



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.12.2017 Bulletin 2017/50

(51) Int Cl.:
C14B 1/30 (2006.01) **C14B 1/44 (2006.01)**
C14B 1/56 (2006.01) **C14B 17/06 (2006.01)**

(21) Application number: **17175130.8**

(22) Date of filing: **09.06.2017**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(72) Inventors:
• **Lovato, Denis Ettore**
36040 Vicenza (IT)
• **Marchino, Antonello**
36053 Vicenza (IT)
• **Pavan, Alberto**
36030 Vicenza (IT)

(30) Priority: **10.06.2016 IT UA20164264**

(74) Representative: **Bettello, Pietro**
Via Col d'Echele, 25
36100 Vicenza (IT)

(71) Applicant: **EVOLUTION TECH SRL**
36100 Vicenza (IT)

(54) **INTRODUCER TO BE APPLIED ON MACHINES FOR PRIMARY PROCESSING OPERATIONS SUCH AS PRESSING, EMBOSSEING, STAKING AND FINISHING, ON TANNED LEATHER, FAKE LEATHER, FABRIC, SYNTHETIC MATERIAL AND OTHERS**

(57) An introducer is involved, to be applied on machines for primary processing operations of pressing, embossing, staking and finishing, on leather, tanned leather, fabric, synthetic material and others. Said introducer (100) comprises a first device (10), serving the function of introducer/crease spreader, formed by the pair of webs wound in a ring (1, 2), to which a second device (20) is connected immediately upstream, serving

the function of transfer belt, on which the operator deposits the product (P), and of providing for, inside each of the two webs (1, 2), thermal apparatuses (3, 4) which transmit the heat to the two portions of the above webs and which define the channel for the passage of the product (P) which, consequently, undergoes heating on both sides, thus obtaining a pre-heating of the product itself.

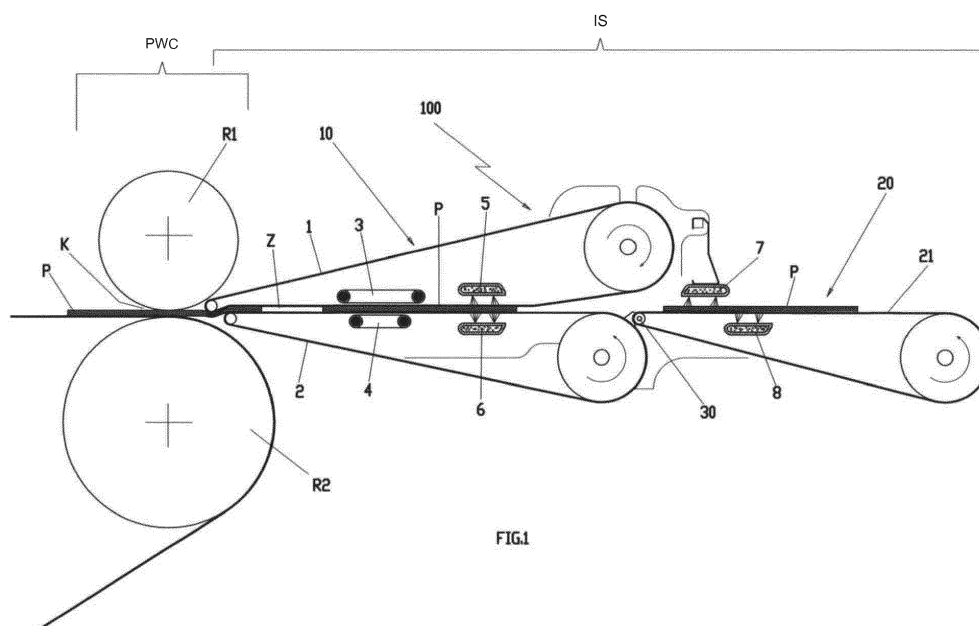


FIG.1

Description

[0001] The present invention relates to an introducer to be applied on machines for primary processing operations such as pressing, embossing, staking, finishing and others, on tanned leather, fake leather, fabric, synthetic material and others, according to the general part of claim 1.

