

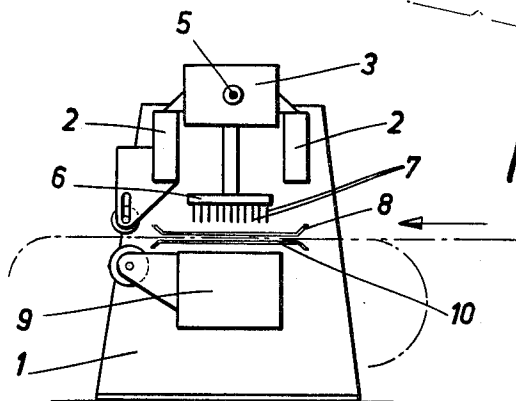
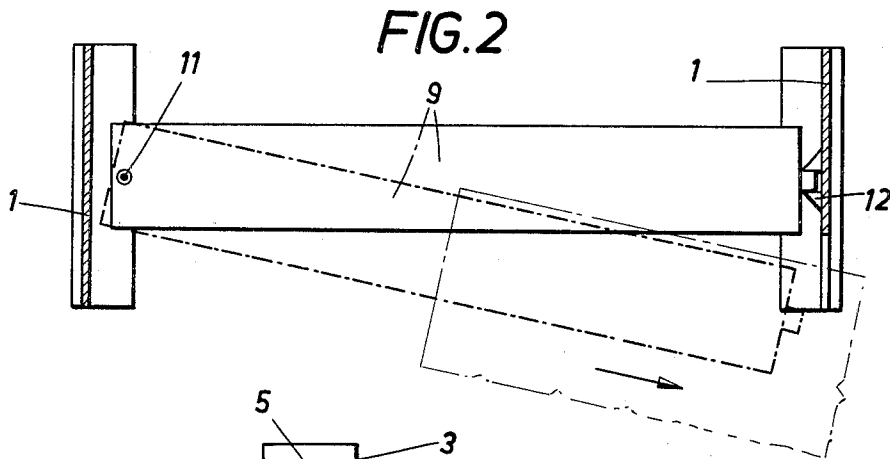
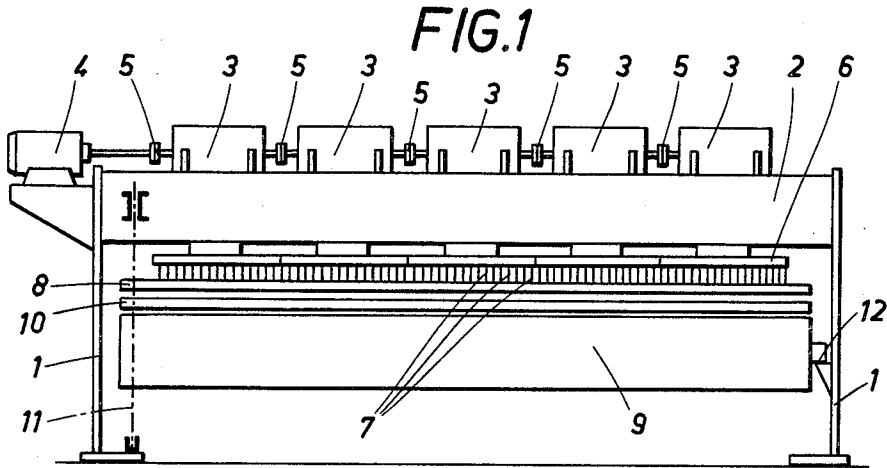
Jan. 13, 1970

E. FEHRER

3,488,820

NEEDLE PUNCHING MACHINE FOR MANUFACTURING ENDLESS WEBS

Filed Aug. 6, 1968



INVENTOR.

ERNST FEHRER

BY

Kurt Kelman

AGENT

1

3,488,820

NEEDLE PUNCHING MACHINE FOR MANUFACTURING ENDLESS WEBS

Ernst Fehrer, Auf der Gugle 28, Linz, Austria

Filed Aug. 6, 1968, Ser. No. 750,723

Claims priority, application Austria, Sept. 15, 1967,

A 8,441/67

Int. Cl. D04h 18/00

U.S. Cl. 28—4

1 Claim

ABSTRACT OF THE DISCLOSURE

A needle beam is mounted in a machine frame for an up and down movement relative thereto. A multiplicity of depending needles are secured to needle board means, which are secured to the needle beam. A table is carried by the frame and adapted to support a web. A perforated stripper is carried by the frame between the needle board means and the table. The needles are arranged to pass through respective perforations in said stripper and table during the up and down movement of the needle beam. A vertical pivot is secured to the machine frame on one side thereof and pivotally connects the table at one end thereof to the frame. Locking means are provided for releasably locking the table to the frame on the other side thereof. An endless web extending around the table above and below the same can easily be removed from the machine when the locking device is released and the table has been swung out of said frame about said pivot.

