

Jan. 15, 1957

K. J. HARWOOD ET AL

2,777,779

FACED TEXTILE MATERIAL

Filed Jan. 21, 1949

Fig. 1

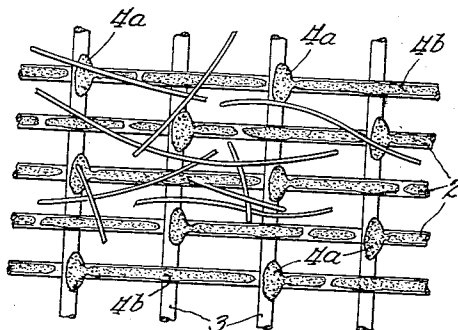


Fig. 2

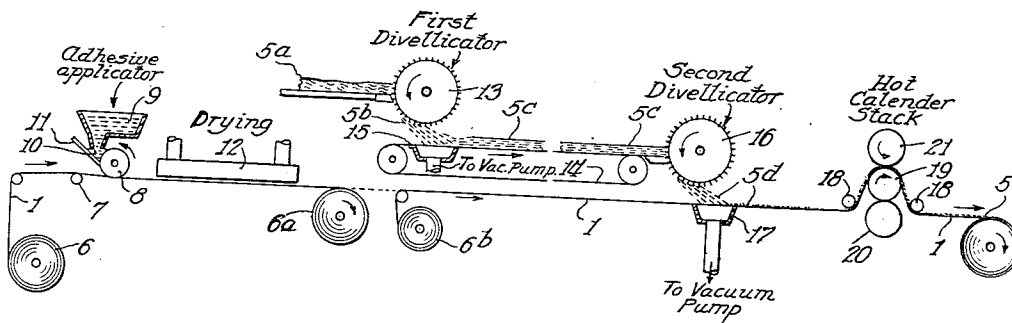


Fig. 3

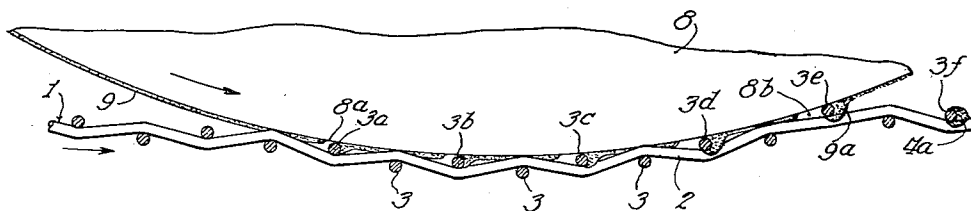
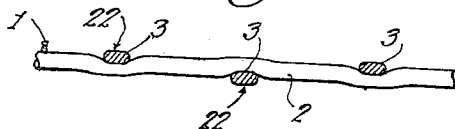


Fig. 4



Inventor
Kenneth J. Harwood
and
Harvey J. Le Dain.
By Soans, Pind & Anderson Attys.

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FACED TEXTILE MATERIAL

Kenneth J. Harwood, Neenah, and Harvey J. Le Dain, Appleton, Wis., assignors, by mesne assignments, to Kimberly-Clark Corporation, a corporation of Delaware

Application January 21, 1949, Serial No. 71,904

12 Claims. (Cl. 117—25)

This invention relates to an improvement in textile fabrics, and especially to fabrics embodying a web of woven material having a substantial amount of tensile strength and a facing of non-woven fibers on at least one face of the woven fabric to modify the normal surface characteristics of the woven material.

Fabrics of this character are adaptable to a wide range of uses, such as, for example, wrappers for sanitary napkins, disposable towels, various hospital and surgical uses, and they may constitute low cost materials for decorative and other purposes such as are served by drapes of various kinds.

Various modifications of the product and method of making the same about to be described, may be made to adapt the material to these various uses, each of which may require some characteristics which might be objectionable for the purpose of the other uses.

