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(54) **METHODE ET APPAREIL POUR APPLIQUER UN ADHESIF  
SUR UNE FACE D'UN TISSU POREUX**

(54) **METHOD AND APPARATUS FOR APPLYING ADHESIVE TO  
ONE SIDE OF A POROUS WEB**

(57) A method and apparatus for applying adhesive onto a porous web, such as a web of non-woven material, comprises at least one adhesive dispenser which applies adhesive in a first direction onto an adhesive application area located on one side of the web, and an air blower located on the opposite side of the web. The air blower is attached to a nozzle which directs pressurized air through an opening in a plate over which the porous web passes so that the pressurized air contacts the porous web on the side opposite the adhesive over substantially the entire adhesive application area to prevent bleed-through of adhesive through the web.

**METHOD AND APPARATUS FOR APPLYING ADHESIVE  
TO ONE SIDE OF A POROUS WEB**

**Abstract of the Disclosure**

A method and apparatus for applying adhesive onto a porous web, such as a web of non-woven material, comprises at least one adhesive dispenser which applies adhesive in a first direction onto an adhesive application area located on one side of the web, and an air blower located on the opposite side of the web. The air blower is attached to a nozzle which directs pressurized air through an opening in a plate over which the porous web passes so that the pressurized air contacts the porous web on the side opposite the adhesive over substantially the entire adhesive application area to prevent bleed-through of adhesive through the web.

Specification

The invention pertains to a system and to a process for the production of a porous web, especially of nonwoven material, provided on one side with an adhesive.

Porous, absorbent materials are provided with adhesive on one side during the production, for example, of hygienic articles such as sanitary napkins and baby diapers. In particular, a liquefied hot-melt adhesive is sprayed onto a web as it passes underneath the adhesive applicator. The material must be porous because it has to be absorbent, but because of this porosity, the adhesive penetrates to a greater or lesser depth into the material. In the case of highly porous materials such as nonwovens, this can lead to bleed-through; that is, the adhesive penetrates all the way through the web. This leads to considerable processing problems, such as the contamination of the pulleys and support rolls. The necessity of cleaning operations increases the cost of production, but in addition this bleed-through also brings with it the danger that the web material will stick to the rolls or other adhesive-contaminated parts of the machinery, which can lead to the rupture of the web.

The task of the invention is to provide a process and a system of the type indicated above by means of which the danger of adhesive bleed-through is eliminated even in the case of highly porous web materials.

According to one aspect of the invention, there is provided an apparatus for applying adhesive onto a porous web having opposed first and second sides, comprising:

means for dispensing adhesive in a first direction onto an adhesive application area located on the first side of the porous web; and  
means for directing a stream of air onto the second side of the porous web,

opposite said application area, in a second direction which is substantially opposite to said first direction in which the adhesive is applied, so that the air at least partially penetrates the porous web and substantially prevents the adhesive from passing through the porous web.

In a second aspect of the invention there is provided a method for applying adhesive onto a porous web having opposed first and second sides, comprising:

dispensing adhesive in a first direction onto an adhesive application area located on the first side of the porous web; and

directing a stream of air onto the second side of the porous web, opposite said application area, in a second direction which is substantially opposite to said first direction in which the adhesive is applied, so that the air at least partially penetrates the porous web and substantially prevents the adhesive from passing through the porous web.

According to the invention, directing a stream of gas against the web on the side opposite that to which the adhesive is applied prevents the adhesive from bleeding through. Thus the adhesive is prevented from reaching the pulleys or rolls and other parts of the machinery. The contamination of these

parts with adhesive is avoided, and web ruptures can be almost completely eliminated.

It is advantageous for the gas stream according to the invention to be realized in the form of unheated compressed air, which can be done at little expense.

In particular, when an adjustable blower is used, the gas stream can be adjusted easily to prevent excessive penetration of adhesive into the web without at the same time interfering with the uniform application of the adhesive.

