(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 511 384 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.10.2012 Bulletin 2012/42

(51) Int Cl.:
C14B 1/14 *(2006.01)* ***C14B 17/06*** *(2006.01)*

(21) Application number: **11191204.4**

(22) Date of filing: **29.11.2011**

(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

(30) Priority: **11.04.2011 IT VI20110092**

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(54) **Skin introducing group for a splitting machine**

(57) The finding concerns a skin introducing group for a splitting machine, used for splitting (dividing) skins in the transversal direction, so as to obtain a valuable upper part - the "grain" - and a less valued lower part - the "split"; such a machine consists of a frame (M) that supports two parallel and opposite rollers, one known as calibrator and the other known as compensator, between which the skin slides, as well as a splitting blade that takes care of cutting the skin into the aforementioned two parts. Such a splitting machine is also provided with a skin introducing group (1), which is used as an alternative to a fixed introduction table (T), said group being made up of a pair of mats (2, 3). Such an introducing group (1) is **characterised in that** each of the two mats (2, 3) is equipped with a ratiomotor (2.1, 3.1), the speed of which, through an electrical actuation, is able to be slowed down to exert a braking action on each skin during the splitting operating. Moreover, said introducing group is supported by a particular articulated structure (10). (Fig. 1).

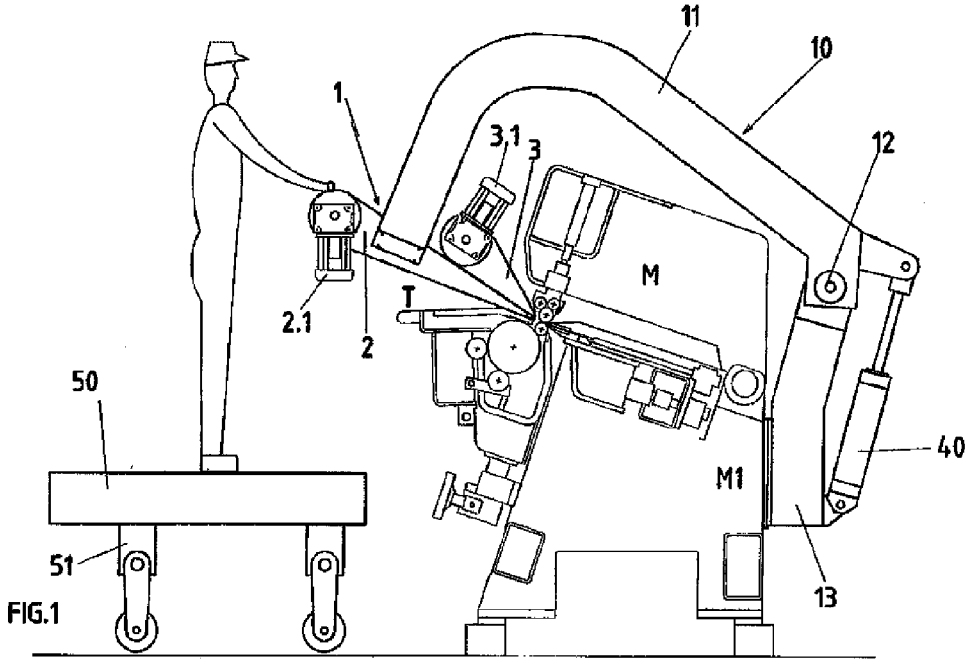

FIG.1

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Description

[0001] The finding concerns a skin introducing group for a splitting machine, according to the general part of claim 1.

[0002] As is well known in the tanning industry, there is widespread use of machines known by the term "splitters" used to split skins according to the thickness, through its forward motion against the blade.

[0003] In this way a valuable part, commonly known as the "grain", corresponding to the outer part of the skin, and a less valued part, commonly known as the "split", corresponding to the part of the skin that on the animal's body is in contact with the flesh, are obtained.