The main objects of the invention are to provide a faced fabric of the character indicated which may be practically made economically and at low cost, and which will require the employment of relatively inexpensive materials; to provide faced fabric of the character indicated which will afford the tensile strength of woven textile material such as gauze, together with a smoothness and softness of cotton or like webs of loosely matted, non-woven fibers; and to provide such material in which the component parts of the fabric are positively bonded together while at the same time maintaining to a high degree the normal free flexibility and softness of the component parts.

Other objects of the invention are to provide a method whereby material of the character indicated may be produced by substantially continuously operating automatic machinery; to provide a method and apparatus for producing such material as aforesaid and which method and apparatus may be readily adjusted without major changes in the apparatus to alter the characteristics of the material produced; and to provide such a method and apparatus which affords easy control of the characteristics of the material being produced.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawing in which there is schematically illustrated the structure of the improved faced material and the method of producing it.

In the drawings:

Fig. 1 is a more or less schematic illustration on an enlarged scale of the construction of the improved faced fabric;

Fig. 2 is a schematic illustration of the method and apparatus for producing the improved fabric;

Fig. 3 is a more or less schematic illustration on an enlarged scale of a part of the method and apparatus shown in Fig. 2; and

Fig. 4 is a more or less schematic illustration on an enlarged scale of a detail of construction of the woven component of the improved fabric.

The fabric structure shown in Fig. 1 consists of a web

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1 of woven material, such as gauze, which is represented in the figure on an enlarged scale in about the proportions of an 18 x 8 web, i. e. a web having 18 threads to the inch extending in the lengthwise or machine direction of the fabric, and 8 threads to the inch (filler threads) extending crosswise of the length of the fabric. The lengthwise extending threads are indicated at 2 and the filler threads are represented at 3.

Thermoplastic adhesive material is applied to the woven web in small discrete areas 4a at alternate intersections of the woven threads, and also more or less continuously as indicated at 4b along the lengths of the lengthwise threads 2. A non-woven applique or facing 5 of fiber, such as cotton fiber, is applied to the adhesive bearing face of the woven web and anchored thereto through the agency of said adhesive. The facing or film of fiber may be formed of other natural fibers or of various synthetic fibers, or of mixtures of natural and synthetic fibers suitable to the purpose for which the product is destined.

The web structure shown in Fig. 1 may be produced by suitably drawing the web 1 of woven gauze or like material from a gauze supply roll 6 (Fig. 2) and guiding the same by means of suitable guide rolls 7—7 over an adhesive applying roll 8. Adhesive may be applied to the surface of the roll 8 from a reservoir 9 containing the adhesive in liquid form. The adhesive may be delivered into a pool 10 formed between a portion of the roll surface and one side of a doctor blade 11 which regulates, in well known manner, the thickness of the adhesive coating carried by the surface of the roll 8 beyond the doctor blade. By this arrangement, the adhesive 9 is applied to the upper surface of the gauze web. For many purposes, the adhesive is preferably of a thermoplastic character although this is not essential.

The adhesive, whatever its character, may be permitted to dry or set or setting or drying thereof may be accelerated by any suitable means. This means, one form of which is represented at 12, for the purpose of setting molten thermoplastic material, may consist of a hood for discharging cooled air against the adhesive bearing surface of the web. For the purpose of drying aqueous or other adhesive solutions, the hood 12 may be connected to a source of hot air. In some instances, the adhesive, whether of thermoplastic character or otherwise, need not be dried and the layer 5 of fibrous material may be deposited on the web while the adhesive remains wet or only partially dried, after which the woven carrier web with its applique of fibrous material may be subjected to a drying operation as will presently appear. There is some advantage in depositing the fibers on adhesive which is at least slightly tacky, the fiber being thereby more or less immediately gripped upon contact with the adhesive and held against shifting or rebounding from the carrier web.

