, 19), die ebenfalls als Aufnahme- und Übertragungsfilze wirken, aus dem oberen Pressfilz (10) der ersten Presse (6) und aus dem unteren Pressfilz (19) der zweiten Presse (7) bestehen.

15. Papiermaschine gemäß einem der Ansprüche 1 bis

14,
dadurch gekennzeichnet, dass
das obere Pressenelement der ersten Presse (6) die Schuhpresswalze (8) bildet und das untere Pressenelement der zweiten Presse (7) die Schuhpresswalze (16) bildet.

Revendications

1. Machine à papier pour fabriquer une bande de papier continue (1), comportant :

- un tronçon humide (2),
- un tronçon de presses (3) ayant au moins deux première et seconde presses à double feutre consécutives (6, 7), qui comportent chacune un élément de presse supérieur (8, 15), un élément de presse inférieur (9, 16), lesdits éléments de presse (8, 9 ; 15, 16) formant respectivement des premier et second interstices de presse, (N1, N2) l'un avec l'autre, un feutre de presse supérieur (10, 17) qui se déplace en une boucle à travers le premier interstice de presse (N1) et le second interstice de presse (N2), respectivement, et un feutre de presse inférieur (13, 19) qui se déplace en une boucle à travers le premier interstice de presse (N1) et le second interstice de presse (N2), respectivement,
- un tronçon de séchage (25),
- un habillage (4) disposé en amont de la première presse (6),
- un habillage (22) disposé en aval de la seconde presse (7),
- une première zone de transfert (T1) agencée entre ledit habillage (4) disposé en amont et la première presse (6),
- une deuxième zone de transfert (T2) agencée entre la première presse (6) et la seconde presse (7), et
- une troisième zone de transfert (T3) agencée entre la deuxième presse (7) et ledit habillage (22) disposé en aval, l'un des feutres de presse (10, 13, 17, 19) de chacune desdites première et seconde presses (6, 7), dans une relation alternée entre les presses (6, 7), étant agencé pour saisir la bande de papier (1) dans la zone de transfert (T1, T2) située en amont de l'interstice de presse (N1, N2) lui appartenant, et lesdits feutres de presse (10, 19) utilisés comme feutres de saisie étant également agencés pour transporter et transférer la bande de papier (1) à partir de l'interstice de presse (N1, N2) appartenant à ceux-ci jusqu'à la zone de transfert suivante (T2, T3), chacune desdites première et seconde presses (6, 7) étant des presses à patin (6, 7) et un élément de presse (8, 16) des deux presses à patin (6, 7) étant un rouleau de presse à patin (8, 16), **caractérisée en ce que** le rouleau de presse à patin (8, 16) des deux presses à patin (6, 7) est agencé dans la boucle formée par le feutre de presse (10, 19) qui fonctionne également comme feutre de saisie et de transfert.

2. Machine à papier selon la revendication 1, **caractérisée en ce que** le feutre de presse (10) d'au moins la première presse (6), utilisé comme feutre de saisie et feutre de transfert, est agencé pour être guidé à l'écart de la bande de papier au niveau d'un point situé en amont dudit second interstice de presse (N2), et à distance de celui-ci.

3. Machine à papier selon la revendication 1 ou 2, **caractérisée en ce que** ledit habillage (4) disposé en amont de la première presse (6) constitue un fil de mise en forme dans ledit tronçon humide (2).

4. Machine à papier selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** la première zone de transfert (T1) comporte un dispositif d'aspiration de saisie (12) agencé dans la boucle du feutre de presse (10) utilisé comme feutre de saisie.

5. Machine à papier selon la revendication 4, **caractérisée en ce que** ledit dispositif d'aspiration de saisie (12) est un rouleau ou un patin d'aspiration de saisie.

6. Machine à papier selon l'une quelconque des revendications 1 à 5, **caractérisée en ce que** ledit habillage (22) disposé en aval de la seconde presse est constitué d'un habillage de saisie et de transfert pour saisir et transférer la bande de papier (1) vers ledit tronçon de séchage (25) de la machine à papier.

7. Machine à papier selon la revendication 6, **caractérisée en ce que** la troisième zone de transfert (T3) comporte un dispositif d'aspiration de saisie (23) agencé dans la boucle dudit habillage de saisie et de transfert (22).

8. Machine à papier selon la revendication 7, **caractérisée en ce que** le dispositif d'aspiration de saisie (23) est un rouleau ou un patin d'aspiration de saisie.

9. Machine à papier selon l'une quelconque des revendications 1 à 8, **caractérisée en ce que** la deuxième zone de transfert (T2) comporte un dispositif d'aspiration de saisie (21) agencé dans la boucle du feutre de presse (19) utilisé en tant que feutre de saisie, dispositif d'aspiration de saisie (21) au niveau duquel convergent les deux feutres de presse (10, 19) utilisés comme feutres de transfert, pour diverger ensuite l'un de l'autre à l'extrémité de la zone de transfert (T2), ou immédiatement après celle-ci.

10. Machine à papier selon la revendication 9, **caractérisée en ce que** ledit dispositif d'aspiration de saisie (21) est un rouleau ou un patin d'aspiration de saisie.

11. Machine à papier selon la revendication 9 ou 10, **caractérisée en ce que** la bande de papier (1) est agencée pour être transportée lors d'un déplacement linéaire ou sensiblement linéaire entre lesdits deux interstices de presse (N1, N2), la bande de papier (1) étant tangentielle ou sensiblement tangentielle au rayon de courbure du dispositif d'aspiration de saisie (21) à l'intérieur de la zone de transfert (T2), avant et après celle-ci.