[0004] A splitting machine substantially consists of a frame that supports two parallel and opposite rollers, one known as calibrator and the other known as compensator or compensating group, between which the skin slides, and a splitting blade, which takes care of cutting the skins into the aforementioned two parts.

[0005] Usually, the introduction of the skin between the two rollers takes place manually, depositing it on top of a fixed introduction table and bringing an edge of the skin up to the rotary rollers, so that it is gripped and moved forward against the blade, positioned on the opposite side of the aforementioned rollers.

[0006] Such a manual way of operating involves substantial danger since, in order to promote the gripping of the skin between the two rollers, in particular of skins that are not properly stretched out, workers must take their hands as close as possible to the work area, with the danger of them becoming trapped between the aforementioned rollers with converging rotation and against the blades, also rotating, which is on the opposite side.

[0007] Moreover, in order to prevent the blade from irreparably damaging the skin itself in projecting points, such as creases, depressions, bulges or other, it is necessary for the worker to exert a strong pressure with the hands and with the belly against the fixed introduction table.

[0008] In order to avoid such risks, in the current state of the art the splitting machine is equipped with an automatic feeding system, which allows workers to operate away from the area of the rollers and the blade.

[0009] Such a system known by the term "feeding and insertion group", more commonly identified by the more generic term "introducing group", consists of an automatic introduction table, which is used as an alternative to the fixed introduction table.

[0010] Constructively, the introduction group is substantially made up of a pair of mats wound in a loop, which defined an area for flattening and stretching out the skin, before it is conveyed towards the two rollers.

[0011] In practice, the known introducing groups only operate correctly with skins that are perfectly stretched out and without bulges; moreover, they have the drawback of needing complex displacement operations of the splitting machine when it becomes necessary for the worker to manually introduce the skins on the fixed bench, as well as for any adjustment or maintenance to the aforementioned machine.

[0012] In patent document no. VI2002A000073 the introducing group is mounted on a mobile support and foresees that the skin is loaded with the grain side down.

[0013] This arrangement allows the splitting only of skins with uniform thicknesses, without creases and already trimmed; moreover, this way of operating does not make the skin on the split side visible, where the residues of the previous processes normally remain attached, which cannot be removed, since they stay between the grain side and the lower mat, which causes variations in thickness after splitting.

[0014] Such an embodiment, with a truck or sliding on rails, whilst facilitating the positioning and the movement away of the introducing group, nevertheless has the drawback of constituting a structure of substantial dimensions, which requires a substantial movement space and always occupies a bulk of substantial dimensions when it is deposited in a warehouse.

[0015] The purpose of the present finding is to make a skin introducing group for a splitting machine, capable of splitting, without distinction, both in the conventional manner, i.e. with the grain facing up, and with the grain facing down, which does not have the drawbacks displayed in known machines.

[0016] Specifically, the purpose of the finding is to make a skin introducing group for a splitting machine for skins, which can be inserted on the machine or removed from the work area more quickly and the positioning of which in rest conditions does not take up any extra space.

[0017] A further purpose of the finding is to make a skin introducing group in which the speed of the two introduction mats, as soon as the processing (splitting of the skin) begins, is automatically slowed down with respect to the speed of the transportation rollers of the splitting machine, so as to be able to exert a braking action to stretch out the creases or bulges of the skin, similar to that exerted by an expert worker.

[0018] Such an embodiment is obtained with an introducing group for a splitting machine, **characterised in that** each of the two introducing mats is equipped with a ratiomotor, both able to be electronically braked during the splitting process of each skin;

[0019] Moreover, said group is supported by an articulated structure that, through anthropomorphic movements, allows the group itself to be removed automatically, positioning it above the machine, where it does not take up any extra space when it is not being used.

