Title (en)

Apparatus for making perforated nonwoven fabrics by means of hydrodynamic needling

Title (de)

Vorrichtung zur Herstellung von perforierten Vliesstoffen mittels hydrodynamischer Vernadelung

Title (fr)

Dispositif pour la fabrication de tissus non-tissés perforés par aiguilletage hydrodynamique

Publication

EP 1001064 A3 20000816 (DE)

Application

EP 99122456 A 19991111

Priority

DE 19852717 A 19981116

Abstract (en)

[origin: EP1001064A2] The assembly to produce a perforated nonwoven fabric, using a hydrodynamic needling action, has a circular drum (1) to support the fabric. The roller surface has drain openings (7) to lead off the high pressure fluids from the needling water jet beam over the fabric, and malleable projections (6) to form the perforations from the under surface of the nonwoven, which are distributed irregularly in both dimensions over the roller surface. The projections (6) are at irregular intervals in a random scattering, to cover the whole of the surface of the nonwoven material. The continuous surface to support the nonwoven can be a continuous belt or a drum (1). Water jets are directed from a lateral jet beam at the unsupported surface of the nonwoven fabric. The walls of the drum (1) or the under side of the belt are supported by sliding rails (9), with a suction slit (10) at the inner roller (8) located between two rails (9) to act on the covering nonwoven through a pumped suction. The sliding rails (9) support the axially parallel suction roller (8). Additional supports can be fitted, in addition to the rails (9), to hold the drum wall at the suction roller (8). The continuous belt or the drum (1) is of plastics or a metal material. The sliding rails (9) are of metal or plastics, according to the material used for the surface projections (6). The drum projections (6) cover 25-50% of the drum surface, and pref. 30%. The drain holes (7) between the projections (6) have a dia. of 0.5-3.0 mm and pref. 1.5 mm. The projections (6) are at intervals of 1.5-20.0 mm and pref. 3-10 mm. The open surface of the nonwoven, through the effective dia. of the projections (6) to give the perforations, is computed according to the formula OA=(DO divided by Dabstand)<2> x 0.9 where OA is the open area surface in the nonwoven, DO is the dia. of the projections to form the perforations, Dabstand is the average gap between the nonwoven perforations or the projections on the supporting surface. The projections (6) have a conical upwards taper into pointed tips. The flanks of the projections (6) have an outer flank, in the movement direction of the nonwoven, in the shape of an unwinding curve, according to the dia. of the drum (1) or the detaching angle of the nonwoven from the support surface. The projection (6) height is 1-3 mm, according to the drum (1) dia. The structure of the projections (6) and drain openings (7) is formed in the fabric support surface by an engraving laser beam from the solid material layer. The projection (6) shape can differ in terms of the cross section surface and/or the effective dia. More than one jet beam delivers water jet streams at the nonwoven fabric, supported on the perforating surface.

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D04H 1/46; D04H 1/70

IPC 8 full level

D04H 13/00 (2006.01); **D04H 1/46** (2006.01); **D04H 1/70** (2006.01); **D04H 18/04** (2012.01)

CPC (source: EP US)

D04H 18/04 (2013.01 - EP US)

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