[0002] In relation to the various methods with which they operate, machines for the primary processing of tanned leather, fake leather, fabric, synthetic material and others, commonly known with the generic definitions of "presses", "staking machines" and "pigment machines", substantially consist of a station for introducing the material to be processed followed by a station where the primary processing of the product occurs and by an unloading station of the processed product.

[0003] Specifically, such machines are used:

- as "presses for drying/ pressing", when there is a need to make the upper surface of the product to be processed soft and possibly also polished;
- as "embossing presses", when there is a need to emboss a pattern on the upper surface of the product;
- as "staking machines", when there is a need to soften the product and/or give back the softness lost during the preceding processing operations undergone by the above product;
- as "pigment machines", when there is a need for a surface application of a liquid pigment on the surface of the product.

[0004] Operatively, to obtain improved success of all these operations, there is a need to subject the product to a thermal heat treatment which in addition to occurring directly on the processing area, may occur also upstream thereof, when there is a need for pre-heating the product to reduce the processing times and/or improve the initial conditions of the processing.

[0005] By way of example, mention is made of the plate press described in patent document WO 9210592 (fig. 1), where the product to be processed (ref. L) is deposited on a first conveyor belt (ref. TB) which, combined with a second conveyor belt (ref. HB), then positions the aforesaid product in the three operating stations (references STS, TRS1, TRS2) where opposed plates (ref. HZV) perform the operations, respectively, of drying and where the heating of the product occurs with means inserted directly in the aforesaid stations.

[0006] Again by way of example, mention is made of the plate press described in patent document GB2038234 (figures 1, 2), where the leather (ref. CF) is positioned by means of a conveyor belt (ref. 10) at a bridge structure (ref. 1), where a hydraulic press (ref. 7)

provided with opposed plates (references 3, 5) performs the embossing on said product and where, in addition to the normal heating which occurs inside the bridge structure (ref. 1) by means of the pressing plate (ref. 5), the product additionally undergoes also a pre-heating by means of external devices (ref. 16) positioned upstream of said structure.

[0007] Again by way of example, mention is made of a roller press described in patent document DE 20 2006 003489 U1 (fig. 2), where the leather (ref. 6), which is positioned on a conveyor belt (ref. 11), is caused to pass through a limited area (ref. 17) defined by two opposed rollers, an upper roller, specifically an embossing pressure roller (ref. 18), and a lower contrast roller (ref. 13), and where a pre-heating of the leather occurs by means of a heating unit (ref. 20) arranged immediately upstream of the aforesaid rollers and consisting of a radiator (ref. 22) which transfers the heat to the aforesaid leather by means of a heated belt (ref. 21) before it is introduced into the aforesaid limited area.

[0008] In particular, roller presses, known with the term "pigment machines", consist of two opposed rollers which rotate in a synchronous and an asynchronous manner, the upper roller being intended to transfer a liquid material onto the product to be processed, while the lower one serving the function of dragging means; they may be provided with an apparatus that serves as crease spreader and facilitates the introduction of the product into the limited processing area.

[0009] In the current prior art, among the various types of apparatuses for introducing the product which are positioned immediately upstream of the primary processing station and are known with the generic term of "introducers", an apparatus is common which consists of a pair of webs wound in a ring, mutually overlapping, so as to identify an intermediate area where the product, while in sliding engagement, undergoes a flattening and spreading effect before contact with the primary processing area.

[0010] By way of example, mention is made of patent document EP 2177632 A1 (figures 1, 2), where the leather (ref. P) is conveyed into a limited processing area (ref. K), defined by a knurled upper roller (ref. 2) and a lower rubber roller (ref. 1), by means of the use of an introducer consisting of a pair of webs wound in a ring (references TS, TI), mutually overlapping so as to identify an intermediate area where the product, while in sliding engagement, undergoes a flattening and spreading effect before contact with the aforesaid primary processing area; basically, it undergoes an automatic "crease spreading" action.

