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APPARATUS FOR MAKING NONWOVEN PILE CARPETS

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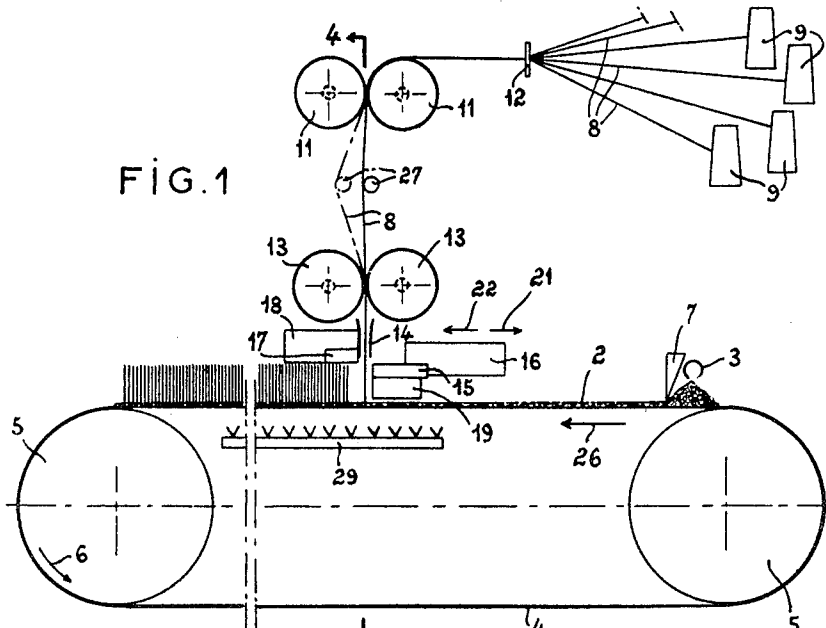


FIG. 1

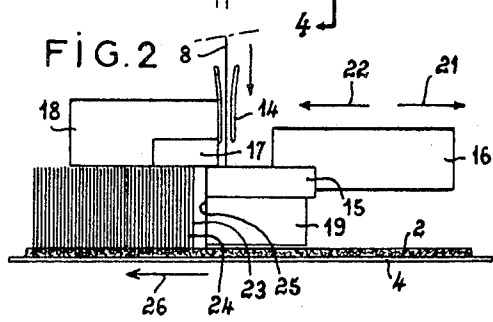


FIG. 2

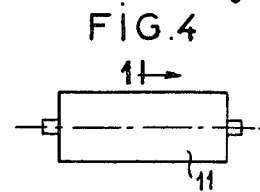


FIG. 4

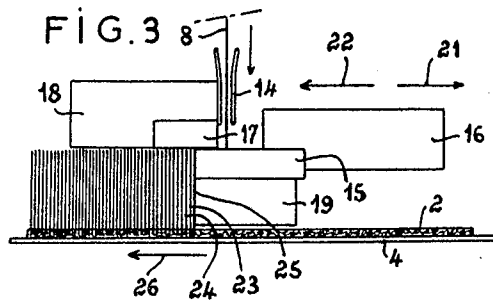
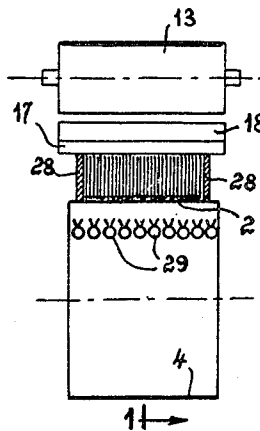


FIG. 3



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**APPARATUS FOR MAKING NONWOVEN
PILE CARPETS**

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45,800

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1 Claim

ABSTRACT OF THE DISCLOSURE

Nonwoven pile carpet is produced by spreading a layer of plastic on a conveyor belt, and while it is still tacky, pushing the edge of a sheet of fiber into the plastic. A knife cuts off the fiber to the desired pile depth, and a heel on the knife presses the cut-off fibers against a previously inserted row.

Numerous processes are known for the production of pile carpets obtained without weaving by introducing the said pile into a support or backing in plastics or other adhesive material. These processes generally consist of gripping the threads in grippers and transporting them, when cut to the desired length, onto the support of adhesive material. However, the machines for carrying out such processes are usually complicated.

The present invention concerns a very simple machine for producing pile carpets without weaving.

According to the invention, apparatus for producing nonwoven pile carpets is produced, comprising a conveyor belt, means for depositing a layer of adhesive material on the belt, means for pushing the edge of a sheet of fibers into the layer of adhesive on the belt to embed the ends of the fibers in the layer of adhesive while the layer of adhesive is still tacky, a fixed counter blade, and a knife movable past the fixed counter blade to cut the fibers to form a row of pile, the knife having a heel thereon that pushes the row of pile in the direction of conveyor movement against the previously deposited row of pile.

