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DE DK FR GB GR IT NL PT(71) Applicant: **Balsells Ventura, Angel**
Ctra. Nacional II, Km.551,9
E-08711 Odena (Barcelona) (ES)(72) Inventor: **Balsells Ventura, Angel**
Ctra. Nacional II, Km.551,9
E-08711 Odena (Barcelona) (ES)(74) Representative: **Duran Moya, Luis-Alfonso et al**
DURAN-CORRETJER, S.L.,
Paseo de Gracia, 101
E-08008 Barcelona (ES)(54) **Web guide for textile web unwinder.**

(57) A series of air jets (9,18) which is directed towards the lower face of a piece of textile material or fabric (7) which is to be uncoiled towards a lay-out table, the air jets (9,18) being situated in the interstice defined by the lower face of the said textile or fabric material (7) and the slide plates (8) which guide the material towards the said lay-out table for uncoiling thus ensuring a smooth entry and orderly passage of the material to the table. Also provided are outlets for free air (16,23) adjacent to the low pressure air jets (9,18) so as to compensate for any unbalance caused by the air jets.

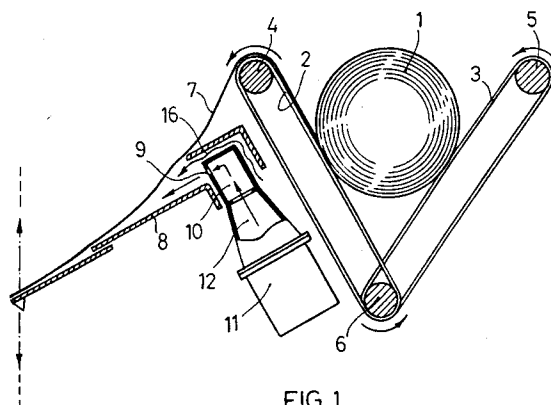


FIG. 1

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This invention patent discloses improvements to the machinery used for uncoiling pieces of fabric material from a roll or reel.

Machinery for this purpose, to which these improvements apply are well known in the state of the art for the handling of textile materials in roll form in the clothing and similar trades.

The machines used for laying out material from rolls on to a table for operations such as folding, etc., comprise generally a long table with guides for defining the movement of a carriage which takes up the full width of the table and which supports the roll of textile material so that it can be laid out on the table in a controlled manner and be submitted to various manipulations. The said carriage comprises the means of holding the roll in such a manner that it can be unrolled and also the mechanism for unrolling and guiding the piece, starting and stopping the movement on the table, etc. Frequently the carrying unit incorporates a cutting device on its forward end such that apart from unrolling the material and laying it out on the table the machine has the means for transverse cutting the material to a required length, the cutting mechanism having transverse guides for its displacement and for other ancillary devices.

Relevant to the machines as described for uncoiling rolls of fabric material are the objects of the Spanish patents nos. 8900577 and 8902432 of this same applicant.

All currently known machines for laying out fabric materials on the work table from rolls have the problems associated with the correct issue and alignment of the edge of the piece on the inclined guide plane feeding to the table. These problems are particularly frequent on extracting the initial extremity of the roll through the front section of the carriage on commencing the layout operation. Currently this initial phase has to be carried out manually so as to avoid the creasing or misalignment which generally occurs, this manual stage being especially onerous.

The improvements as disclosed in this patent are designed to obviate completely the above mentioned difficulties by introducing technical means to the carriage carrying the roll or the piece of textile material as well as to the cutting device which is associated with it.

In practical terms the inventors who are applying for this patent have found that by means of a combination of air jets at low pressure directed within the space between the fabric material and the guide plate in the form of a multiplicity of individual jets orientated at the under face of the material being unrolled a local floating effect of the fabric material is produced thus avoiding the frictional contact between the extremity of the piece of material and the guide plate such that the forward

movement of the piece, particularly in its initial phases of extraction of the extremity from the roll takes place in a regular manner despite the feeble stiffness of the fabric which in currently known machines gives rise to the problems referred to above.

In accordance with the disclosure of this invention it has been observed that in order to attain a high efficiency of the air jets in effecting a smooth passage of the fabric piece on to the lay-out table of the machine it is essential that the said jets have a predetermined angular orientation with respect to the longitudinal axis of symmetry of the piece of fabric such that the jet flow for optimum effect should be inclined towards the nearest outer edge of the material, so requiring that the jets be divided into two groups with one group located between the centre of the piece and one of the edges and the other group between the centre of the piece and the other edge or border of the piece of fabric. With this arrangement it has been found that the piece of fabric material remains correctly located on the guide plate without wrinkles. The angle is not critical and can be from 15 to 60° to the longitudinal axis of the piece with a preference for 30 to 45°.

