



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 334 231 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
03.05.2006 Bulletin 2006/18

(21) Application number: **01982503.3**

(22) Date of filing: **02.11.2001**

(51) Int Cl.:
D21F 3/00 (2006.01)

(86) International application number:
PCT/FI2001/000960

(87) International publication number:
WO 2002/036878 (10.05.2002 Gazette 2002/19)

(54) **PRESS SECTION OF A BOARD MACHINE PROVIDED WITH A PRE-PRESS AND METHOD FOR REMOVING WATER FROM A WEB IN SUCH A PRESS SECTION**

PRESSENPARTIE FÜR EINE MIT EINEM VORPRESSSPALT VERSEHENE KARTONMASCHINE
UND VERFAHREN ZUR ENTWÄSSERUNG EINER PAPIERBAHN IN EINER SOLCHEN
PRESSENPARTIE

SECTION DES PRESSES DE MACHINE A CARTON EQUIPEE D'UNE PRE-PRESSE ET PROCEDE
D'EGOUTTAGE D'UNE BANDE CONTINUE DANS UN TELLE SECTION DES PRESSES

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **06.11.2000 FI 20002428**

(43) Date of publication of application:
13.08.2003 Bulletin 2003/33

(73) Proprietor: **Metso Paper, Inc.**
00130 Helsinki (FI)

(72) Inventors:
• **HONKALAMPI, Petter**
FIN-40930 Kinkomaa (FI)

• **KAASALAINEN, Heikki**
FIN-40630 Jyväskylä (FI)
• **SÖDERHOLM, Nils**
FIN-46910 Anjalankoski (FI)

(74) Representative: **Stellberg, Hans Valter et al**
Forssén & Salomaa Oy
Eerikinkatu 2
00100 Helsinki (FI)

(56) References cited:
EP-A2- 0 870 866

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The invention relates to a press section of a board machine provided with a pre-press according to the preamble of claim 1.

[0002] The invention also relates to a method for removing water from a web in a press section of a board machine provided with a pre-press according to the preamble of claim 8.

[0003] In this application, a separate press nip means a press nip in which opposing press members form only one press nip. The separate press nip may be a roll nip or an extended nip. As a contrast to a separate press nip there is a press which is provided with a centre roll and in which the centre roll forms press nips with at least two other rolls.

[0004] The function of the press section is to remove water from a web and make the web symmetric, so that the absorption and roughness properties of both sides of the web are symmetric. In addition, the press section should be simple and efficient enough in order that it might be applied to several board grades.

[0005] At high speeds in particular, the travel of the web in the press section should be as straight as possible. The water-containing and weak web arriving at the press section does not withstand the dynamic forces produced by high speeds and changes of direction, but there are web breaks and other operational malfunctions, which cause shutdowns.

[0006] The applicant's **US patent 5,792,320** discloses a method for removing water from a paper or board web by pressing. In Fig. 2 of the patent, a pre-press nip is formed between a hollow-faced lower roll placed inside the loop of a forming wire and an upper shoe roll placed outside the loop of the forming wire. In the pre-press nip, a substantially non-water-receiving, smooth-faced transfer belt runs on the side of the upper shoe roll, by means of which belt the web is transferred from the pre-press nip onto a lower press felt of the first press nip proper. Removal of water takes place in the pre-press nip, which forms an extended nip, only in one direction, i.e. through the forming wire into the shell of the hollow-faced roll.

[0007] The applicant's *US patent 5,522,959* discloses a press section intended in particular for printing paper qualities. In Fig. 6 of the patent, a pre-press nip is formed between a lower hollow-faced roll placed inside the loop of a forming wire and an upper shoe roll placed outside the loop of the forming wire. In the pre-press nip, a press felt runs on the side of the upper shoe roll. Water is removed in the pre-press nip, which forms an extended nip, in two directions, i.e. through the forming wire into the shell of the lower hollow-faced roll and into the upper press felt. The transfer of the web to the press section proper takes place on a pick-up roll from the forming wire after the pre-press nip.

[0008] The applicant's *US patent 5,820,731* discloses a method and an apparatus for removing water from a web in a paper or board machine. In Fig. 3 of the patent,

a first pre-press nip is formed between a hollow-faced first lower roll placed inside the loop of a forming wire and a smooth-faced first upper roll placed outside the loop of the forming wire. A second pre-press nip is formed between a smooth-faced second lower roll placed inside the loop of the forming wire and a hollow-faced second upper roll placed outside the loop of the forming wire. The web runs in both pre-press nips between the lower forming wire and an upper wire running over the upper rolls. Removal of water takes place in the first pre-press nip mainly through the forming wire into the shell of the first lower hollow-faced roll and in the second pre-press nip mainly through the upper wire into the shell of the second upper hollow-faced roll. Both pre-press nips are roll nips. The transfer of the web to the press section proper takes place on a pick-up roll from the forming wire after the second pre-press nip.

[0009] It is an object of the present invention to provide a press section of a board machine provided with a pre-press, which press section is particularly suitable for the manufacture of board grades having a high basis weight. By a high basis weight is meant here a basis weight which is over 100 g/m², advantageously over 200 g/m².

[0010] The press section according to the invention is mainly characterised by the characterising part of claim 1.

[0011] The method for removing water in a press section according to the invention is mainly characterised by the characterising part of claim 8.

[0012] In the press section in accordance with the invention there are at least two separate press nips. A pre-press nip serving as a first press nip is formed between an inner roll placed inside the loop of a forming wire and an outer roll placed outside the loop of the forming wire. The pre-press nip is an extended nip which is formed between a shoe roll and a counter roll. An extended nip provides a higher dry solids content than a roll nip because of a longer nip and a higher linear load.