[0020] The finding will be defined more clearly through the description of three possible embodiments thereof, given only as examples for indicating and not limiting purposes, with the help of the attached tables of drawings, in which:

- figs. 1-2 (table I) represent the respective work and rest conditions of the introducing group, supported

by an articulated structure, applied to the frame of the machine.

- figs. 3-4 (table II) represent the respective work and rest conditions of the introducing group, supported by an articulated structure, which is independent from the frame of the machine.

- figs. 5-6 (table III) represent the respective work and rest conditions of the introducing group, supported by a telescopic structure.

[0021] As can be seen in figures 1, 3, 5, the splitting machine, indicated with reference letter "M", has an introducing group applied to it, indicated with reference numeral 1, consisting of two mats 2 and 3, each moved by its own ratiomotor, 2.1 and 3.1 respectively, the speed of which is electronically slowed down to exert a braking action on every type of skin, during the splitting process.

[0022] Such an introducing group is supported by an articulated structure, indicated with reference numerals 10, 20, 30, which positions the aforementioned introducing group in the work step, i.e. with the automatic introduction of the skins, on top of the introduction table "T"; on the other hand, as can be seen in figs. 2, 4, 6, when it is required to manually introduce the skins, said articulated structure moves the aforementioned introducing group away from the work area and positions it above the machine itself.

[0023] As can be seen in fig. 1, a first embodiment 10 of the articulated structure, which moves the introducing group 1, consists of a fork-shaped oscillating arm 11, which sits above the machine "M" and at one end holds the aforementioned group, while at the other end it is fitted on a pin 12, hinged onto a bracket 13, in turn fixedly applied to the frame "MI" of the machine.

[0024] Alternatively, as can be seen in fig. 3, in a second embodiment 20 of the articulated structure that moves the introducing group 1 the fork-shaped oscillating arm 11, which sits above the machine "M" and that at one end holds the aforementioned group, is fitted onto a pin 12, hinged onto an upright with pedestal 14, positioned separately from the frame of the machine.

[0025] As can be seen in figs. 2 and 4, the two articulated structures 10 and 20 are equipped with an actuator 40, such as a hydraulic cylinder, which engages the two mutually hinged parts, so as to make the fork-shaped oscillating arm 11 angularly rotate, which moves the introducing group 1.

[0026] In practice, the introducing group 1 moves from the work area to an area above the machine and vice-versa through an angular rotation (arrow F) about a pin 12, present at the rear of the machine.

[0027] Finally, as can be seen in fig. 5, the movement of the introducing group 1 takes place through a telescopic articulated structure 30, made up of a horizontal telescopic arm 31, which holds the aforementioned introducing group, and a vertical telescopic arm 32, which acts as a support for said structure.

[0028] As can be seen in fig. 6, the articulated structure 30 is equipped with two actuators 41 and 42, which actuate the two respective telescopic arms, so as to move the introducing group 1.

[0029] In practice, the introducing group 1 moves from the working area to an area above the machine and vice-versa through two perpendicular movements (arrows 21,22) given by the two telescopic arms 31 and 32.

[0030] Finally, the machine "M" has an associated lifting footboard 50, which has the function of always keeping the worker in the right work position as the height of the skin introduction plane varies, lifted with the use of the introducing group 1 or lowered using the work table "T".

[0031] Constructively, the footboard 50 is equipped with a truck 51, which allows the horizontal movement (arrow X) and the vertical movement (arrow Y) to adjust the height of the walking plane to the two different work modes, i.e. with or without the loading group.

[0032] The finding thus conceived can undergo modifications and variants and its details can be replaced by technically equivalent elements, provided that it is all covered by the inventive concept defined by the following claims.