In the following, a preferred embodiment of the invention is explained in more detail on the basis of the attached drawing, which illustrates a preferred embodiment of a system according to the invention in the form of a schematic diagram.

System 1 comprises a flat plate 10, over the top of which a web 14 of porous material, especially nonwoven material, to be provided with adhesive is conveyed in the direction of arrow A. Web 14 can be paid out, for example, from a supply roll and wound up again on another supply roll after the adhesive has been applied and possibly a protective film has been attached.

Above plate 10 are spray devices 12, which are shown schematically in the drawing in the form of three individual spray nozzles. The spray nozzles of spray device 12 discharge a hot-melt adhesive which has been liquefied by heat in the direction of arrows B onto web 14 and thus produce a spray pattern 18 in an application area 16 over a certain portion of the width of the web.

Plate 10 has a long, rectangular opening 20, the width of which is approximately the same as that of application area 16. Web 14 is guided to travel so closely to plate 10 and thus to opening 20 that it seals opening 20.

Underneath plate 20 is a nozzle 22, which is connected by a tubular connector 24 to an adjustable blower (not shown). Unheated, compressed air is conveyed by the blower in the direction of arrow C to nozzle 22. In the area of opening 20, this unheated, compressed air strikes the underside of web 14. In application area 16, therefore, web 14 is subjected on one side to the application of hot-melt adhesive and on the other side to a stream of unheated, compressed air. The compressed air penetrates into the web material and prevents the adhesive being applied simultaneously from the opposite side from penetrating through the web material.

The supply rate of the compressed air should be selected so that the bleed-through of adhesive is reliably prevented without at the same time causing any interference with the uniform application of the adhesive.

Instead of the nozzle with tubular connector shown in the figure, which is suitable especially for connecting the blower to the connector by means of a compressed air hose, it is also possible to connect the nozzle directly to the blower, which makes it possible to save additional space.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. Apparatus for applying adhesive onto a porous web having opposed first and second sides, comprising:

means for dispensing adhesive in a first direction onto an adhesive application area located on the first side of the porous web;

means for directing a stream of air onto the second side of the porous web, opposite said application area, in a second direction which is substantially opposite to said first direction in which the adhesive is applied, so that the air at least partially penetrates the porous web and substantially prevents the adhesive from passing through the porous web.

2. The apparatus of claim 1 in which said means for directing a stream of air comprises:

a blower for discharging a stream of compressed air and nozzle means connected to said blower for receiving the stream of compressed air and for distributing the compressed air over an area on said second side of the porous web opposite said adhesive application area so that the compressed air at least partially penetrates the porous web.