[0013] Two separate press fabrics are used as an upper press fabric in the pre-press nip. A press fabric that receives water very well is placed against the outer roll and a press fabric that is highly permeable to water is placed against the outer surface of this water-receiving press fabric. The press fabric which receives water very well is advantageously a press felt and the press fabric which is highly permeable to water is advantageously a wire. In that connection, the web runs between two wires in the pre-press nip.

[0014] By using a separate wire loop on the outside of the upper press felt loop in the pre-press nip, contamination of the upper press felt can be substantially reduced. This is particularly important when board grades having a high basis weight are manufactured at high speed. The dry solids content of a board web is, depending on running speed, basis weight and the quality of pulp, generally below 20 % when it enters the pre-press nip. In the pre-press nip, the dry solids content of the web rises by about 10-15 %.

[0015] The press section in accordance with the inven-

tion is also not sensitive to variations in the quality of pulp nor to the abrasive effects of pulp. Because of the upper wire, the pulp cannot come into direct contact with the upper press felt in the pre-press nip.

[0016] The wire loop placed on the outside of the upper press felt also reduces the rewetting of the web after the pre-press nip. The water bound into the upper press felt in the pre-press nip cannot be absorbed through the upper wire back into the web after the pre-press nip.

[0017] On the press section in accordance with the invention, a board web can be run whose basis weight varies in a range of about 100 to 500 g/m². A board web having a basis weight of about 400 g/m² and a dry solids content of about 20 % before the pre-press nip can be run at a speed of about 600 m/min, in which case the production capacity of the press will be about 4 kg/sm.

[0018] In the method in accordance with the invention, water is removed from the web in a press section of a board machine provided with a pre-press. The web to be pressed is passed as a closed draw through at least two separate press nips. The first press nip of the press section is a pre-press nip formed between a roll placed inside the loop of a forming wire and a roll placed outside the loop of the forming wire, which pre-press nip is an extended nip. The second press nip of the press section is a press nip proper which is provided with two water-receiving press felts and through which the web runs between said press felts. The web runs in the pre-press nip between the lower forming wire and an upper water-permeable press fabric, which water-permeable press fabric is in turn positioned against the outer surface of a water-receiving press fabric lying against the outer roll.

[0019] In the following, the invention will be described in detail with reference to the embodiments of the invention shown in the appended figures, to the details of which embodiments the invention is, however, not by any means narrowly confined.

[0020] Figure 1 is a schematic view of a press section of a board machine provided with one pre-press nip and with one press nip proper in accordance with the invention.

[0021] Figure 2 is a schematic view of a variant of the press section shown in Fig. 1 in accordance with the invention.

[0022] Figure 3 is a schematic view of a second variant of the press section shown in Fig. 1 in accordance with the invention.

[0023] Figure 4 is a schematic view of a third variant of the press section shown in Fig. 1 in accordance with the invention.

[0024] Fig. 1 shows a press section of a board machine provided with two separate press nips N1 and N2 in accordance with the invention. The first press nip is a pre-press nip N1 and the second press nip is a press nip proper N2.

[0025] The pre-press nip N1 is formed of an upper first shoe roll 22 and of a lower first counter roll 11 provided with a hollow-faced 11a shell. The first counter roll 11 is

located inside a forming wire loop 12 and the shoe roll 22 is located outside the forming wire loop 12. An upper first press felt 24 runs around the shoe roll 21 as an inner loop and an upper wire 26 runs around the shoe roll 21 as an outer loop. On the inner press felt loop 24 there are conditioning devices 25 for the press felt 24.

[0026] The press nip proper N2 is formed of a lower second shoe roll 31 and of an upper second counter roll 41 provided with a hollow-faced 41a shell. The second shoe roll 31 is located inside a lower second press felt loop 34 and the second counter roll 41 is located inside an upper third press felt loop 42. On the lower second press felt loop 34 there are conditioning devices 35 for the press felt 34 and, in a corresponding manner, on the upper third press felt loop 42 there are conditioning devices 43 for the press felt 42.

[0027] The structure of the shoe rolls, i.e. hose rolls 21, 31 used in the press nips N1, N2 is known in itself, comprising a flexible hose shell 22, 32, inside which there is a press shoe 23, 33 which can be loaded with a hydraulic pressure medium and which provides the necessary compression pressure on a web W running through the nips N1, N2. In this kind of structure, the hose shell is advantageously hollow-faced 22a, 32a, but it can also be smooth-faced.

[0028] The web W is brought into the pre-press nip N1 on the forming wire 12 over suction boxes 13 placed at the end of a forming section. The web W runs in the pre-press nip N1 forming an extended nip between the lower forming wire 12 and the upper wire 26. The upper first press felt 24 additionally runs between the upper wire 26 and the hollow-faced belt shell 22 of the first shoe roll 21. Removal of water takes place in the pre-press nip N1 in two directions, i.e. through the lower forming wire 12 into the hollow-faced 11a shell of the lower first counter roll 11 and through the upper wire 26 into the upper first press felt 25 as well as into the hollow face of the belt shell 22 of the upper first shoe roll 21.

[0029] After the pre-press nip N1, the wires 12, 26 and the press felt 24 follow some distance the outlet edge of the shoe 23, after which the lower forming wire 12 is separated from the upper wire 26. The angle α between the nip plane T of the pre-press nip N1 and the running direction S of the web W after the nip N1 is an acute angle, in which connection the web W follows the upper wire 26 after the pre-press nip N1. The adherence and sticking of the web W to the bottom surface of the upper wire 26 after the pre-press nip N1 is enhanced by means of a suction box 27 placed inside the upper first press felt loop 24. After that, the web W is passed on support of the bottom surface of the upper wire 26 onwards as a straight draw and transferred at a first transfer point S1 in a suction zone 36a of a first transfer suction roll 36 onto the top surface of the lower second press felt 34 running around said transfer suction roll 36, the web W being passed on support of said top surface into the press nip proper N2.