The adhesive may be applied to the gauze 1 and dried or partially dried as may be preferred while the gauze is traveling at a fairly high rate of speed, for example, 200 feet per minute or more and the adhesively treated gauze with the adhesive already dried thereon may be wound into rolls such as indicated at 6a for subsequent use or it may proceed directly into the zone of operation of mechanism which deposits the fiber film on the gauze.

The adhesive which is applied to the gauze web 1 is applied in a special way which aids in preserving in the composite or laminated web, all or at least a high degree of the normal softness and flexibility of the components of the web. For example, the adhesive is preferably of fairly heavy viscosity, for example from 3500 centipoises to 9500 centipoises or more, so that it tends to remain on the surface of the threads of the gauze. Such

3 adhesive may be applied by propelling the gauze at a speed of around 200 feet per minute while the surface speed of the applicator roll is around 185 feet per minute in the same direction as the gauze. When the gauze web and roll are driven in this relationship, i. e., with a speed differential of about 7%, the effect is to cause the gauze to wipe across the surface of the roll to thereby scrape some of the fairly viscous adhesive from the roll. As indicated in Fig. 3, the gauze bears on the adhesive carrying roll surface particularly at the thread crossings. Portions of the filler threads 3 which overlie the longitudinal threads more or less project from the normal plane of the gauze and these projecting or high portions of the cross threads 3 tend to scrape some of the adhesive from the surface of the roll. This is represented in Fig. 3 where the crosswise thread indicated at 3a is illustrated as having a small amount of adhesive piled up in front of the thread, the roll surface being substantially scraped clean of adhesive for a short portion of its circumference as indicated at 8a. As the thread 3a reaches the successive positions 3b to 3f inclusive, the adhesive accumulation will gradually increase until there is a quantity sufficient to constitute one of the areas 4a, the cleaned roll surface 8a being correspondingly enlarged as indicated at 8b. Hence, by the time the woven web leaves the roll 8 it will have accumulated small blobs 4a of adhesive material at alternate intersections of the threads as indicated in Fig. 1, the crosswise threads 3 remaining substantially free of adhesive intermediate said bonded intersections as illustrated.

The lengthwise extending threads also pick up a coating of the adhesive which extends circumferentially only from about one-fourth to about one-half of the distance around the threads, but more or less continuously lengthwise thereof. The lengthwise continuity of adhesive coating on the longitudinal threads may be broken for short lengths immediately behind the cross threads (with reference to the direction of travel of the gauze during the adhesive applying operation) and perhaps haphazardly at other points as indicated, due to various causes, for example, a probable tendency to stretch or elongate the adhesive ribbons which would evidently occur as an incident to the travel of the gauze at a higher speed than the surface speed of the adhesive applicator roll. The adhesive free portions of the crosswise and lengthwise threads serve to retain in the fabric a substantial measure of the normal softness and flexibility of the threads which form the fabric.

The quantity and location of adhesive in the areas 4a and 4b may be adjusted by adjusting the relative speeds of the web and adhesive applying roll, by adjusting the circumferential extent of the contact between the web and the adhesive applying roll, and by adjusting the depth of the coating of adhesive on the applying roll. In the arrangement shown and described, the adhesive is more or less accumulated or piled up on the front or leading sides of the cross threads 3 at their points of crossing the lengthwise threads 2. If the roll is rotated at a surface speed which is greater than that of the gauze travel, such accumulations of adhesive will be produced in back of said portions of the cross threads.

The fibers to form the non-woven applique or facing 5 emanate from cotton slivers or header rolls, or from coiler cotton or any suitable lap or bat of the selected cotton or other fibers. Hence, in the following description and in the claims, the terms lap and bat, when employed to refer to a source of fibers, refer to any suitable assemblage thereof, whether or not in the forms technically known as sliver, header roll, lap, bat, etc. The lap or bat of fibers is preferably non-woven, and although it may be and usually is of self-supporting strength, it is preferably not too tightly matted or felted.