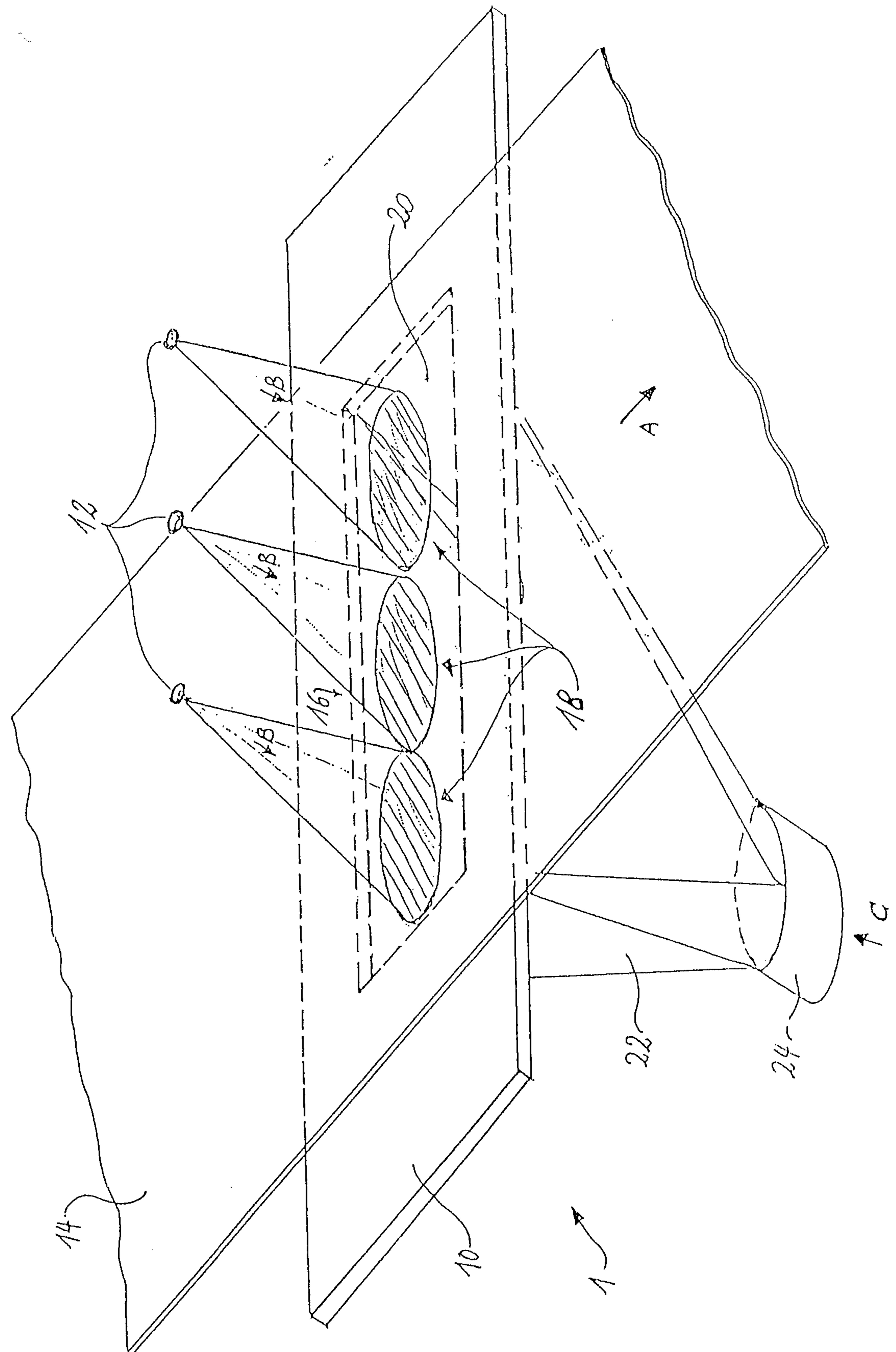
3. The apparatus of claim 2 further comprising:

a plate formed with an opening, the porous web being movable with respect to said plate so that at least a portion of the second side of the porous web opposite said adhesive application area passes over said opening in said plate;

said nozzle means directing said stream of air through said opening in said plate onto said portion of said second side of said porous web opposite said adhesive application area so that said stream of air at least partially penetrates the porous web at said portion of said second side and substantially prevents the adhesive from passing through the porous web.

4. The apparatus of claim 2 or claim 3 in which said blower is an adjustable speed blower which is effective to vary the velocity of said compressed air through said nozzle means and into contact with the porous web so as to prevent penetration of adhesive through the porous web.
5. A method for applying adhesive onto a porous web having opposed first and second sides, comprising:
  - dispensing adhesive in a first direction onto an adhesive application area located on the first side of the porous web; and
  - directing a stream of air onto the second side of the porous web, opposite said application area, in a second direction which is substantially opposite to said first direction in which the adhesive is applied, so that the air at least partially penetrates the porous web and substantially prevents the adhesive from passing through the porous web.
6. The method of claim 5 further comprising the step of:
  - varying the velocity of the air directed onto the second side of the porous web so as to prevent penetration of adhesive through the porous web.

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