[0030] The figure also shows dropping jets 28, by

which the web W can be detached from the upper wire 26 and run as broke into a pulper located beneath the press section.

[0031] In the press nip proper N2 forming an extended nip, the web W runs between the lower second press felt 34 and the upper third press felt 42. Thus, removal of water in the press nip proper N2 takes place into the lower second press felt 34 and into the hollow face of the belt shell 32 of the lower second shoe roll 31 as well as into the upper third press felt 42 and into the hollow face 41 a of the upper second counter roll 41.

[0032] After the press nip proper N2, the upper third press felt 42 is detached from the lower second press felt 34. In this press nip proper N2, the angle between the running direction of the web W after the press nip N2 and the nip plane is an obtuse angle, in which connection the web W follows the lower second press felt 34 as a straight draw onwards. From the lower second press felt 34 the web W is transferred at a second transfer point S2 in a suction zone 51 a of a second transfer suction roll 51 onto the bottom surface of an upper drying wire 52 running around said transfer suction roll 51, on support of which bottom surface the web W is transferred further to a dryer section.

[0033] Fig. 2 shows a variant of the embodiment shown in Fig. 1. An upper wire 26 and an upper first press felt 24 are separated from a lower forming wire 12 immediately after a pre-press nip N1. The angle α between the running direction S of the web W after the pre-press nip N1 and the nip plane T is an obtuse angle, in which connection the web W follows the lower forming wire 12 after the pre-press nip N1. The web W is detached from the obliquely downward run of the forming wire 12 at a pick-up point P in a suction zone 44a of a pick-up suction roll 44 and caused to adhere to the outer surface of an upper third press felt 42 running around the pick-up suction roll 44. When the running direction of the web W has been turned on the pick-up suction roll 44, the web W is transferred as a straight draw first some distance merely on support of the bottom surface of the upper third press felt 42 and after that between a lower second press felt 34 and the upper third press felt 42 into a press nip N2 proper. In other respects, the embodiment shown in Fig. 2 corresponds to the embodiment shown in Fig. 1.

[0034] Fig. 3 shows a second variant of the embodiment shown in Fig. 1. This embodiment differs from the embodiment of Fig. 2 in respect of the structure of the pre-press nip N1 and the press nip proper N2. The pre-press nip N1 is formed of a lower first shoe roll 21 provided with a hollow-faced 22a belt shell 22 and of an upper first counter roll 11 provided with a smooth-faced shell. The first shoe roll 21 is now located inside a forming wire loop 12 and the first counter roll 11 is located outside the forming wire loop 12. An upper first press felt 24 runs around the first counter roll 11 as an inner loop and an upper wire 26 runs around it as an outer loop. The press nip proper N2 is formed of a lower second shoe roll 31 provided with a smooth-faced belt shell 32 and of an upper

second counter roll 41 provided with a smooth-faced shell. In other respects, this embodiment corresponds to the embodiment shown in Fig. 2.

[0035] Fig. 4 shows a third variant of the embodiment shown in Fig. 1. This embodiment differs from the embodiment of Fig. 3 in respect of the pre-press nip. The pre-press nip N1 is formed of a lower hollow-faced 11a first counter roll 11 and of an upper first shoe roll 21 provided with a smooth-faced belt shell 22. The nip plane of the pre-press nip N1 forms here an angle of about 90° to the running direction of the web W after the pre-press nip N1.

[0036] The travel of the web through the press section is very linear in particular in the embodiment shown in Fig. 1, in which connection the web is not subjected to high dynamic forces caused by changes in the running direction. The web thus adheres very well to the surface which supports it, such as a wire or a press felt.

[0037] In the press sections shown in the figures there are only two press nips, i.e. a pre-press nip N1 and a press nip proper N2. However, in addition to these two press nips N1, N2, the press section in accordance with the invention may include one or more press nips after the second press nip N2. If, for example, the basis weight of the web W to be formed is high, a third press nip can be used to raise the dry solids content of the web W before the web W is transferred to the dryer section.

[0038] In the press sections shown in the figures, the shoe roll 31 is always the lower roll of the press nip proper N2, but the shoe roll 31 may also function as the upper roll of the press nip proper N2, in which case the lower roll of the press nip N2 is a counter roll.

[0039] The maximal linear load used in the pre-press nip N1 in accordance with the invention depends on the structure of the counter roll 21 and of the wires 12, 26. Linear loads of at least the order of about 600 kN/m are possible. In the press nip proper N2 it is possible to use linear loads of at least the order of 1500 kN/m. The degree of openness of the hollow face 22a, 32a of the belt shell 22, 32 of the shoe rolls 21, 31 is in a range of 15 to 35 %, advantageously 25 %, and the degree of openness of the hollow face 11 a, 41a of the counter rolls 11, 41 is in a range of 40 to 70 %, advantageously 60 %.

[0040] The wire 26 or an equivalent press fabric serving as the outer upper fabric in the pre-press nip N1 shall be a thin fabric which is highly permeable to water but rigid enough to function. The press felt 24 or an equivalent press fabric serving as the inner upper fabric in the pre-press nip N1 shall in turn be a fabric which receives water very well, which has enough space for water and whose weight is over 2000 g/m².

[0041] The claims are presented in the following and the various details of the invention may vary within the inventive idea defined by said claims and differ from the disclosure given above by way of example only.