12. Machine à papier selon la revendication 1, **caractérisée en ce que** le second élément de presse (9, 15) des presses à patin (6, 7) est un contre-rouleau ayant la forme d'un rouleau lisse, d'un rouleau rainuré ou d'un rouleau percé à l'aveugle.

13. Machine à papier selon l'une quelconque des revendications 1 à 12, **caractérisée en ce qu'**au moins la première presse (6) comporte un dispositif d'aspiration (24) disposé en aval de l'interstice de presse (N1) dans la boucle formée par le feutre de presse (10) qui agit également comme feutre de saisie et de transfert.

14. Machine à papier selon l'une quelconque des revendications 1 à 13, **caractérisée en ce que** lesdits feutres de presse (10, 19) qui agissent également comme feutres de saisie et de transfert sont constitués également du feutre de presse supérieur (10) de la première presse (6) et du feutre de presse inférieur (19) de la seconde presse (7).

15. Machine à papier selon l'une quelconque des revendications 1 à 14, **caractérisée en ce** l'élément de presse supérieur de la première presse (6) constitue ledit rouleau de presse à patin (8), et ledit élément de presse inférieur de la seconde presse (7) constitue ledit rouleau de presse à patin (16).

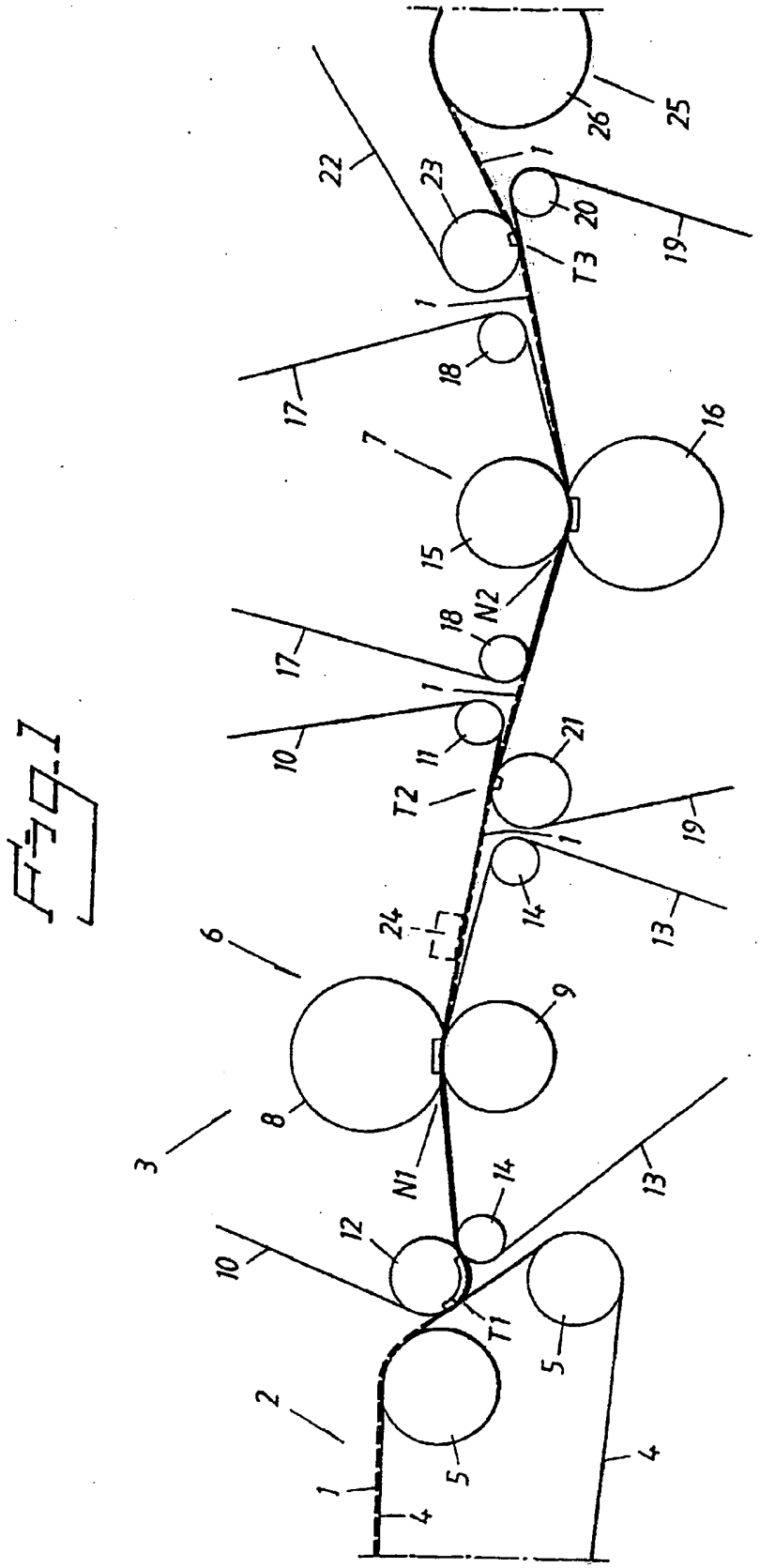

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N2

Fig.1

REFERENCES CITED IN THE DESCRIPTION

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