In Fig. 2, the source of the fiber film 5 is shown as being a lap 5a of cotton, that is to say, a non-woven

bat of cotton (or other) fiber which is suitably fed toward a divellicating or defibering roll 13. This defibering roll is driven at high speed and its surface is provided with a multiplicity of teeth projecting from the normal roll surface, said teeth being operative to pull fibers from the lap 5a as the lap is fed toward the roll. The feed of the lap 5a toward the roll should be carefully regulated to permit the teeth of the roll to act against only a single fiber thickness on the end of the lap, thereby to insure disintegration of the lap fiber by fiber and to avoid the biting off of heavy chunks which would be somewhat objectionable because such chunks would interfere with the desired smoothness and softness of the final product.

The defibering roll 13 is arranged in suitable relation to a continuously traveling wire screen belt 14 on which the separated fibers indicated at 5b are deposited to build up a secondary or refined bat or lap 5c of fiber. The thickness of the bat 5c may be controlled as desired by appropriately regulating the speed of travel of the screen belt, by regulating the rate at which the lap 5a is fed to the roll 13, and also by appropriate selection of a starting lap 5a of predetermined thickness.

A suction box 15 is preferably associated with the upper reach of the screen 14 to facilitate and more or less control the deposition of the fibers 5b on said screen. Suitable guide walls may be arranged to confine the stream of fibers 5b in the desired path.

The refined lap or bat 5c of fibers may be rolled upon itself for storage purposes and for subsequent use. However, said refined bat 5c may be fed directly into the operating zone of a second defibering roll 16 of substantially the same character as the roll 13. The speed at which the bat 5c is fed to the roll 16 is, of course, carefully controlled to insure operation of the roll 16 on substantially single fiber portions of the advancing end of the bat 5c. Formation of the bat 5c may be so regulated that this refined bat may be fed forwardly at the same rate that the starting lap 5a is fed and the roll 16 will operate in a satisfactory manner to properly disintegrate the refined bat 5c into single fiber pieces. By this arrangement the rolling of the web 5c upon itself may be avoided and the process made substantially continuous from the disintegration of the lap 5a to the deposition of the fibers on and attachment thereof to the carrier web.

This subsection of the fiber material to successive defibering operations results in very effective untangling and separation of the fibers so that the deposition of fiber on the carrier web may easily be confined to a film as light as 1.5 grams per square yard, the fiber being quite uniformly distributed and deposited, usually in a haphazard directional arrangement, although by means of certain controls the directional arrangement may be more or less predetermined.

The stream 5d of fibers produced by the roll 16 is suitably guided to the surface of the web 1 which may come directly from the drier 12 or from a supply roll 6b which would be one of the rolls produced as indicated at 6a. If the web is drawn from a supply roll such as the roll 6b, the roll is so mounted and the web is so drawn from it that the adhesive bearing side of the web will be on the top face of the web on which the stream 5d of fibers is deposited. The deposition of the fiber 5d on the web 1 may be aided by means of a suction box 17 associated with the web 1.

The web 1 now having a non-woven applique or facing of fiber 5d is next guided by means of suitable guide rolls 18 around a portion of a firm but resilient calendar roll 19 which is supported by a rigid supporting roll 20. A heated steel or similar hard and rigid calendar roll 21 cooperates with the calendar roll 19 to press the fiber film and woven web tightly together, the heat of the roll 21 serving to soften thermoplastic adhesive in the areas 4a and 4b so as to permit the fibers 5d to be embedded in

the softened material, or to dry adhesive solutions which remain in a wet state when they reach the calender stack.