This invention relates to a needle punching machine for manufacturing endless webs made of hair or fibers, which machine comprises a needle beam, which is reciprocable in a machine frame, needle boards which are secured to said beam and set with a multiplicity of depending needles, a perforated stripper, and a table, which is mounted in the machine frame and forms an also perforated support for the moving web, which at the delivery end extends downwardly and then under the table back to the receiving end. As the needles are provided with barbs, individual fibers or hairs will be caught by the barbs as the needles pierce the web and these caught fibers or hairs will be pulled through the web by the needles so that the cohesion of the web is improved and a thorough felting of the web material results. Because the web is returned to the receiving end of the machine and performs another pass through the machine, the desired endless web results. If the circulation is repeated, the endless web will consist of a plurality of layers, which are joined as a result of the needle punching treatment. When the thickness which is desired for the endless web has been reached, it will be sufficient to cut off the arriving web. These endless webs may often have a comparatively large width and are mainly required for paper machines.

A difficulty which arises in connection with such needle-punching machines resides in that the finished web cannot readily be removed from the needle punching machine because the web is moved as an endless element around the table and the required side members of the machine frame obstruct a pulling of the web from the machine in the longitudinal direction of the table, transversely to the feeding direction. It is already known to arrange one side standard of the machine frame to be removable so as to enable a removal of the finished web. This design can be used only in machines having a small working width because the removal of said side standard will deprive the needle beam and table of a support at one end thereof. It is also known to move the table out of the machine frame in the feeding direction so that the side members of the machine frame will not obstruct the pulling of the

2

finished endless web from the machine. The structure described last is relatively complicated and expensive.

It is an object of the invention to provide a needle punching machine which serves to manufacture endless webs made of hairs and fibers and in which the finished web can easily be removed without need for a complicated and expensive machine structure and without restriction to comparatively small working widths.

This object is accomplished according to the invention in that the table is pivoted on a vertical axis on one side of the machine frame and is releasably locked to the frame on the other side. When the working operation is completed, it is sufficient to release the lock and to pivotally move the table out of the frame about the vertical axis provided only on one side so that the finished web can then be pulled off that end of the table which is now free. The structure is very simple because all that is required is a sufficiently strong pivot, to which the table is connected in such a manner that the weight of the table is taken up properly. The design according to the invention can be applied without difficulty also to machines having large working widths.

The subject matter of the invention is shown by way of example and strictly diagrammatically on the accompanying drawing, in which

FIG. 1 is an elevation showing a needle punching machine,

FIG. 2 is a top plan view showing the machine with the top part removed, and

FIG. 3 is a side elevation showing the machine with the forward portion of the side part removed.

A machine frame consists of two side parts 1 and two top cross-members 2 and carries a plurality of drive units 3, which are jointly driven by a motor 4 via flexible couplings 5. The needle beam 6 comprises a plurality of sections, which are moved jointly up and down by the drive units 3. Needle boards, not shown, are inserted into the needle beam 6 and set with a multiplicity of depending needles 7. A stripper 8 is firmly connected to the machine frame and provided with apertures which are in register with respective needles 7.

A table 9 is mounted in the machine frame 1, 2 and forms a support 10, which is also perforated. The web is moved in steps between the stripper 8 and the base 10 and thereafter extends downwardly and under the table back to the receiving end for a repeated needle punching treatment. When the circulation has been repeated several times, the arriving web is severed so that the endless web is finished.

To enable a removal of the finished endless web from the machine, the table 9 is pivoted to the machine frame 1, 2 on one side thereof by means of a vertical pivot 11 and on the other side of the frame is releasably locked thereto by means of any suitable locking device 12. When the locking device has been released, the table 9 can be pivotally moved to the position which is shown in dash-dot lines in FIG. 2 so that the web can readily be pulled off over the free end of the table.

What is claimed is:

1. A needle punching machine for manufacturing endless webs, which comprises
a machine frame,
a needle beam mounted in said machine frame for an up and down movement relative thereto,
needle board means secured to said needle beam, a multiplicity of depending needles secured to said needle board means,
a table carried by said frame and adapted to support a web,
a perforated stripper carried by said frame between said needle board means and said table,

3

said needles being arranged to pass through respective perforations in said stripper and table during said up and down movement of said needle beam, a vertical pivot secured to said machine frame on one side thereof and pivotally connecting said table at one end thereof to said frame, and locking means releasably locking said table to said frame on the other side thereof, whereby an endless web extending around said table above and below the same can easily be removed from the machine when the locking device is released

4

and the table has been swung out of said frame about said pivot.

References Cited

UNITED STATES PATENTS

2,067,163	1/1937	Sonman	28—4	X
3,117,359	1/1964	O'Byrne	28—4	
3,129,486	4/1964	O'Byrne	28—4	
3,287,786	11/1966	Goy	28—4	

LOUIS K. RIMRODT, Primary Examiner