The invention will be apparent from the following description, with reference to the several figures of the accompanying drawing, which show, by way of example only, one form of machine for carrying out the process of the invention.

In the drawing:

FIG. 1 is a longitudinal section of the machine on the line I—I of FIG. 4;

FIGS. 2 and 3 show fragmentary sections of the machine illustrating the positions of the knife just after cutting of a row of pile and at the time of the positioning thereof against the preceding row respectively; and

FIG. 4 is a section of the machine on the line 4—4 of FIG. 1.

Referring now to the drawing, it will be seen that plastic material 2, not as yet set, is spread by a device 3 onto a conveyor belt 4, which is stretched horizontally over two rollers 5 one of which is rotated in the direction of the arrow 6. After the plastic material 2 is laid on the belt 4 it passes under a fixed doctor-blade 7 which spreads it uniformly over the whole width of the belt 4. A bundle of threads 8, coming from independent bobbins 9, is driven in a continuous manner by rollers 11. Before passing between the rollers 11, the threads 8 pass through

a comb 12 which distributes them into an even sheet. The threads 8 then pass between two rollers 13 which drive them intermittently towards the belt 4 and perpendicularly thereto. After passage between the rollers 13 and before reaching the belt 4, the threads 8 pass through vertical tubular guides 14. These tubular vertical guides 14 are disposed above a cutting device consisting of a moving knife 15 carried by a support 16 and a fixed knife or counter blade 17 carried by a support 18. The moving knife 15 is, furthermore, provided with a bottom heel 19. This moving knife 15 has an oscillating horizontal movement in the directions of the arrows 21 and 22 and the end of its travel in the direction of the arrow 22 is below the counter blade 17 and the support 18.

The machine operates in the following manner:

After a row a threads 23 has just been pushed against a preceding row 24, the support 16 carries the knife 15 in the direction of the arrow 21. When the knife 15 is no longer below the counter blade 17 (FIG. 1) the rollers 13 drive the threads 8 in such a manner that their ends embed themselves in the layer 2 of plastic material.

The angle through which the rollers 13 rotate at each movement thereof is calculated as a function of the desired height of the pile. The support 16 then carries the knife 15 in the direction of the arrow 22, the threads 8 are thus cut so as to obtain a new row 25 of pile (FIG. 2) and due to the movement of the knife 15 extending in the direction of the arrow 22, the new row of pile 25 is pushed against the preceding one 23 (FIG. 3). During this movement of the knife 15, the conveyor belt 4 is displaced in the direction of the arrow 26 by a distance corresponding to the thickness of a row of pile.

So that the yarns 8 are not wound off the bobbins 9 by jerks, the draw rollers 11 are driven in a continuous rotary movement. Since the rollers 13 only have an intermittent rotation, the machine includes a compensating device 27 which keeps the yarns 8 stretched between the rollers 11 and the rollers 13.

In order to obtain even edges on the carpet the conveyor belt 4 is provided with vertical lateral lips 28 which move with it.

The shafts of the rollers 5 may slide in vertical guides (not shown), and the displacement of the conveyor belt 4 which results therefrom allows the height of the pile of the carpet to be regulated. This regulation is obviously accompanied by a corresponding adjustment of the angular rotation of the rollers 13 for each thread feeding operation.

Alternatively the conveyor belt 4 can be fixed, and the adjustment of the pile height may then be obtained by making the cutting device movable.

After the conveyor belt has passed the cutting device, it passes heating means, such as the heaters 29 which ensure the setting of the plastic material 2. The power of the heaters 29 is obviously adjusted as a function of the thickness of the layer of plastic material and the speed of displacement of the belt 4.

Obviously any other heating device may be provided such as for example a tunnel shaped oven through which the conveyor belt 4 passes and any heating system such as electrical may be used.

It will be appreciated that it is not intended to limit the invention to the above example, many variations being possible, without departing from the scope thereof.

Thus by variation of the forward movement and a suitable adjustment of the height of the cut, the yarns can be embedded at any desired angle and not vertically.

It is also possible to obtain surface effects by embedding

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more or less deeply certain zones of the pile before the setting of the plastic material.

The yarns can be replaced by a sheet of carded or combed fibres if desired.

What is claimed is:

1. Apparatus for producing nonwoven pile carpets, comprising a conveyor belt, means for depositing a layer of adhesive material on the belt, means for pushing the edge of a sheet of fibers into the layer of adhesive on the belt to embed the ends of the fibers in the layer of adhesive while the layer of adhesive is still tacky, a fixed counter blade, and a knife movable past the fixed counter blade to cut the fibers to form a row of pile, the knife having a heel thereon that pushes the row of pile in the direction of conveyor movement against the previously deposited row of pile.

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156—72, 250, 297, 510; 198—201