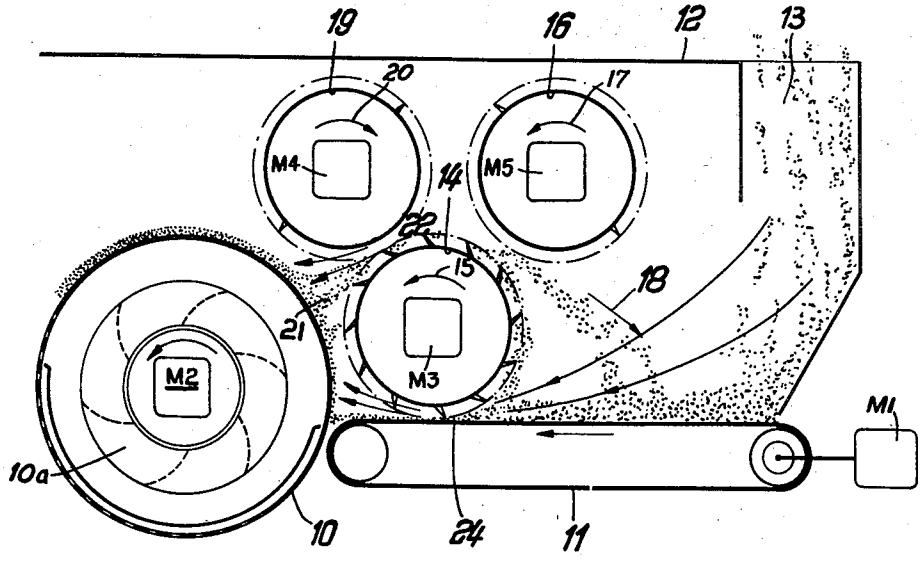
June 21, 1960 G. FLEISSNER 2,941,264

APPARATUS FOR PRODUCING A UNIFORM BAT OF FIBROUS MATERIAL

Filed March 16, 1959



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United States Patent Office

2,941,264

Patented June 21, 1960

2,941,264

APPARATUS FOR PRODUCING A UNIFORM BAT OF FIBROUS MATERIAL

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Filed Mar. 16, 1959, Ser. No. 799,721

Claims priority, application Germany Mar. 21, 1958

3 Claims. (Cl. 19—156)

The present invention relates to an apparatus for producing a uniform bat or fleece of loose fibrous material, and more particularly to improvements in an apparatus as described and claimed in my copending application, Serial No. 669,681, filed on July 2, 1957.

In this prior application I have described an apparatus of the above-mentioned type which comprises a needle drum which is mounted above a conveyer belt for feeding the loose fibrous material and at the periphery of which an induced draught or suction is maintained at the point where the loose fibrous material is taken off the moving conveyer belt. For producing this suction the needle drum is provided with a perforated wall at the inside of which a pressure below atmospheric is maintained which, in turn, results in the required suction. This negative pressure in the needle drum is produced in the apparatus according to this prior application by means of a suction fan separate from the suction means for operating the main suction drum or drums on which the bat of material is dried.

It is an object of the present invention to simplify the design and construction of this apparatus and to provide an apparatus in which the main perforated suction drum having a pressure below atmospheric therein is mounted at a point closely behind the needle drum. The suction produced by such a perforated drum for applying the loose fibrous material upon the peripheral wall of the drum is so strong as to be still effective at a certain distance from its peripheral wall. This feature is utilized to advantage according to the present invention which essentially consists in mounting the needle drum so closely in front of the suction drum and so closely to the upper surface of the conveyer belt feeding the fibrous material that the needle drum will be separated from the conveyer belt by a narrow gap and the suction from the suction drum will be effective within this gap and will draw the fibrous material from the conveyer belt within the narrow gap upon and between the needles of the needle drum. Thus the separate suction fan previously required for the needle drum may be omitted.

These and other objects, features, and advantages of the invention will become further apparent from the following detailed description thereof, particularly when read with reference to the accompanying drawing of one preferred embodiment of the invention.

As illustrated in the drawing, the apparatus comprises a box-shaped housing 12 with a chute 13 therein into which the loose fibrous material is inserted and from which it then drops upon the upper conveying surface of a conveyer belt 11 driven by motor M1 near the bottom of the housing 12. Adjacent one end of the conveyer belt, as seen in the direction of the conveying movement thereof, a perforated drum 10 rotated by motor M2 is mounted at the inside of which a strong suction is produced by fan 10*a* which will hold the fibrous material attached to the outer peripheral surface of the wall of drum 10. A needle drum 14 driven by motor M3 is mounted so closely above the conveyer belt 11 that they

will only be separated by a narrow gap 24 which just allows the needles of drum 14 to pass at a small distance from the upper surface of the belt. The needle drum is also spaced at such a small distance from the outer surface of the perforated drum 10 that it will be within the effective range of the suction from drum 10. This suction will then be effective within the gap 24 and draw therein the loose fibrous material fed by the conveyer belt 11 toward the peripheral surface of needle drum 14 and firmly upon and between the needles on this drum.