Claims

1. A press section of a board machine provided with a pre-press, which press section comprises at least two separate press nips (N1, N2) through which a web (W) to be pressed is passed as a closed draw, in which connection the first press nip of the press section is a pre-press nip (N1) formed between a roll (11) placed inside a forming wire loop (12) and a roll (21) placed outside the forming wire loop (12), which pre-press nip is an extended nip, and the second press nip of the press section is a press nip proper (N2) provided with two water-receiving press felts (34, 42), through which nip the web (W) runs between said press felts (34, 42), **characterised in that** an upper press fabric in the pre-press nip (N1) is formed of a water-receiving press felt (24) lying against the outer roll (21) and of a water-permeable wire (26) lying against the outer surface of the water-receiving press felt (24), in which connection the web (W) runs in the pre-press nip (N1) between the lower forming wire (12) and the upper water-permeable wire (26).
2. A press section according to claim 1, **characterised in that** the outer roll in the pre-press nip (N1) is a shoe roll (21) provided with a press shoe arrangement (23) and with a belt shell (22) and the inner counter roll in the pre-press nip (N1) is a hollow-faced (11a) roll (11), in which connection removal of water in the pre-press nip (N1) takes place through the forming wire (12) into the hollow-faced (11a) shell of the counter roll (11) and through the upper wire (26) into the press felt (24).
3. A press section according to claim 2, **characterised in that** the belt shell of the outer roll in the pre-press nip (N1) is hollow-faced (22a), in which connection water is also removed through the press felt (24) into the hollow-faced (22a) belt shell (22) of the shoe roll (21).
4. A press section according to claim 1, **characterised in that** the inner roll in the pre-press nip (N1) is a shoe roll (21) provided with a press shoe arrangement (23) and with a hollow-faced (22a) belt shell (22) and the outer counter roll in the pre-press nip (N1) is a smooth-faced roll (11), in which connection removal of water in the pre-press nip (N1) takes place through the forming wire (12) into the hollow-faced (22a) belt shell (22) of the shoe roll (21) and through the upper wire (26) into the press felt (24).
5. A press section according to my one of claims 1 to 4, **characterised in that** the second press nip after the pre-press nip (N1) is an extended nip (N2).
6. A press section according to any one of claims 1 to 5, **characterised in that** the second press nip (N2)

is formed between a shoe roll (21) provided with a hollow-faced (22a) belt shell (22) and a hollow-faced (41 a) counter roll (41).

7. A press section according to any one of claims 1 to 5, **characterised in that** the second press nip (N2) is formed between a shoe roll (21) provided with a smooth-faced belt shell (22) and a smooth-faced counter roll (41).
8. Method for removing water from a web (W) in a press section of a board machine provided with a pre-press, in which press section the web (W) to be pressed is passed as a closed draw through at least two separate press nips (N1, N2), in which connection the first press nip of the press section is a pre-press nip (N1) formed between a roll (11) placed inside a forming wire loop (12) and a roll (21) placed outside the forming wire loop (12), which pre-press nip is an extended nip, and the second press nip of the press section is a press nip proper (N2) provided with two water-receiving press felts (34, 42), through which nip the web (W) runs between said press felts (34, 42), **characterised in that** the web (W) runs in the pre-press nip (N1) between the lower forming wire (12) and an upper water-permeable wire (26), which water-permeable wire (26) in turn lies against the outer surface of a water-receiving press felt (24) lying against the outer roll (21).

Patentansprüche

1. Pressenpartie einer Kartonmaschine, die mit einer Vorpresse versehen ist, wobei die Pressenpartie zumindest zwei separate Pressenspalte (N1, N2) aufweist, durch die eine zu pressende Bahn (W) als ein geschlossener Zug tritt, wobei in diesem Zusammenhang der erste Pressenspalt der Pressenpartie ein Vorpressenspalt (N1) ist, der zwischen einer Walze (11), die innerhalb einer Formersiebschleife (12) angeordnet ist, und einer Walze (21) ausgebildet ist, die außerhalb der Formersiebschleife (12) angeordnet ist, wobei der Vorpressenspalt eine Langspalt ist, und wobei der zweite Pressenspalt der Pressenpartie ein eigentlicher Pressenspalt (N2) ist, der mit zwei Wasser aufnehmenden Pressenfilzen (34, 42) versehen ist, wobei durch diesen Spalt die Bahn (W) zwischen den Pressenfilzen (34, 42) läuft, **dadurch gekennzeichnet, dass** ein oberes Pressengewebe in dem Vorpressenspalt (N1) aus einem Wasser aufnehmenden Pressenfilz (24), der an der äußeren Walze (21) liegt, und aus einem gegenüber Wasser durchlässigen Sieb (26), das an der äußeren Fläche von dem Wasser aufnehmenden Pressenfilz (24) liegt, ausgebildet ist, wobei in diesem Zusammenhang die Bahn (W) in dem Vorpressenspalt (N1) zwischen dem unteren

Formersieb (12) und dem oberen gegenüber Wasser durchlässigen Sieb (26) läuft.

2. Pressenpartie gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die äußere Walze in dem Vorpressenspalt (N1) eine Schuhwalze (21) ist, die mit einem Pressschuh Aufbau (23) und mit einem Riemenmantel (22) versehen ist, und die innere Gegenwalze in dem Vorpressenspalt (N1) eine mit einer hohlen Seite (11a) versehene Walze (11) ist, wobei in diesem Zusammenhang ein Entfernen von Wasser in dem Vorpressenspalt (N1) durch das Formersieb (12) in den mit der hohlen Seite (11a) versehenen Mantel der Gegenwalze (11) und durch das obere Sieb (26) in den Pressenfilz (24) stattfindet.
3. Pressenpartie gemäß Anspruch 2, **dadurch gekennzeichnet, dass** der Riemenmantel von der äußeren Walze in dem Vorpressenspalt (N1) mit einer hohlen Seite (22a) versehen ist, wobei in diesem Zusammenhang Wasser auch durch den Pressenfilz (24) in den mit der hohlen Seite (22a) versehenen Riemenmantel (22) der Schuhwalze (21) entfernt wird.
4. Pressenpartie gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die innere Walze in dem Vorpressenspalt (N1) eine Schuhwalze (21) ist, die mit einem Pressschuh Aufbau (23) und mit einem mit einer hohlen Seite (22a) versehenen Riemenmantel (22) versehen ist, und die äußere Gegenwalze in dem Vorpressenspalt (N1) eine mit einer glatten Seite versehene Walze (11) ist, wobei in diesem Zusammenhang eine Entfernen von Wasser in den Vorpressenspalt (N1) durch das Formersieb (12) in den mit der hohlen Seite (22a) versehenen Riemenmantel (22) der Schuhwalze (21) und durch das obere Sieb (26) in den Pressenfilz (24) stattfindet.
5. Pressenpartie gemäß einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** der zweite Pressenspalt nach dem Vorpressenspalt (N1) ein Langspalt (N2) ist.
6. Pressenpartie gemäß einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der zweite Pressenspalt (N2) zwischen einer Schuhwalze (21), die mit einem mit einer hohlen Seite (22a) versehenen Riemenmantel (22) versehen ist, und einer mit einer hohlen Seite (41a) versehenen Gegenwalze (41) ausgebildet ist.
7. Pressenpartie gemäß einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der zweite Pressenspalt (N2) zwischen einer Schuhwalze (21), die mit einem mit einer glatten Seite ver-