The roll 19 is preferably constructed of cotton discs compressed together in the direction of the length of the roll under such compression as to provide it with a surface which is at least slightly compressible or resilient. When the cotton (or other) fiber faced carrier web of gauze is calendered by being passed between the rolls 19 and 21, the threads of the gauze are more or less compressed into each other at their crossings and the threads are more or less flattened approximately as represented at 22 in Fig. 4. This flattening and embedding of the threads in each other serves to eliminate to a considerable extent the prominences usually present in woven material at the crossings of the interwoven threads. To a lesser extent the entire lengths of the threads are also slightly flattened. Flattening of the crossing thread portions and the meshing thereof into each other, and the indicated flattening of the threads throughout their lengths, probably serves to increase the flexibility of the fabric since the thickness of the material is reduced with a corresponding increase in bendability. The employment of the more or less resilient, cotton-constructed roll 19, avoids cutting of the threads of the gauze at their crossings when subjected to the indicated calendering operation.

The fiber is effectively bonded to the web 1 in the arrangement described so that there is a negligible amount of loose fiber which will dust off the finished web during handling. This effective bonding of the fiber results mainly from the direct adhesive bonding of some of the fibers to spaced portions of the carrier web of gauze, for example at the areas 4a and at various points where the fibers cross the coatings 4b on the threads 2, and from the fact that some of the fibers which are directly adhesively bonded to the woven web are inter-twined with and more or less overlap some of the other fibers which do not directly contact any adhesive particle, and also in part by the normal cohesive tendency between fibers of the same kind, especially after the calendering operation whereby the fibers are forced into intimate contact with each other and with the carrier web. For the reasons indicated, even the shortest fibers are effectively retained in the applique, it being understood that the fiber lengths may vary from as little or less than $\frac{1}{16}$ of an inch to as much as one inch or more.

By causing the threads of the woven fabric to be adhesively bonded together at alternate crossings thereof as shown at 4a, the woven web is itself stabilized in respect of the positions of the threads relative to one another. This helps to maintain the woven threads in the desired uniform grid-like formation which provides an effective support for the non-woven fiber film; it also adds appreciably to the appearance of the product. By spacing the points of adhesive bonding of the threads of the carrier web and of the applied fiber to the carrier web, the normal flexibility of the woven material is maintained, to a high degree if not in its entirety. By employing an adhesive which is permanently flexible, the adhesive on the longitudinal threads 2 of the gauze will not, despite its nearly continuous application to said threads, materially stiffen threads or the gauze.

The non-woven applique of fibers arranged in haphazard directions as indicated in Fig. 1 serves as a sort of shield for the relatively harsh threads of the woven fabric, said film or facing presenting a soft, smooth surface which has important non-chafing characteristics when the material is employed as a wrapper for a sanitary napkin or other types of bandages. When the non-woven film 5 of fiber is made somewhat heavier, the material is adaptable to the making of ornamental fabrics, such as drapes, the woven thread component serving to impart adequate strength while the non-woven film provides a finished looking surface which may be imprinted or otherwise decorated. By the employment of fairly strong suction in the suction box 17, a considerable amount of the fiber may be

caused to extend through the gauze so as to form a facing on both sides of the gauze web. For certain purposes, this may be highly desirable.

Instead of the indicated type of divellicating or defiber-ing apparatus, we may employ other equipment such as garnetting or carding machines or drawing frames (such as are well known in the textile industry) to deliver the desired free, unmatted fibers to the gauze carrier web. However, with a roll of the kind described, operated at high speed, lower weight webs may be produced than is generally possible with said other types of equipment.

If the initial supply of fiber is sufficiently refined, i. e. not too strongly matted and of approximately uniform density throughout its area, it is possible to produce good results by using only a single unit of equipment to pull the supply lap apart into its component fibers and to deposit such separated fibers on the carrier web.

For many purposes it is preferable that the adhesive content of the product be such, and that it be so applied that it is surfaced on the carrier web, that is, it remain on the surface of the threads of the gauze web with but little, if any, penetration of the threads of the gauze. By the employment of a permanently flexible adhesive which will remain on the surface of the threads, most of the normal flexibility of the components of the material may be preserved. However, for some other purposes, we may use adhesive which penetrates the threads of the gauze to almost any selected extent. Generally, such penetrating adhesives have a tendency to harden or stiffen the fabric—this is somewhat dependent on the characteristics of the particular adhesive employed.