[0011] Operatively, with the use of the introducer, which consists of an apparatus that is positioned immediately upstream of the primary processing station, the leather or another product to be processed does not require spreading out on a conveyor belt since advantageously, said product is transferred directly by the introducer or "crease spreader" to the "limited area" of the primary processing station where the processing occurs,

as is apparent from the comparison between figures 2 of patent documents GB 2038234 and DE 202006003489 U1 and fig. 2 of patent document EP 2177632 A1.

[0012] In actual practice on the other hand, the absence of the conveyor belt in the station for introducing the leather does not allow any pre-heating apparatuses of the leather to be positioned [see positioning of said apparatuses in documents GB 2038234 (fig. 2/ref. 16) and DE 202006003489 U1 (fig. 2/ref. 20)], whereby there may only be a heating action which occurs only in the primary processing station, at the heated plates or rollers. Such condition, in actual practice, does not allow products to be processed such as tanned leathers, which require being adequately heated to melt the chemical products applied on the surface in the previous processing operations and simultaneously may not be subjected to excessive heating in order not to compromise the quality and the softness of the processed product.

[0013] To illustrate, in the presses where the heating is assigned only to the upper roller, the heat exchange area occurs in the tangent contact line between the product and the hot roller and the temperature of said roller is adjusted on a single value for the whole length of the aforesaid hot roller/product contact line, with the consequence that a concentrated heating action is caused on a single part of the product, the one in contact with the aforesaid hot roller.

[0014] It is the object of the present invention to make a device to be applied on the above primary machines such as "presses", "staking machines" and others, which does not have the drawbacks manifested by similar products of known type.

[0015] Specifically, it is the object of the invention to make an introducer device which increases the temperature and/or the moisture of the product to be processed in a regulated manner.

[0016] It is a further object of the invention to make a device which facilitates the introduction of the leather into the machine.

[0017] Such objects are obtained by providing the machine with an introducer which, in addition to functions of flattening and crease spreading, provides also a pre-heating and possibly also a moistening of the product to be processed, on one or both sides, in a regulated, homogenous manner and at a temperature which is independent from the operating temperature of the plates or of the rollers which operate in the primary processing area.

[0018] Practical tests have demonstrated that, with the pre-heating or moisturizing of the product, pressing/embossing, staking and pigmentation effects may be obtained which are significantly different and improved with respect to the ones obtained with traditional machines.

[0019] In essence, since the leather or product being processed is already pre-heated when introduced into the primary processing station, embossed leathers and other products with increased performance and softness may be obtained due to the lower temperature required

by the plates or by the upper roller which perform the primary processing.

[0020] Since a greater contact surface with relatively low temperatures may be taken advantage of in the presses, the total melting of the finishing chemical compounds is obtained so as to obtain a leather with considerable physical features and appearance, for example less shininess.

[0021] Finally, the invention provides for the introducer to be provided also with a hydraulic circuit which performs a vaporization action to make the sliding product adequately hydrated so that when said product enters the limited area to undergo the primary processing, the loss of moisture undergone by the product itself is compensated for. The invention will be better described by means of the description of a possible embodiment thereof, provided by way of a non-limiting example, with the aid of the accompanying drawings, where:

- fig. 1 depicts a diagrammatic view of the introducer of the invention, positioned at a station for the primary processing;
- fig. 2 depicts a perspective view of the introducer of the invention.

[0022] As shown in fig. 1, positioned immediately upstream of the primary working station, indicated as a whole with reference "PWC", consisting of, in the specific embodiment depicted, an upper roller R1 heated with smooth or embossed surface, and of a lower pressing roller R2, which define the limited primary processing area "K", is the introducer of the invention, indicated as a whole with reference 100, serving the function of introducer station "IS", which consists of a first device indicated with reference 10, which serves the function of introducer/crease spreader and is of the type formed by a pair of webs wound in a ring 1 and 2, mutually overlapping, so as to identify an intermediate area "Z" where the product "P", while in sliding engagement, undergoes a flattening and spreading effect before the contact with the above dragging rollers; said device 10 is characterized in that it provides for, inside each of the two webs 1 and 2, thermal apparatuses 3 and 4 that transmit the heat to the two portions of the above webs and that define the channel for the passage of the product "P" which, consequently, undergoes heating on both sides, thereby obtaining a pre-heating of the product itself.