Claims

1. SKIN INTRODUCING GROUP FOR A SPLITTING MACHINE, used for splitting (dividing) skins in the transversal direction, so as to obtain a valuable upper part - the "grain" - and a less valued lower part - the "split", consisting of a frame (M) that supports two parallel and opposite rollers, one known as calibrator and the other known as compensator, between which the skin slides and a splitting blade that takes care of cutting the skin into the aforementioned two parts, which is provided with an automatic introduction group (1) for the skins, which is used as an alternative to a fixed introduction table (T), said group being made up of a pair of mats (2, 3) wound in a loop, which define an area for flattening and stretching out the skin before it is conveyed towards the two rollers, said skin introduction group (1) being **characterised in that** each of the two mats (2, 3) is equipped with a ratiomotor (2.1, 3.1), the speed of which, through an electrical actuation, is able to be slowed down to exert a braking action on each skin during the splitting operation, said introduction group being supported by an articulated structure (10, 20, 30), which, through anthropomorphic movements, allows the introduction group to be automatically removed, positioning it above the machine, where it does not take up space, when it is not being used.

2. SKIN INTRODUCTION GROUP, according to claim 1, **characterised in that** the introduction group (1)

moves from the work area to an area above the machine (M) and vice-versa through an angular rotation (F) about a pivot (12), present at the rear with respect to the machine.

3. SKIN INTRODUCTION GROUP, according to claim 1, **characterised in that** the articulated structure (10), which moves the introduction group (1), consists of a fork-shaped oscillating arm (11), which is above the machine (M) and holds the aforementioned group at one extremity, while the other extremity is fitted onto a pivot (12), hinged on a bracket (13), in turn applied in a fixedly connected manner to the frame (M1) of the machine.

4. SKIN INTRODUCTION GROUP, according to claim 1, **characterised in that** the articulated structure (20), which moves the introduction group (1), consists of a fork-shaped oscillating arm (11), which is above the machine (M) and holds the aforementioned group at one extremity, while the other extremity is fitted on a pivot (12), hinged on an upright with pedestal (14), positioned separately from the frame (M) of the machine.

5. SKIN INTRODUCTION GROUP, according to claims 3 and 4, **characterised in that** the two articulated structures (10, 20) are equipped with an actuator (40), such as a hydraulic cylinder, which engages the two parts that are hinged together (11-13 E 11-14), so as to give the fork-shaped oscillating arm (11) an angular rotation, which moves the introduction group (1).

6. SKIN INTRODUCTION GROUP, according to claim 1, **characterised in that** the introduction group (1) moves from the work area to an area above the machine (M) and vice-versa through two perpendicular movements (Zi, Z2), given by two telescopic arms (31,32).

7. SKIN INTRODUCTION GROUP, according to claim 1 and 6, **characterised in that** the telescopic articulated structure (30) is made up of a horizontal telescopic arm (31), which holds the introduction group (1) and of a vertical telescopic arm (32), which acts as a means for supporting said structure and is equipped with two actuators (41, 42), which actuate the two respective telescopic arms so as to move the introduction group (1).

8. SKIN INTRODUCTION GROUP, according to one or more of the previous claims, **characterised in that** it foresees a lifting footboard (50), which has the function of keeping the operator always in the correct working position as the height of the skin introduction plane varies, raised using the introduction group (1) or lowered using a fixed work table (T).

9. SKIN INTRODUCTION GROUP, according to claim 8, **characterised in that** the footboard (50) is equipped with a trolley (51), which allows its horizontal movement (X) and vertical movement (Y) to adjust the height of the treading plane to the two different ways of working, with or without the introduction group (1).

10. SKIN INTRODUCTION GROUP, for the introduction of the aforementioned skins between a calibrating roller and a roller or compensator group, however they are mutually arranged, belonging to a splitting machine, **characterised in that** it is supported and moved according to the ways described in one or more of the previous claims.