To provide the air distribution as described there are several technical possibilities such as an arrangement of the jet nozzle angle, ducts or louvres set obliquely in the air channel or some other currently known means. It has also been observed that a preferred arrangement is one using tubes and outlets of a small cross sectional area resulting in a high air velocity in the distribution pipework which supplies the air from a central pressurized source. With this arrangement and combined simply with circular, square or other suitable shape of orifices in the air distributor tube walls, the air outlet stream, while retaining part of the directional vector of the velocity reached in the distributor tubing has a transverse component with respect to the fabric piece, towards one or other of its edges, thus resulting in a satisfactory arrangement using simple and economic means.

It has been observed that the angle between the air jet nozzles and the fabric material guideplate should be small thus forming an air cushion in the contact zone between the textile and the guide plate, so reducing the rubbing friction. However it has been found that other angles of inclination to the guide plate can be effective but with an optimum within the range of 0 to 45°, and preferably between 0 and 15°.

Very satisfactory results can be obtained by applying the above principles as disclosed in this invention to the cutting mechanism associated with the roll carriage of the machine, this being one practical embodiment of this invention. Similarly an

air injection or distribution system as for the textile extremity guide zone will be provided for the cutting unit, resulting in a smooth and efficient operation of that unit.

Various tests carried out by the inventors have shown that the optimum effect from the air jet system as described is with the jets combined with a free air entry above the jets in the distribution manifold so as to eliminate any local depression caused by a venturi effect by the manifold nozzles. This air entry may be free as mentioned or it can be under controlled pressure to suit the characteristics of the main jets referred to above.

To assist in the understanding of the disclosures, drawings are attached showing one non-limitative embodiment of the invention by way of example.

Figure 1 shows a cross-section in schematic form of the roll support assembly and the draw out towards the guide plates.

Figure 2 is also a schematic view showing the frontal aspect of the roll carriage with a front view of the cutting device.

Figures 3 and 4 are respectively schematic views in section and in perspective of the cutting unit which is incorporated in the machine carriage. As may be seen in Figure 1, these improvements apply to the mobile carriage of the machine for drawing out the pieces or rolls of textile material, as in current practice, thus it is not described in full detail but shown simply as a piece or roll of textile material -1- resting on endless belts -2- and -3-, the number being variable and motorized so as to cause the rotation of the roll -1- supported freely by motorized belts on the upper shafts -4- and -5-, the lower shafts -6- being common.

In accordance with these improvements, there is situated between the piece of textile cloth -7- as it leaves the motorized belts -2- and the guide plate -8- an alignment of orifices or nozzles -9- for low pressure air coming from a distribution manifold -10- supplied from a blower -11-, though the air may equally be supplied from an industrial air line fitted with the necessary reducing valves and filters etc.

The orifices or nozzles -9- are distributed preferably along the whole length of a distribution block -10- which for preference is fed from a blower -11- or other centrally situated low pressure air system through the manifold -12-.

It is essential that the air stream at the exit from the nozzles or orifices -9-, in this patent, form a certain angle to the lateral borders of the piece of textile material shown by trace dotted lines -13- and -14-. Figure 2 shows the air nozzles arranged such that they are in two groups with respect to the central line of symmetry -15- of the textile, represented by vectors in this figure, such that each

group is orientated to provide a stream component towards its respective nearest side or border -13- or -14-.

The disclosures herein include also the disposition of a compensating air flow admission -16-, preferably being at atmospheric pressure having free access to the interstice between the piece of textile material -7- and the guide plate -8-, so as to compensate for local depression effects, particularly any venturi effect.

These improvements can be applied equally to the cutting mechanism which may be associated with the machine which is the subject of this patent, the device being shown generally against the number -17- in Figure 2, this also comprising an alignment of nozzles or orifices -18- provided in a manifold or distributor -19- disposed transversally with respect to the piece of material and which is fed through a point, generally, central, -20- with low pressure air by means of a blower -21- or other means. Between the slide plate -22- opposite the tubular distributor -19- carrying the line of orifices -18- there is an entry for free air -23- similar to the arrangement shown above.