[0023] The introducer 100 is completed with the positioning, immediately upstream of the device 10, of a second device 20 serving the function of transfer belt, on which the operator deposits the product "P" to be processed.

[0024] Moreover, the introducer/crease spreader 100 provides for being equipped also with a vaporisation circuit, for wetting both sides of the product "P", which supplies spraying bars 5 and 6 arranged inside the two webs 1 and 2 for hydrating the product "P", and spraying bars

7 and 8 positioned on the transfer belt 20 for pre-hydrating the product itself, when required.

[0025] Operatively, the temperatures, the operating temperature of the upper heated roller R1 where the pressing/embossing operations are realized and the pre-heating temperature of the thermal apparatuses 3, 4 where the pre-heating of the product "P" takes place, are adjusted independently of each other.

[0026] Again operatively, the steam flows that supply the first spraying bars 5, 6 for the hydration and the second spraying bars 7, 8 for the pre-hydration, respectively, are adjusted independently of each other; normally, the first spraying bars 5, 6 are used, while the second spraying bars 7, 8 perform an auxiliary function because they are activated only when the product "P" to be processed is considerably dehydrated. Finally, the invention provides for the first device 10, serving the function of introducer/crease spreader, and the second device 20, serving the function of transfer belt, to be mutually connected in the joint point 30 and to form a single structure 100. With the constructional solution described above, when it is provided simultaneously with the thermal apparatuses 3, 4 and with the spraying bars 5, 6, 7, 8, the introducer 100 may operate alternately with function only of heating by activating only the thermal apparatuses 3, 4, or with function only of hydration by activating only the spraying bars 5, 6, 7, 8 of the product "P", and may perform alternately a regular hydration using only the first front spraying bars 5, 6 or only a pre-hydration using only the second spraying bars 7, 8.

[0027] Overall, the introducer/crease spreader 100 of the invention performs the function of introducer station "IS" and consists of an apparatus which is totally independent and separate from the members of the machine operating in the primary working station "PWC".

[0028] It is apparent from that above that the objects of the invention have been achieved because the introducer of the invention achieves a pre-heating and vaporization of water on the product before the processing thereof, consisting for example, of ennobling tanned leathers or pressing fabrics, and may be installed on machines having various conformation which are already on the market.

[0029] Obviously, in execution step, several variants of the introducer of the invention are possible, and also the use of different technical components, according to the heating mean used, such as diathermic oil, hot water, steam, electrical resistors, and to the type of operating machine to be equipped, so long as it all falls within the inventive concept defined by the following claims.

Claims

1. INTRODUCER TO BE APPLIED ON MACHINES FOR PRIMARY PROCESSING OPERATIONS SUCH AS PRESSING, EMBOSSING, STAKING AND FINISHING, ON TANNED LEATHER, FAKE