sehenen Riemenmantel (22) versehen ist, und einer mit einer glatten Seite versehenen Gegenwalze (41) ausgebildet ist.

8. Verfahren zum Entfernen von Wasser aus einer Bahn (W) in einer Pressenpartie einer Kartonmaschine, die mit einer Vorpresse versehen ist, wobei in der Pressenpartie die zu pressende Bahn (W) als ein geschlossener Zug durch zumindest zwei separate Pressenspalte (N1, N2) tritt, wobei in diesem Zusammenhang der erste Pressenspalt der Pressenpartie ein Vorpressenspalt (N1) ist, der zwischen einer Walze (11), die im Inneren von einer Formersiebschleife (12) angeordnet ist, und einer Walze (21) ausgebildet ist, die außerhalb von der Formersiebschleife (12) angeordnet ist, wobei der Vorpressenspalt ein Langspalt ist, und wobei der zweite Pressenspalt der Pressenpartie ein eigentlicher Pressenspalt (N2) ist, der mit zwei Wasser aufnehmenden Pressenfilzen (34, 42) versehen ist, wobei durch den Spalt die Bahn (W) zwischen den Pressenfilzen (34, 42) läuft, **dadurch gekennzeichnet, dass** die Bahn (W) in dem Vorpressenspalt (N1) zwischen dem unteren Formersieb (12) und einem oberen gegenüber Wasser durchlässigen Sieb (26) läuft, wobei das gegenüber Wasser durchlässige Sieb (26) wiederum an der äußeren Fläche von einem Wasser aufnehmenden Pressenfilz (24) liegt, der an der äußeren Walze (21) liegt.

Revendications

1. Section de presse d'une machine de fabrication de carton munie d'une pré-presse, laquelle section de presse comprend au moins deux pinces (ou emprises) de presse séparées (N1, N2) à travers lesquelles une bande continue (W) à presser est acheminée en circulation fermée, de telle manière que la première pince de presse de la section de presse est une pince de pré-presse (N1) formée entre un rouleau (11) placé à l'intérieur d'une boucle de toile de formage (12) et un rouleau (21) placé à l'extérieur de la boucle de toile de formage (12), laquelle pince de pré-presse est une pince agrandie et la seconde pince de presse de la section de presse est une pince de presse proprement dite (N2) équipée de deux feutres de presse recevant de l'eau (34, 42), et par laquelle la bande continue (W) défile entre lesdits feutres de presse (34, 42), **caractérisée en ce qu'un** tissu de presse supérieur dans la pince de pré-presse (N1) est constitué d'un feutre de presse de réception d'eau (24) situé contre le rouleau extérieur (21) et d'une toile perméable à l'eau (26) située contre la surface extérieure du feutre de presse de réception d'eau (24), de telle manière que la bande continue (W) défile dans la pince de pré-presse (N1) entre la

toile de formage inférieure (12) et la toile supérieure perméable à l'eau (26).

2. Section de presse selon la revendication 1, **caractérisée en ce que** le rouleau extérieur dans la pince de pré-presse (N1) est un rouleau à sabot (21) muni d'un agencement de sabot de presse (23) et d'une enveloppe de bande (ou courroie) (22), et le contre-rouleau intérieur dans la pince de pré-presse (N1) est un rouleau (11) à face creuse (11a), de telle manière que l'enlèvement de l'eau dans la pince de pré-presse (N1) s'effectue par la toile de formage (12) dans l'enveloppe à face creuse (11a) du contre-rouleau (11) et par la toile supérieure (26) dans le feutre de presse (24). 5 10 15
3. Section de presse selon la revendication 2, **caractérisée en ce que** l'enveloppe de bande du rouleau extérieur dans la pince de pré-presse (N1) est à face creuse (22a), de telle manière que l'eau est également évacuée par le feutre de presse (24) dans l'enveloppe de bande (22) à face creuse (22a) du rouleau à sabot (21). 20
4. Section de presse selon la revendication 1, **caractérisée en ce que** le rouleau intérieur de la pince de pré-presse (N1) est un rouleau à sabot (21) muni d'un agencement de sabot de presse (23) et d'une enveloppe de bande (22) à face creuse (22a), et le contre-rouleau extérieur dans la pince de pré-presse (N1) est un rouleau à face lisse (11), de telle manière que l'évacuation de l'eau dans la pince de pré-presse (N1) s'effectue par la toile de formage (12) dans l'enveloppe de bande (22) à face creuse (22a) du rouleau à sabot (21) et par la toile supérieure (26) dans le feutre de presse (24). 25 30 35
5. Section de presse selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** la seconde pince de presse après la pince de pré-presse (N1) est une pince agrandie (N2). 40
6. Section de presse selon l'une quelconque des revendications 1 à 5, **caractérisée en ce que** la seconde pince de presse (N2) est formée entre un rouleau à sabot (21) muni d'une enveloppe de bande (22) à face creuse (22a) et d'un contre-rouleau (41) à face creuse (41a). 45
7. Section de presse selon l'une quelconque des revendications 1 à 5, **caractérisée en ce que** la seconde pince de presse (N2) est formée entre un rouleau à sabot (21) muni d'une enveloppe de bande à face lisse (22) et d'un contre-rouleau à face lisse (41). 50 55
8. Procédé pour enlever l'eau d'une bande continue (W) dans une section de presse d'une machine de