For some purposes, we may avoid the application of adhesive to the gauze by employing gauze having in some or all of its threads, fibers of thermoplastic material distributed along the lengths of the threads. Such thermoplastic fibers will provide bonds between at least some of the crossing threads of the gauze and also spaced bonds between the gauze and the fiber layer applied to the face of the gauze when the gauze and facing thereon are subjected to the heat of the calender which will reactivate said thermoplastic fibers to the same end that said heat reactivates thermoplastic applied to the gauze as hereinbefore described.

Instead of employing heat and pressure to reactivate the thermoplastic adhesive, or thermoplastic fibers spun into the threads of the gauze, we may employ either heat or pressure alone, or solvents of the thermoplastic material.

When the described fabric is made to be used in the wrapper of a sanitary napkin, the gauze component may consist of woven gauze having a thread count within the range of 18 x 14 down to 4 x 4. The adhesive may be a suitably plasticized polyvinyl acetate in emulsion form preferably embodying some solvent, said adhesive being thermoplastic in character. This adhesive may be applied at the rate of about 2 grams per square yard of 18 x 8 gauze by the method described, and it may easily be dried to the extent desired within a short length of travel, say from 5 to 35 feet, by passing a current of air heated to around 300° F. over the web in the direction opposite to the direction of travel of the web, depending somewhat on the rate of travel of the web. This adhesive has the property of remaining on the surface of the gauze threads with but little, if any, penetration thereof and, upon drying remains heat softenable or thermoplastic. The said adhesive is waterproof and permanently flexible so that there is no stiffening with age whereby "shelf-life" of the sanitary napkins is not affected. This adhesive has the advantage of softening and becoming exceptionally tacky at temperatures around 165° to 185° F. which is sufficiently above body temperature to avoid softening incident to the heat of the body; it is colorless, odorless and non-irritating and its melting temperature is not high enough to cause scorching of the gauze when the

7 gauze and fiber film are passed through the calender and heated to reactivate the adhesive and so as to cause embedment of the fibers therein. The amount of adhesive applied may, of course, be decreased or increased from that set forth.

The amount of adhesive may vary considerably. Our experience indicates that successful sanitary napkin wrappers may be made with 18 x 8 gauze having adhesive material applied thereto at a rate within the range of .3 to 5 grams per square yard and with non-woven fiber applied at a rate within the range of 1.5 to 8 grams per square yard. The optimum is, at least in part, a matter of individual preferences. Our present preference is adhesive at the rate of about 2 grams per square yard and fiber at the rate of from 4 to 6 grams per square yard although as little as 1.5 grams of fiber uniformly distributed is sufficient to eliminate the normal harsh feel of the gauze.

When the weight of the fiber layer is within the range of 1.5 to 6 grams per square yard, a large proportion of the fibers, probably a major proportion thereof, directly engage the threads of the gauze web and become directly attached thereto. This results in very secure attachment of the fiber layer as an entirety and prevents displacement of the fiber layer from the thread web by scuffing or rubbing action in the normal use of a sanitary napkin embodying a wrapper of the described construction, the fiber layer being on the outside of the wrapper so as to be directly subjected to such rubbing action. Attachment of the fibers to the thread web as aforesaid is due to engagement of the fibers with adhesive bearing portions of the threads and also to natural tendencies for fibers to cling to threads, such tendency being increased by the calendaring of the material whereby the fiber layer is pressed into intimate engagement with the thread fabric.

To produce a product having about 5.5 grams of fiber per square yard, a fiber bat 5c weighing about 260 grams per square yard may be fed at the rate of 4 feet per minute while the carrier web is propelled at the rate of 200 feet per minute.