Although small tufts of fibrous material will once in a while be drawn through the narrow gap 24 between the needle drum 14 and conveyer belt 11 and be passed directly to the suction drum 10, the amount of this material will be very small and amount to 1% or less of the total amount conveyed on the belt.

At the right side of and above needle drum 14 which is rotated in the direction shown by the arrow 15, that is, opposite to the direction of movement of belt 11, a needle roller 16 rotated by motor M5 is mounted and driven in a direction as shown by the arrow 17, that is, opposite to the action of needle drum 14. This needle roller 16 strips the excess material from the bat of fibrous material formed on needle drum 14 and throws such excess back upon the conveyer belt 11 in the direction as shown by the arrow 18.

At the left side of the needle drum 14 and above the same another needle drum or roller 19 is mounted and rotated in the direction as shown by the arrow 20 at a speed greater than drum 14. The needles of this roller engage between the needles of needle drum 14, strip off the material from the latter and throw it in the direction toward the suction drum 10. Since drum 14 and roller 19 are mounted within the effective range of the suction of drum 10 and so closely to each other as only to leave a small intermediate gap 22, the suction from drum 10 will act upon this gap and also draw the material from the peripheral surface of needle drum 14.

Roller 16 is spaced at a greater distance from needle drum 14 than roller 19 since it only wipes along the surface of the fibrous bat formed on needle drum 14 and only combs off the excess fibers from said bat.

In this manner it is therefore possible to utilize the suction of drum 10 for also drawing the fibrous material upon the needles of needle drum 14 which thus no longer requires to be provided with a separate suction mechanism.

By mounting the needle drum 14 very closely to the suction drum 10, harmonic air currents will be produced in gaps 22 and 24 adjacent to drum 10. One of these currents serves to draw the loose fibrous material upon the needle drum 14, while the other current serves to draw the material off the needle drum 14 and also off the needle roller 19.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. In an apparatus for producing a uniform bat of fibrous material having a conveyer belt with an upper conveying surface, means for depositing the fibrous material upon said conveying surface near one end thereof, a perforated suction drum mounted closely adjacent the other end of said conveying surface, means for producing a suction within said drum, means for rotating said suction drum, a needle drum having a plurality of needles projecting from its peripheral surface and being mounted between said ends of said conveying surface and closely

above the same so as to form a small gap between said conveying surface and the peripheral surface of said needle drum so that when said needle drum is rotated, said needles pass through said gap and at a close distance from said conveying surface, means for moving said conveying surface in the direction toward said needle drum, said needle drum being also mounted at a close distance from said suction drum so that the suction from said drum will be effective within said gap between said needle drum and said conveying surface so as to draw the fibrous material from said conveying surface and upon and between the needles on said needle drum, and means for rotating said needle drum in a direction opposite to the direction of movement of said conveying surface so that the fibrous material drawn by the suction of said suction drum into said gap and upon and between said needles on said needle drum will then be carried upwardly from said conveying surface and around said needle drum and then be thrown from said needle drum upon said suction drum.

2. An apparatus as defined in claim 1, further comprising a second needle drum having a plurality of needles projecting from its peripheral surface and mounted closely above said first needle drum so that said needles on said two needle drums engage between each other, means for rotating said second needle drum at a speed greater than the speed of said first needle drum so that said needles on said second needle drum will rake said fibrous material off said needles on said first needle drum

and into the direction toward said suction drum, said second needle drum also being mounted so closely to said suction drum that the suction from the latter will also be effective within the gap between said first and second needle drums to draw said fibrous material from the needles of both needle drums upon the peripheral wall of said suction drum.

3. An apparatus as defined in claim 2, further comprising a third needle drum having a plurality of needles projecting from its peripheral surface and mounted above said first needle drum and at a greater distance from said suction drum than said second needle drum, and at a distance from said first needle drum so that when said third drum is rotated, said needles on said third drum will strip off an excess of fibrous material on said first needle drum and throw said excess backwardly and upon said belt, and means for rotating said third needle drum.

References Cited in the file of this patent

UNITED STATES PATENTS

162,371	Flynn	Apr. 20, 1875
186,804	Coons et al.	Jan. 30, 1877
1,030,228	Calderwood	June 18, 1912
2,505,690	Senior et al.	Apr. 25, 1950
2,532,330	Ramsdell	Dec. 5, 1950

FOREIGN PATENTS

795	Great Britain	of 1910