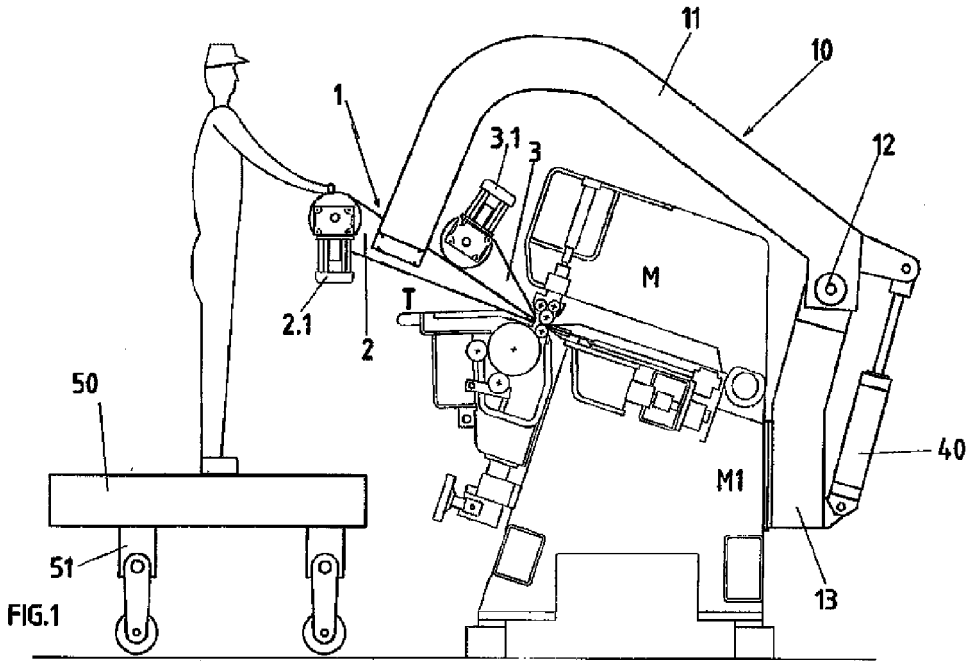

FIG.1

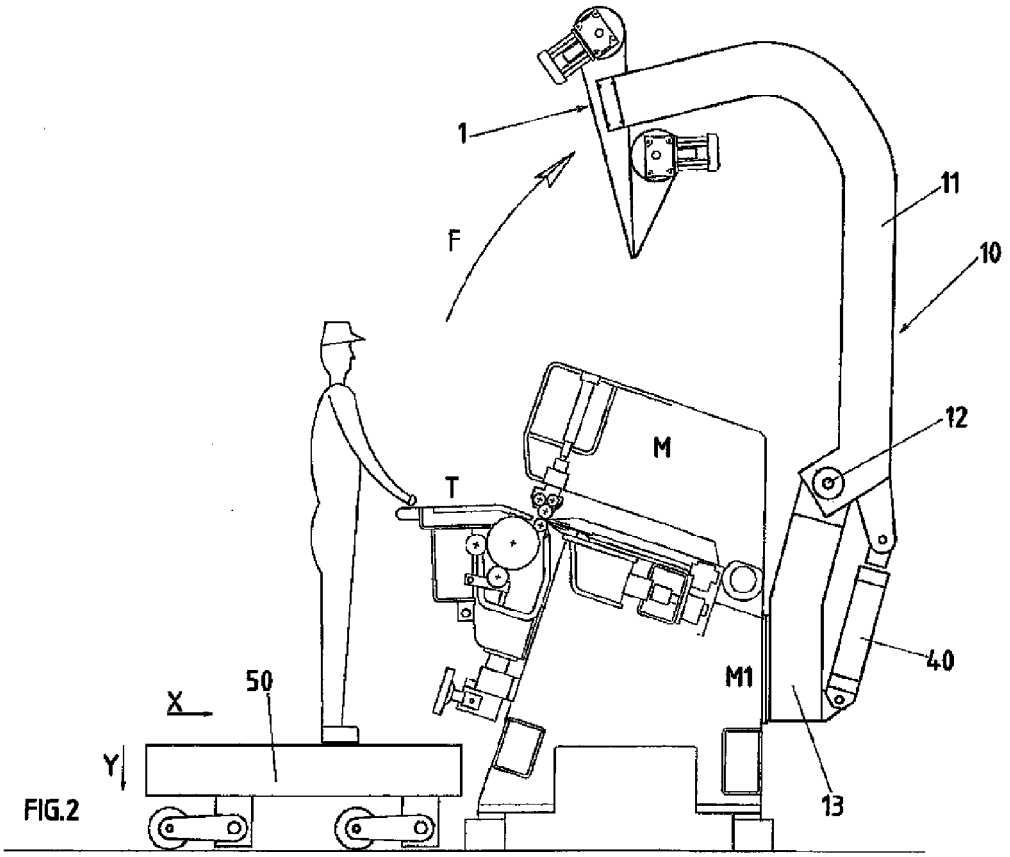

FIG.2

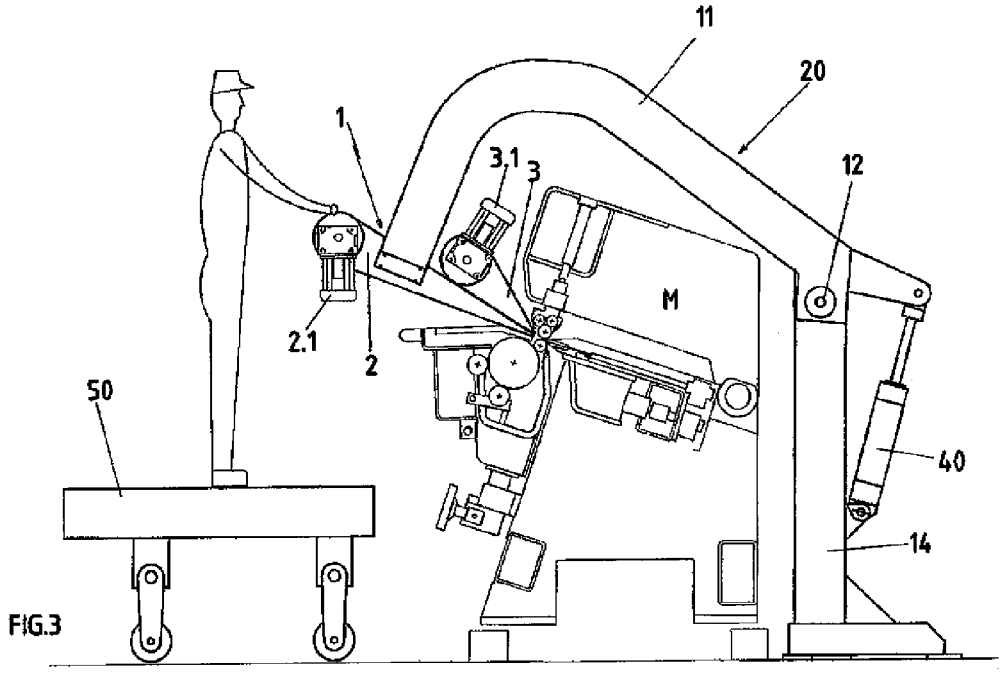

FIG.3

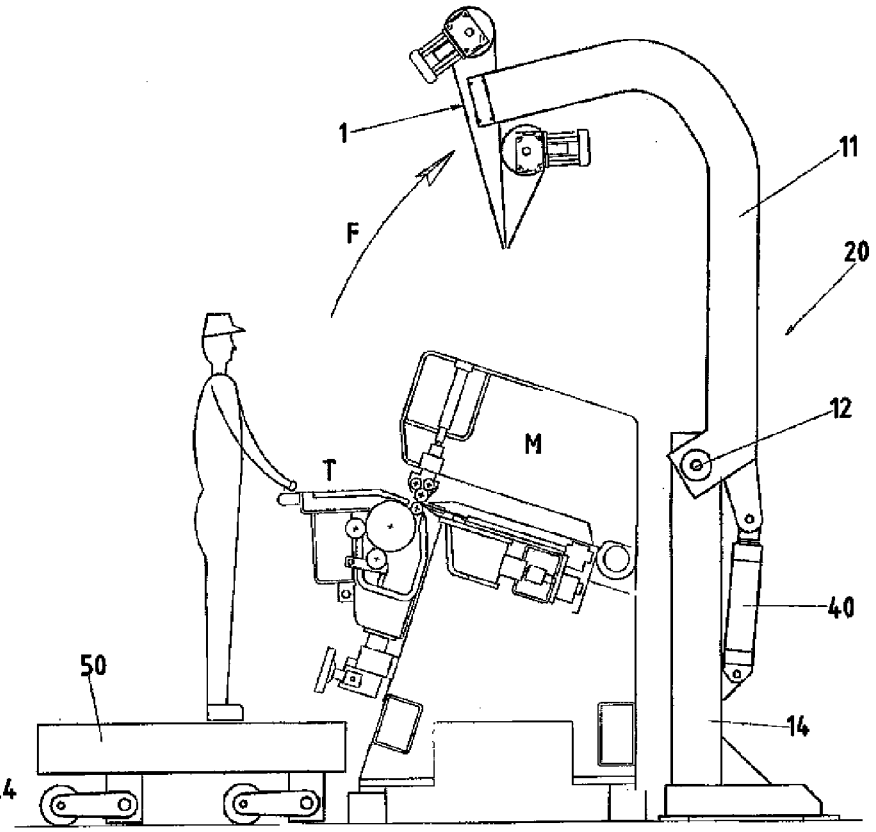

FIG.4

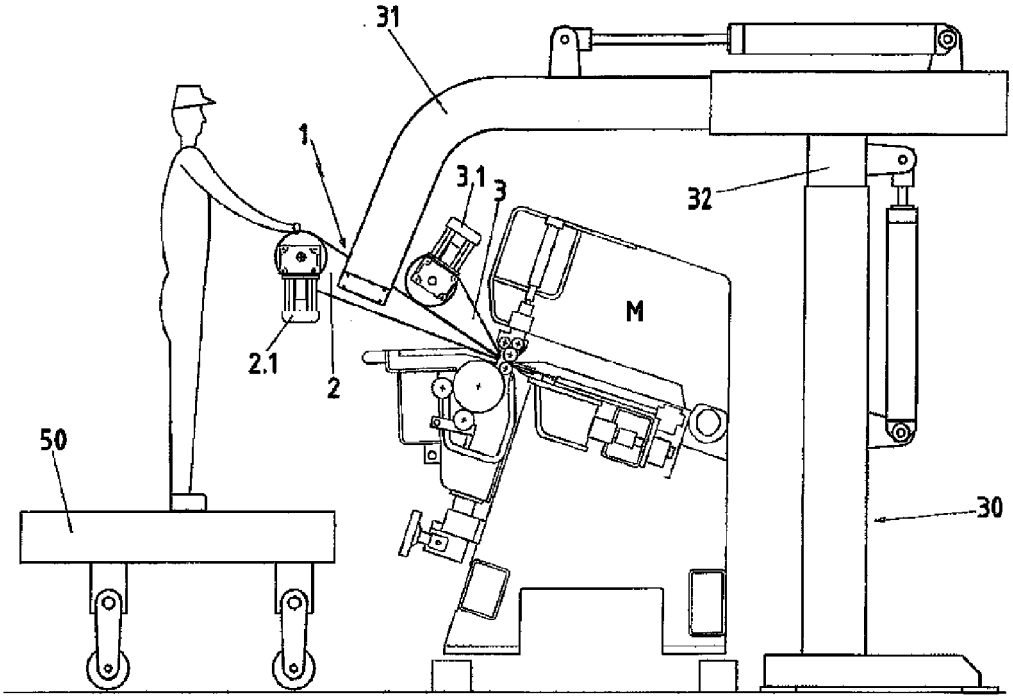

FIG.5