LEATHER, FABRIC, SYNTHETIC MATERIAL AND OTHERS, said machines subjecting the product to a thermal heat treatment which in addition to occurring directly on the processing area, may occur also upstream thereof, when there is a need for pre-heating the product to reduce the processing times and/or improve the initial conditions of the processing; said introducer (100) being positioned immediately upstream of the primary working station (PWC) and serving the function of introducer station (IS) of the product (P) to be worked and consisting of an apparatus which is totally independent and separate from the members of the machine operating in the primary working station (PWC), said introducer being of the type that consists of a pair of webs (1,2) wound in a ring, mutually overlapping, so as to determine an intermediate zone (Z), where the product (P), while in sliding engagement, undergoes a flattening and spreading effect before contacting the primary processing operations members, consisting of two opposing plates or two rollers (R1, R2) defining a limited area (K) being provided that in said introducer (100), the product (P), leaving the intermediate zone (Z), is moved directly into the limited area (K) where it is subjected to the primary processing operations; **said introducer (100) being characterised in that** it comprises a first device (10), with the function of introducer/crease spreader, formed by a pair of webs (1,2) wound in a ring, to which a second device having the function of transfer belt (20) is connected immediately upstream, on which the operator deposits the product)P(and it provides for, inside each of the two webs (1, 2), thermal apparatuses (3, 4), which transmit the heat to the two portions of the above webs and which define the channel for the passage of the product)P) which, consequently, undergoes heating on both sides, obtaining a pre-heating of the product itself.

2. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 1, **characterized in that** it is provided with a vaporisation circuit, which supplies spraying bars (5, 6), arranged inside of the two webs (1, 2), so as to wet both sides of the sliding product (P), obtaining a hydration of the product itself.

3. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 2, **characterized in that** it is provided with a vaporisation circuit, which supplies spraying bars (7, 8), positioned on the transfer belt (20), so as to wet both sides of the sliding product (P), obtaining a pre-hydration of the product itself.

4. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 2, **characterized in that** both the operating temperature of the upper heated roller (R1), where the pressing/embossing opera-

tions are realized and the temperature of pre-heating of the thermal apparatuses (3, 4), where the pre-heating of the product (P) takes place, are adjusted mutually independently of each other.

5

5. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claims 2 and 3, **characterized in that** the steam flows that supply the first spraying bars (5, 6) for the hydration and the second spraying bars (7, 8) for the pre-hydration, respectively, are adjusted independently of each other. 10
6. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 1, **characterized in that** the first device (10), with function of introducer/crease spreader and the second device (20), with function of transfer belt, are mutually connected and form a single structure (100) that constitutes the entire introducer station (IS). 15 20
7. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to one or more of the previous claims, **characterized in that** it is simultaneously provided with the thermal apparatuses (3, 4) and with the first and second spraying bars (5, 6, 7, 8) and it is susceptible to operate alternately with the function of heating only, actuating just the thermal apparatuses (3, 4), or with the function of hydrating only, actuating just the first and second spraying bars (5, 6, 7, 8) for the product (P). 25 30
8. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claims 2 and 3 **characterized in that** it is simultaneously provided with the first spraying bars (5, 6) and with the second spraying bars (7, 8) and it is susceptible to alternately obtain a hydration using just the front first spraying bars (5, 6) or only a pre-hydration using just the second spraying bars (7, 8). 35 40
9. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 1, **characterized in that** the thermal apparatuses (3, 4) are supplied with a hot fluid such as diathermic oil, steam or hot water. 45
10. INTRODUCER FOR PRESSING/EMBOSSING MACHINES, according to claim 1, **characterized in that** the thermal apparatuses (3, 4) consist of electrical resistors. 50