fabrication du carton munie d'une pré-presse dans laquelle section de presse la bande continue (W) à presser est acheminée en circulation fermée par au moins deux pinces de presse séparées (N1, N2) de telle manière que la première pince de presse de la section de presse est une pince de pré-presse (N1) formée entre un rouleau (11) placé à l'intérieur d'une boucle de toile de formage (12) et un rouleau (21) placé à l'extérieur de la boucle de toile de formage (12), laquelle pince de pré-presse est une pince agrandie et la seconde pince de presse de la section de presse est une pince de presse proprement dite (N2) équipée de deux feutres de presse de réception d'eau (34, 42), pince par laquelle la bande continue (W) défile entre lesdits feutres de presse (34, 42), **caractérisé en ce que** la bande continue (W) défile dans la bande de pré-presse (N1) entre la toile de formage inférieure (12) et une toile supérieure perméable à l'eau (26), laquelle toile perméable à l'eau (26) se situe à son tour contre la surface extérieure d'un feutre de presse de réception d'eau (24) situé contre le rouleau extérieur (21).

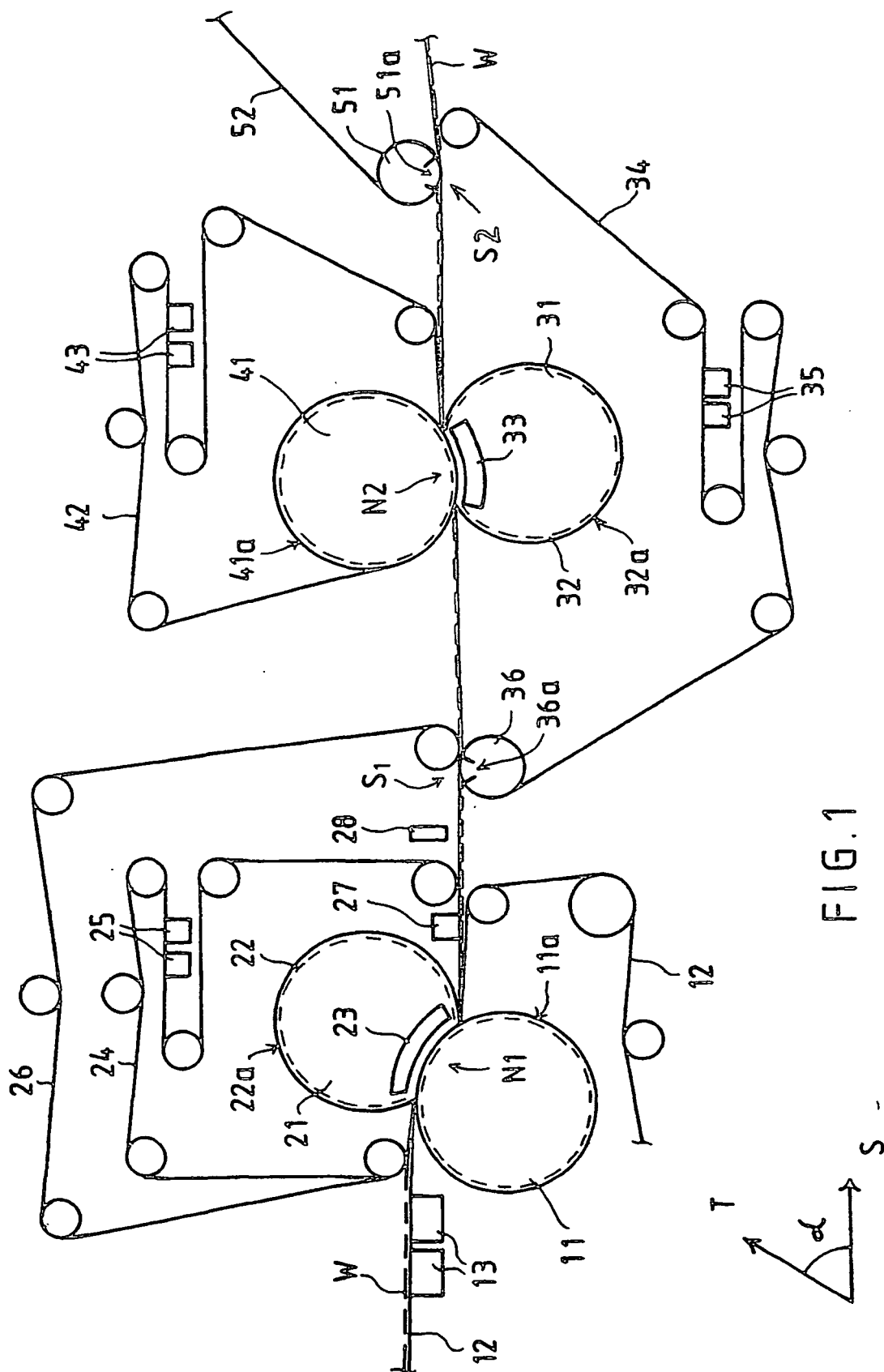


FIG.1

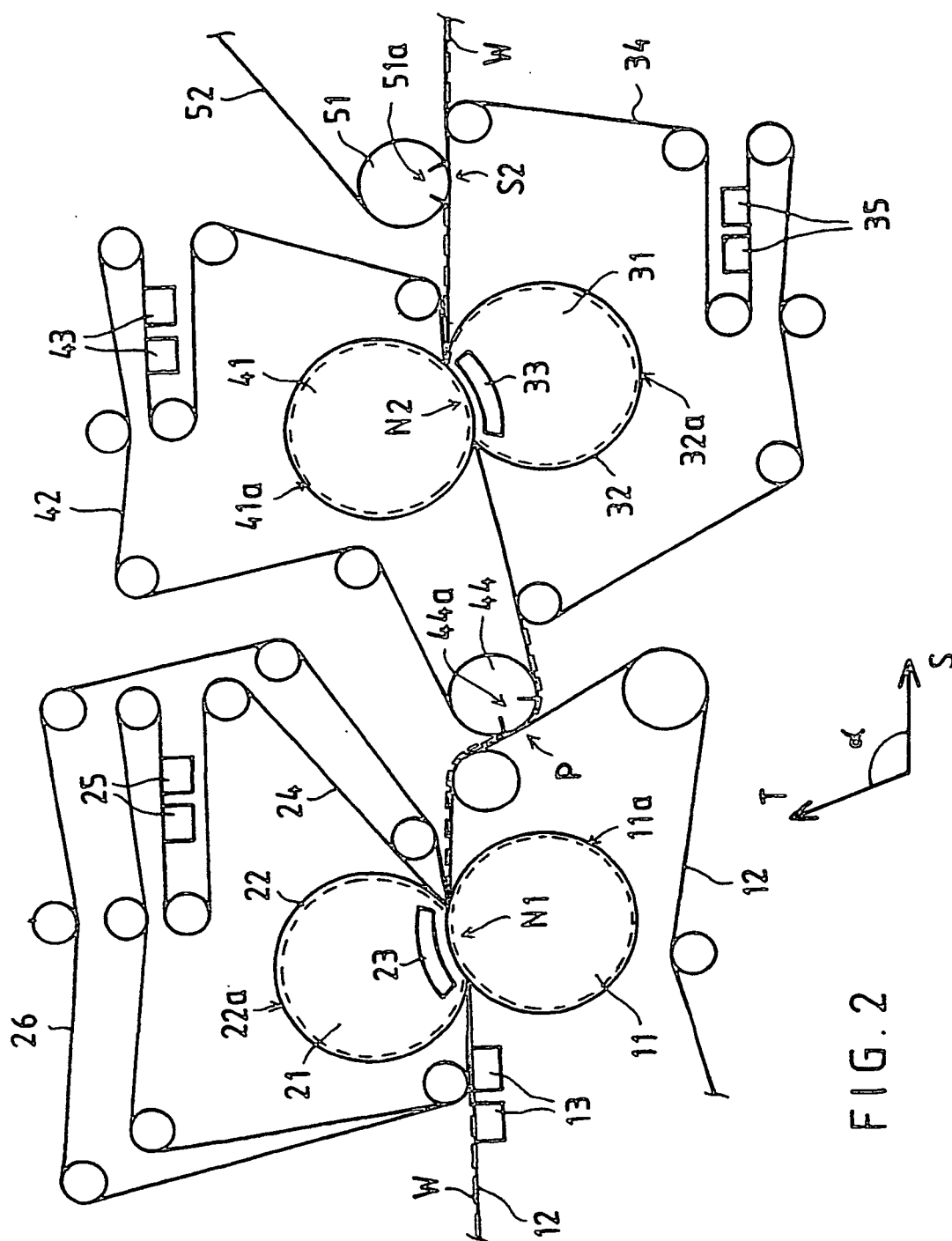


FIG. 2

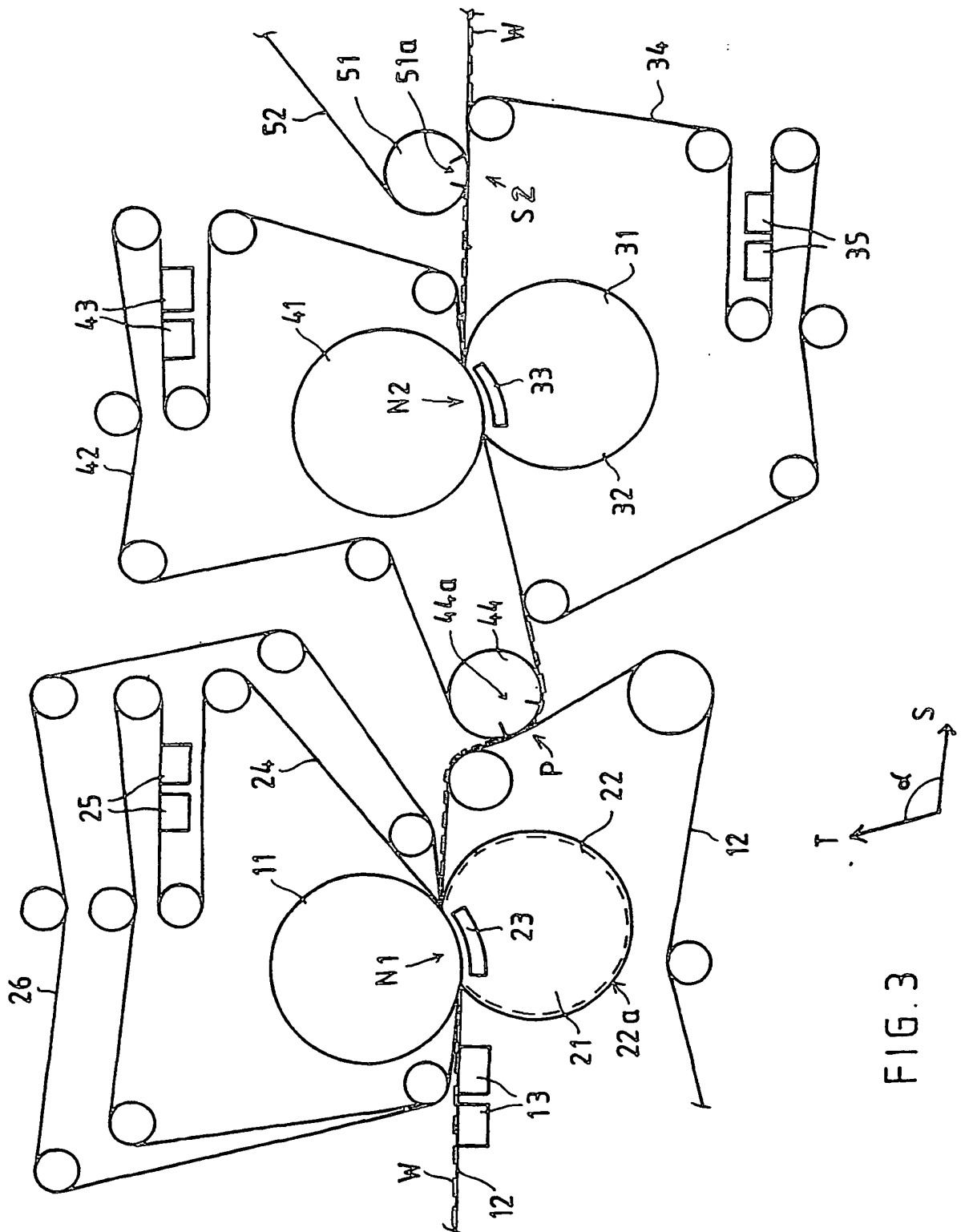


FIG. 3

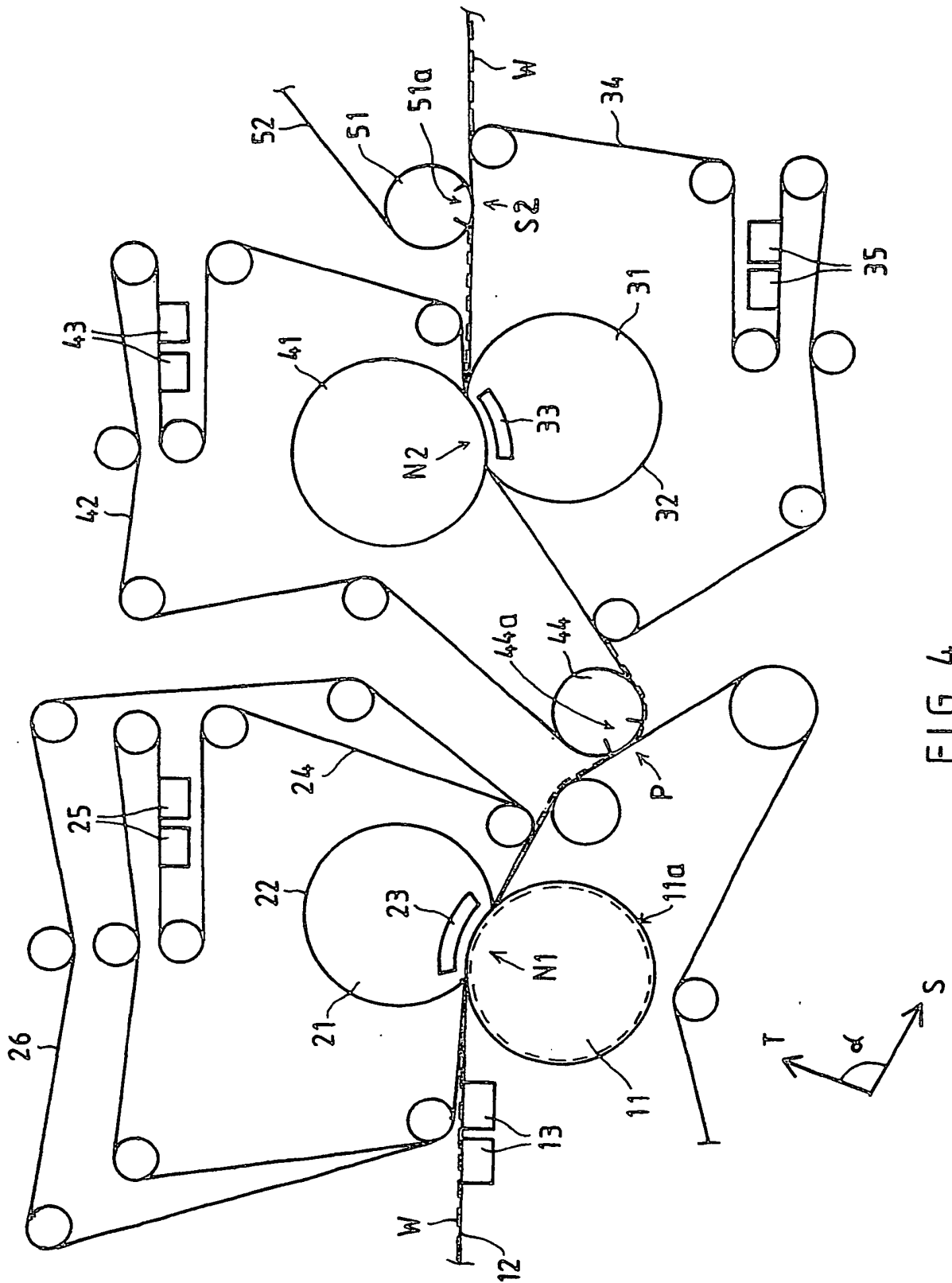


FIG. 4