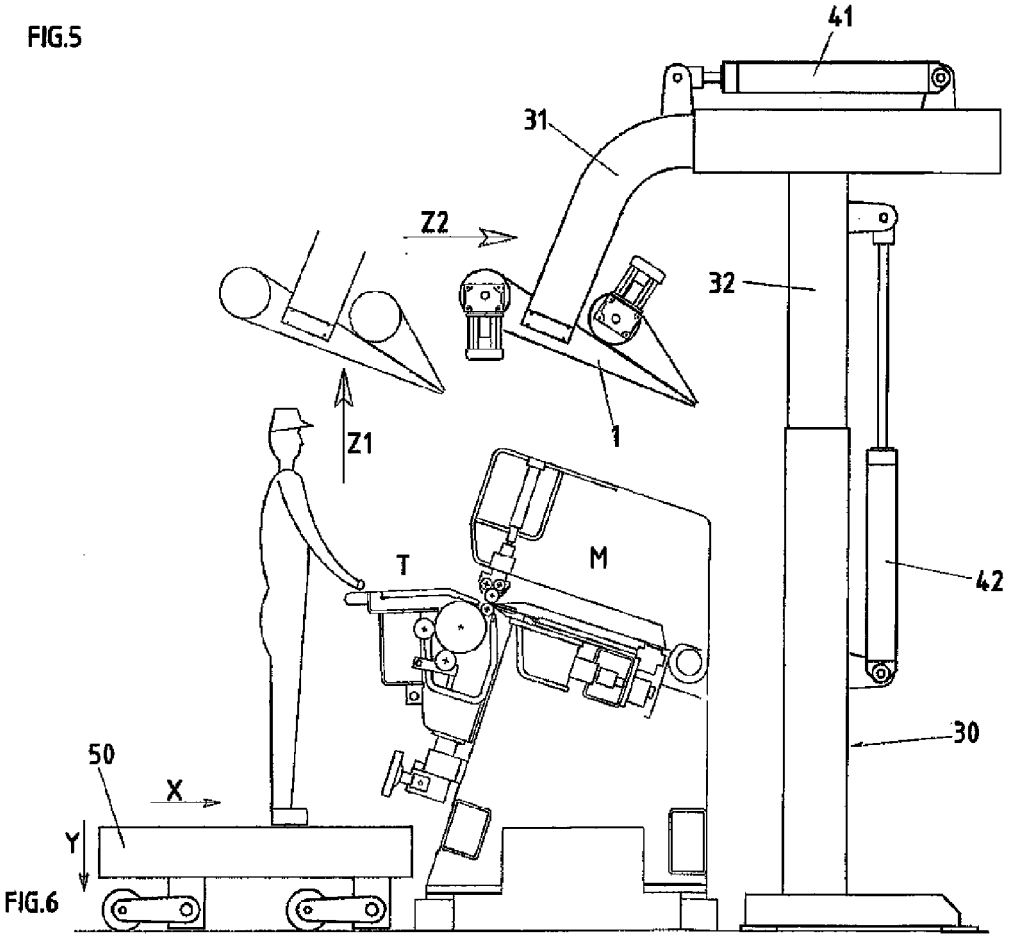

FIG.6

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EUROPEAN SEARCH REPORT

Application Number
EP 11 19 1204

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	US 4 567 739 A (MASCETTI PAOLO [IT]) 4 February 1986 (1986-02-04) * the whole document *	1-10	
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A	DE 38 31 491 A1 (MOENUS TURNER MASCHF [DE]) 22 March 1990 (1990-03-22) * the whole document *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)
C14B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	15 March 2012	Bichi, Marco

CATEGORY OF CITED DOCUMENTS

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15-03-2012

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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