55

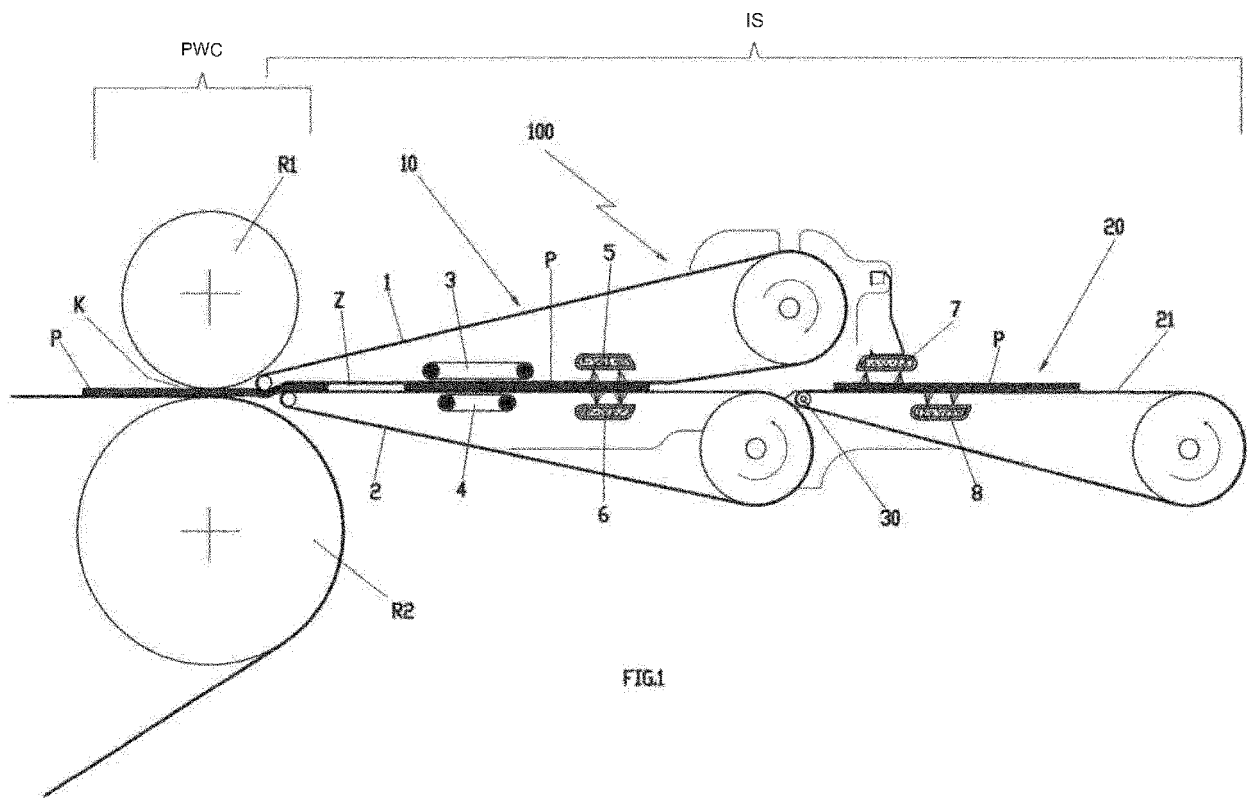
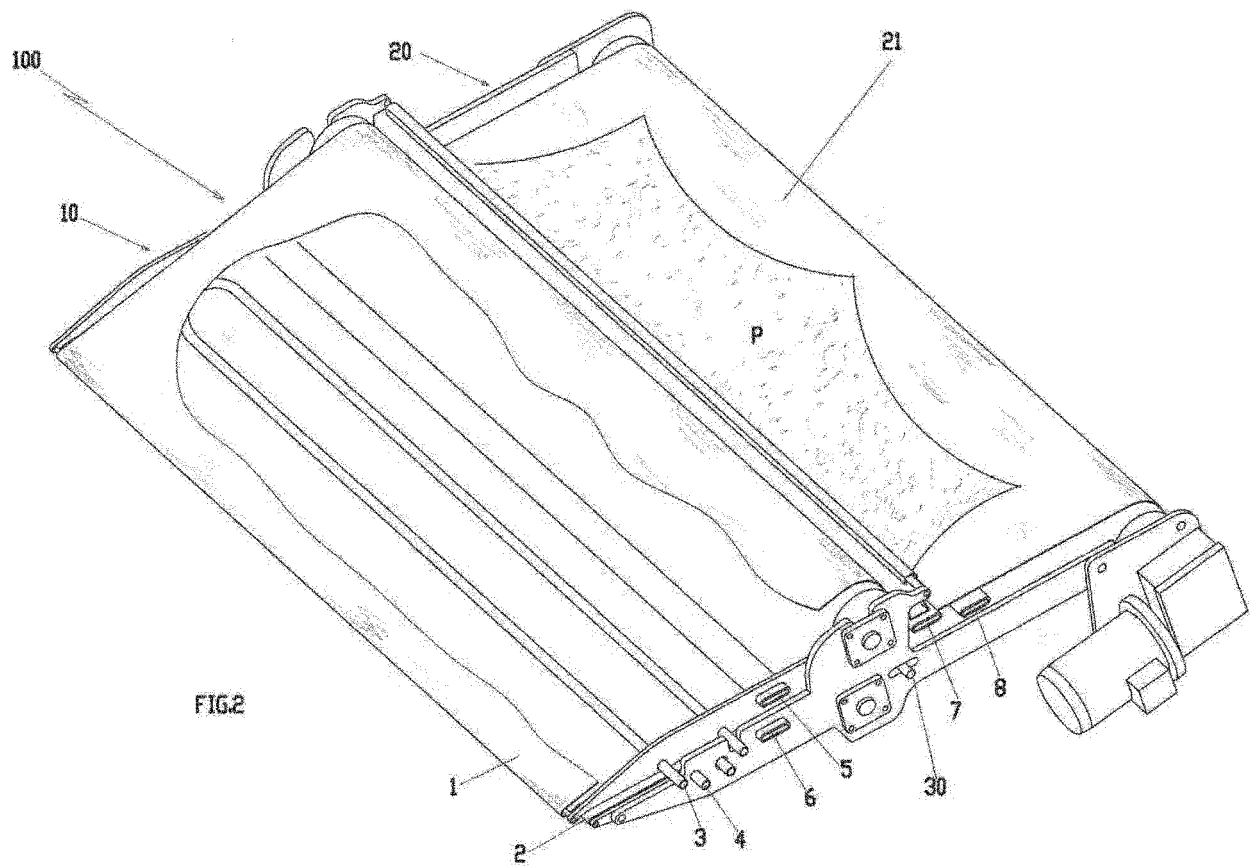