Claims

1. Improvements to machines for uncoiling fabrics in roll form characterized by multiple air jets which are directed towards the lower side of the piece of fabric being unrolled from the machine towards the layout table, the said jets being situated within the interstice determined by the lower side of the said fabric material and the slide plates guiding the said fabric piece on to the table where it is to be laid out or unrolled, thus ensuring a smooth and regular passage of the material.
2. Improvements to machines for uncoiling fabrics in roll form as in Claim 1, characterized by the provision of entries for free air adjacent to the low pressure air jets so as to compensate for the unbalance of any localized pressure caused by the air jets.
3. Improvements to machines for uncoiling fabrics in roll form, as in Claim 1, characterized in that the low pressure air outlets are arranged in two groups each respectively between the axis of symmetry of the piece of fabric and one of its edges such that the air jets in each of the two groups are directed at a certain angle with respect to the corresponding edge or border of the piece of fabric.
4. Improvements to machines for uncoiling fabrics in roll form, as in Claim 1, characterized in

that the low pressure air jets take the form of an alignment of orifices in a distribution manifold of low pressure air situated transversally with respect to the piece of fabric.

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5. Improvements to machines for uncoiling fabrics in roll form as in Claim 4, characterized in that the low pressure air tubing is of a small bore so as to ensure a high air velocity in the transverse distribution piping.

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6. Improvements to machines for uncoiling fabrics in roll form, as in Claim 5, characterized in that the entry of low pressure air is central to the transverse distribution manifold.

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7. Improvements to machine for uncoiling fabrics in roll form, as in Claim 1, characterized in that the low pressure air jets are orientated at a slight angle to the slide plates.

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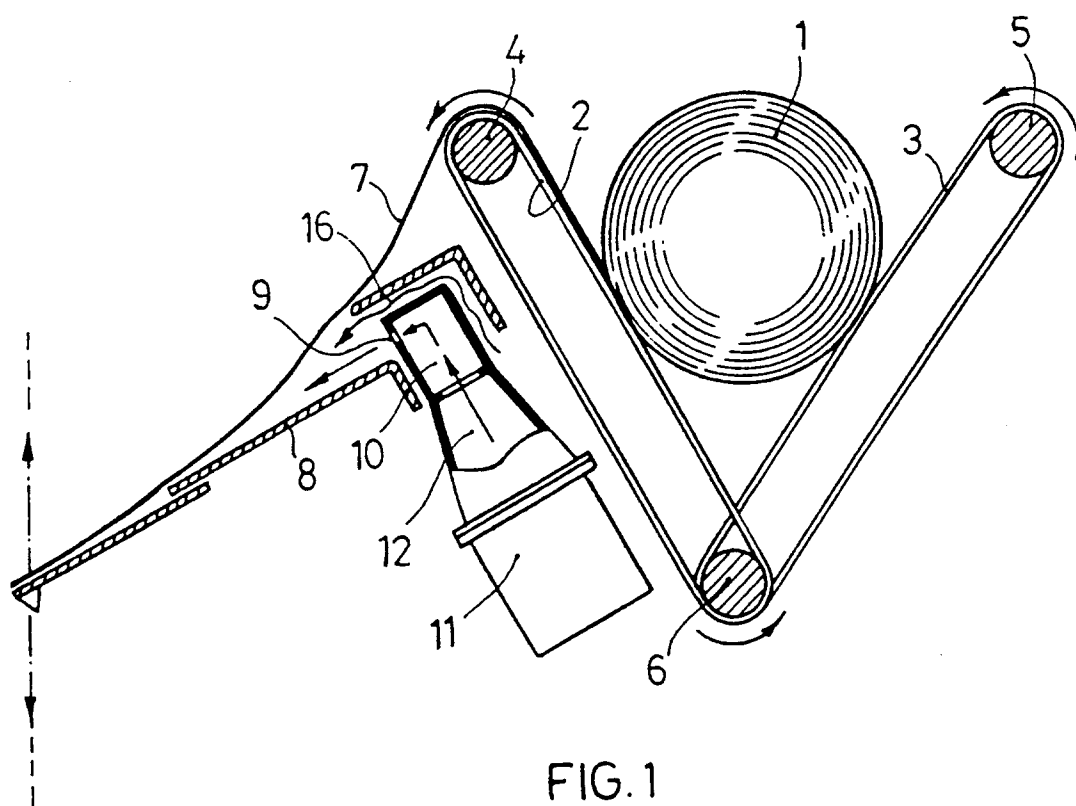
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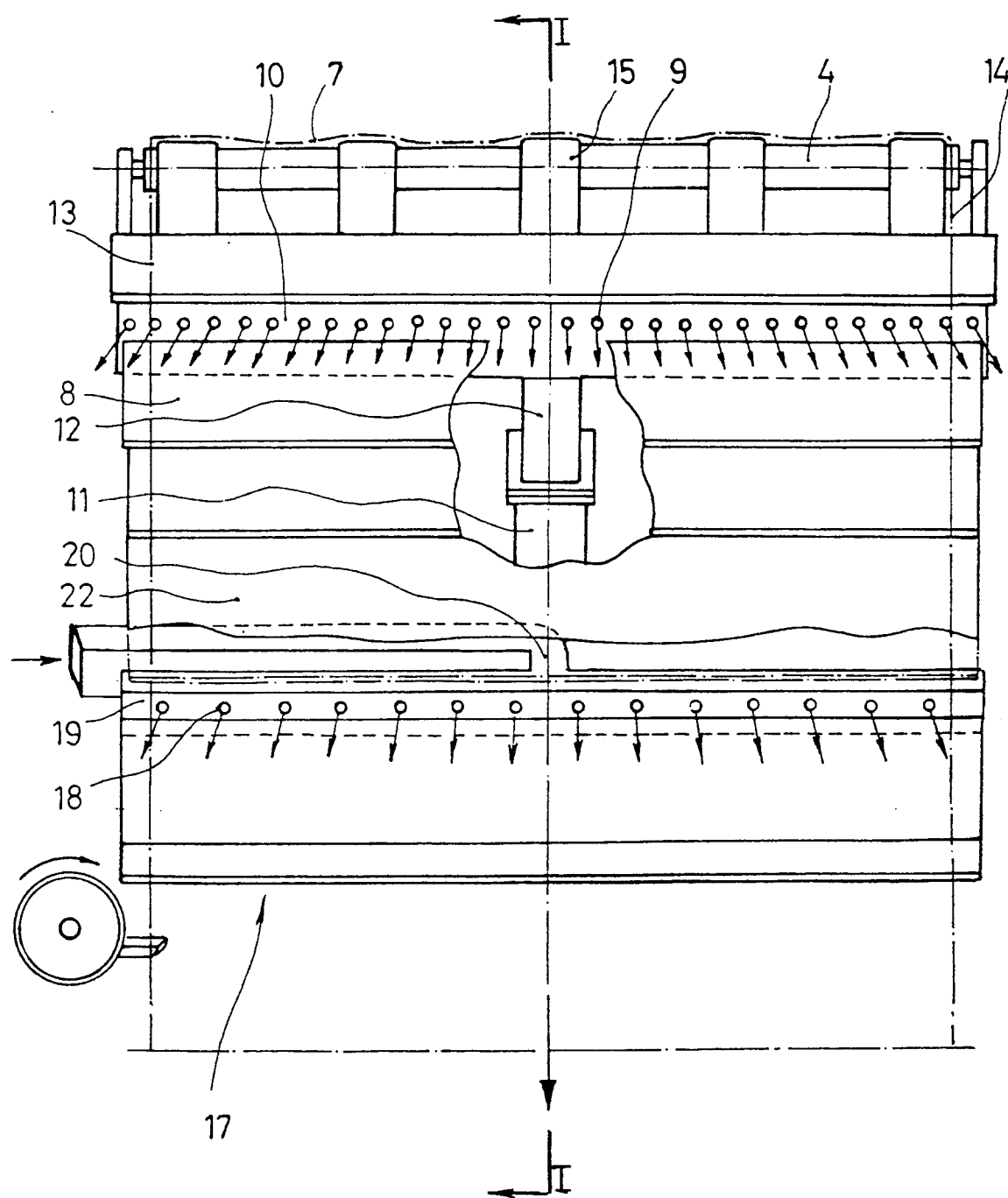