FIG.1





EUROPEAN SEARCH REPORT

Application Number
EP 17 17 5130

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 20 2006 003489 U1 (SCHAEFER PHILIPP [DE]) 4 May 2006 (2006-05-04) * paragraphs [0009], [0010], [0014], [0015], [0017] - [0021], [0032]; figures 1,2,4 *	1-10	INV. C14B1/30 C14B1/44 C14B1/56 C14B17/06
A	WO 92/10592 A1 (DOKOUPIL JIRI [DE]) 25 June 1992 (1992-06-25) * claim 1; figures 1-4 *	1-10	
A	EP 2 177 632 A1 (GE MA TA SPA [IT]) 21 April 2010 (2010-04-21) * claim 1; figure 1 *	1-10	
A	GB 2 038 234 A (GOZZINI A; GOZZINI F) 23 July 1980 (1980-07-23) * page 1, line 105 - page 2, line 52; figures 1-3 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			C14B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 July 2017	Examiner Iamandi, Daniela
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 17 5130

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-07-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202006003489 U1	04-05-2006	AT 8762 U1	15-12-2006
		DE 202006003489 U1	04-05-2006
-----		-----	
WO 9210592 A1	25-06-1992	CS 9103731 A3	15-07-1992
		DE 4039251 A1	11-06-1992
		WO 9210592 A1	25-06-1992
-----		-----	
EP 2177632 A1	21-04-2010	AT 556151 T	15-05-2012
		EP 2177632 A1	21-04-2010
		ES 2387181 T3	17-09-2012
		IT 1392599 B1	09-03-2012
-----		-----	
GB 2038234 A	23-07-1980	DE 2950775 A1	24-07-1980
		ES 487318 A1	16-06-1980
		FR 2445375 A1	25-07-1980
		GB 2038234 A	23-07-1980
		IT 1104219 B	21-10-1985
		NL 7909088 A	01-07-1980
-----		-----	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 9210592 A [0005]
- GB 2038234 A [0006] [0011] [0012]
- DE 202006003489 U1 [0007] [0011] [0012]
- EP 2177632 A1 [0010] [0011]