FIG. 2

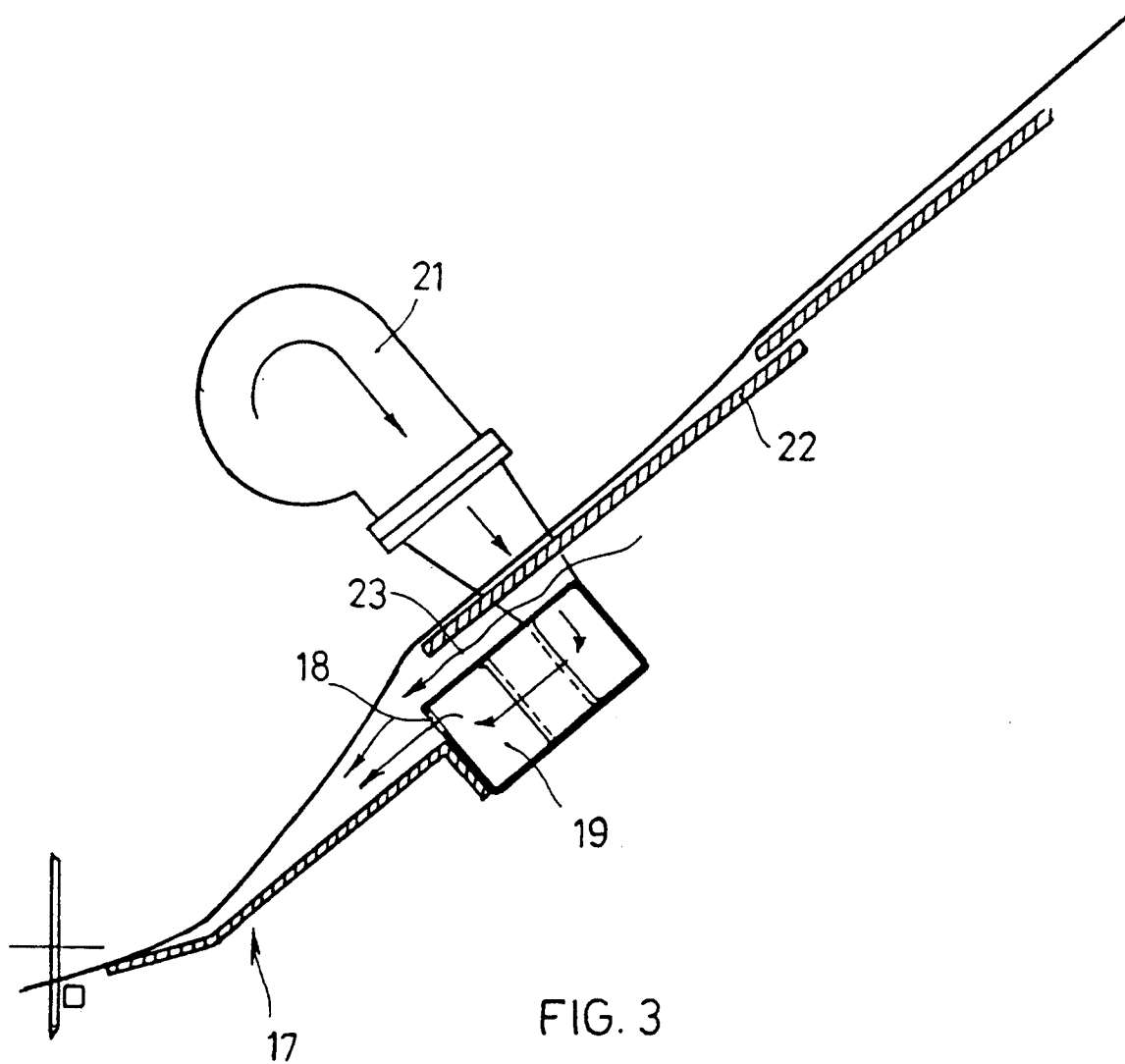


FIG. 3

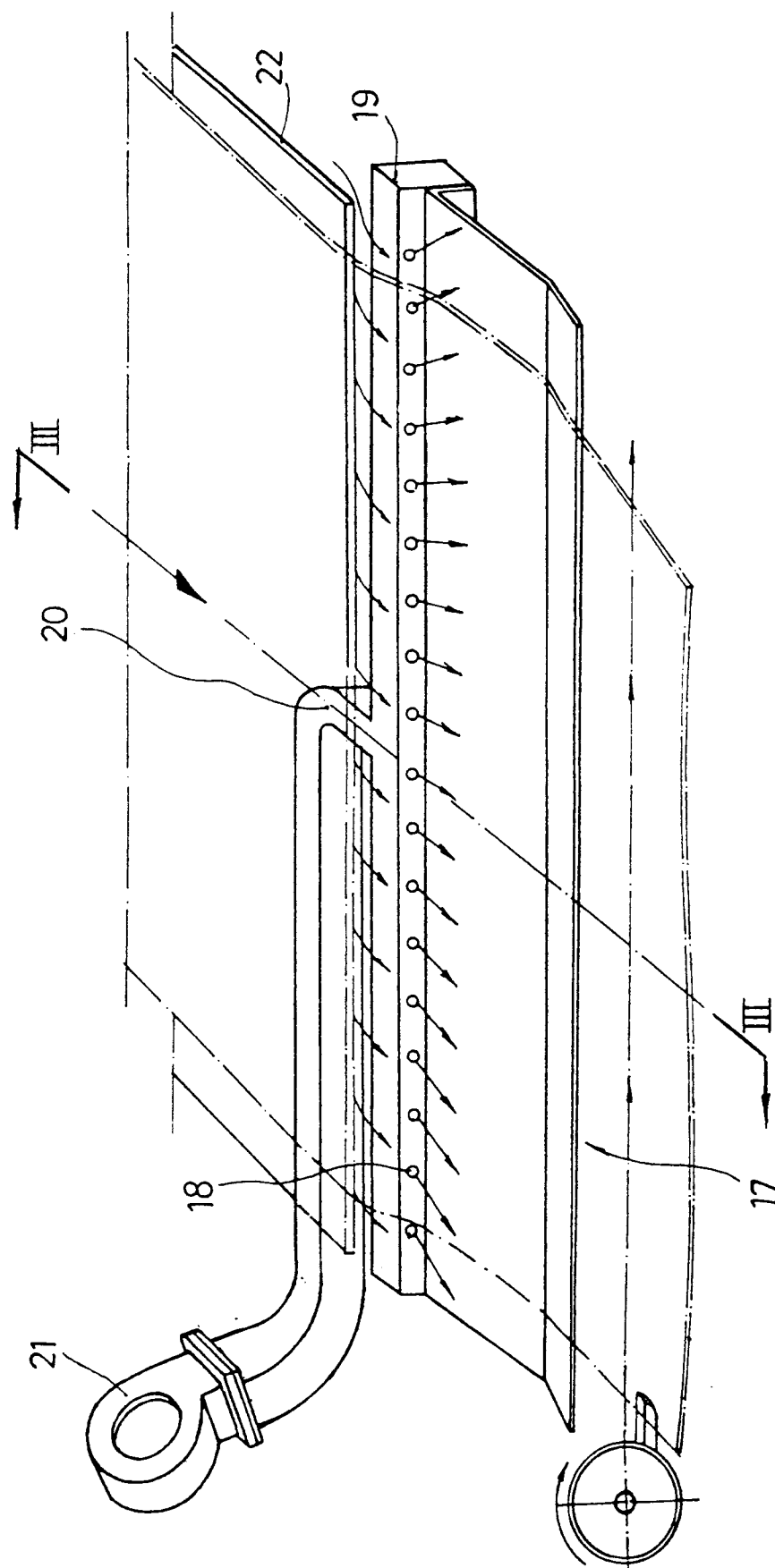


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 94 50 0157

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-A-30 01 729 (KRAUSS U. REICHERT GMBH + CO KG SPEZIALMASCHINENFABRIK) * claims 1,2,4; figures 1,2 * * page 4, line 4 - page 5, line 8 * * page 6, line 12 - page 7, line 30 *	1,4,7	B65H23/24 B65H29/24 B65H23/022 B65H45/103
Y	---	2,3	
A	---	6	
Y	EP-A-0 427 015 (H. VITS) * claims 1,2,8; figures 1,7,8,8A * * column 1, line 9 - line 27 * * column 4, line 57 - column 5, line 10 * * column 5, line 50 - column 6, line 8 *	2,3	
A	---	1,4,7	
X,P	EP-A-0 569 027 (BULLMER SPEZIALMASCHINEN GMBH) 10 November 1993 * claims 1-5; figures 1,2,5,6 * * page 3, line 24 - line 33 *	1,4,7	
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A	CH-A-663 010 (FERAG AG) * figures 1,2 * * page 3, left column, line 45 - right column, line 38 *	1,2,7	B65H A41H
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A	US-A-4 726 502 (G.G. CRYDERMAN) * abstract; figures 1-4 *	1,4,6,7	
A	GB-A-2 032 399 (CROWN ZELLERBACH CORPORATION) * abstract; figures 1,2 *	1,4,7	

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 December 1994	Examiner Häusler, F.U.
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			



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB-A-2 106 554 (G.O. STUMPF) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	15 December 1994	Häusler, F.U.	
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			
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