We prefer to deposit the fiber on the gauze while the adhesive thereon, at least the surface of the adhesive bearing areas, remains active (i. e. incompletely dried or cured) so as to have a definite tendency to cling to the fibers which come into engagement with such areas. The adhesive content of said areas will be reactivated by the heat (and pressure) of said calendaring rolls so that the initial embedment of the fibers in said adhesive will be deepened and improved by the calendaring. When the described polyvinyl acetate thermoplastic adhesive is used, it is possible that the heat imparted to the adhesive, and the heat imparted to the gauze in the drying operation, has some effect in maintaining the adhesive in such uncured condition that the adhesive surfaces are active during the passage of the gauze through the fiber depositing zone of the divellicator 16, especially if the arrangement is such that the distance between the drying chamber and divellicator is short enough to prevent open air drying of the adhesive and cooling thereof to setting temperature before it reaches said fiber-depositing zone.

The rolls 19 and 21 may be urged together under a force ranging up to around 770 pounds per lineal inch of the rolls. A force of about 120 pounds per lineal inch produces very satisfactory results in connection with a cotton fiber facing of from 4 to 6 grams per square yard and adhesive of the polyvinyl acetate emulsion form described and applied at the said rate of 2 grams per square yard.

A length of material prepared according to the foregoing explanation can be produced at less cost than a corresponding length of woven material of equivalent utility. By "equivalent utility" we refer to the usefulness of the woven material for a given purpose where its soft-

ness, smoothness, and similar characteristics are important considerations.

For example, in current, actual practice, a well known brand of sanitary napkins has a wrapper made of 18 x 14 gauze. Such gauze is quite expensive and its cost represents a very substantial part of the total cost of the said napkins. This costly, close-weave gauze, is employed because less expensive equivalent material has not been available on a commercially economical basis. Available lower cost, open mesh gauze is not satisfactory as a substitute because of its flimsiness, which impairs the effectiveness of wrapper tabs for attachment purposes, and also makes the material very difficult to handle in automatic napkin-making machinery; because of its tendency to irregularity of thread arrangement and hence its relative unsightliness; and other reasons.

The material herein described, embodying open mesh, 18 x 8 gauze with a light applique or facing of fibers, when used for wrapping a sanitary napkin, has been found to be very satisfactory in respect of all of the above-mentioned deficiencies of plain open mesh gauze and to have certain advantages of softness, smoothness, and better appearance over the usual plain, relatively closely-woven wrapper. The faced material is nevertheless less costly than the said closely woven material, mainly because the faced material embodies a substantially reduced amount of the costly thread required for the production of gauze. The facing fiber may consist of relatively inexpensive short length fibers, the cost of which, together with the cost of the adhesive employed and other added production costs, per unit of the faced material is less than the value of the thread saved and other costs saved in the production of the open mesh gauze employed in the faced material. Hence, there is an important net saving in the cost of production of the improved, faced material as compared with more closely woven gauze which has heretofore been required for sanitary napkin production purposes.

It should be understood that considerable variation is possible in respect of the quantities and kinds of adhesive and fiber employed in producing the faced material. Variations of these quantities serve to alter the characteristics of the product. Larger quantities of fiber per unit of material produced tend to impair permeability of the material while increasing the cushion characteristic. Larger quantities of adhesive tend to impair the softness and flexibility of the product.

For sanitary napkin purposes, the wrapper material should be readily fluid permeable so as to permit menstrual exudate to quickly reach and be absorbed by the absorbent pad enclosed in the wrapper. For towel purposes, the fiber should be of such kind and in such quantity as to provide a high capacity for fluid absorption. For decorative purposes, the fiber may be such as to give a high sheen to the material and it may be relatively impermeable so as to facilitate surface ornamentation by printing, painting or other treatment. These and other characteristics are easily attained by appropriate fiber selection, appropriate fiber orientation on the gauze, appropriate carrier web selection, adjustment of the amount of fiber applied, adjustment of the amount and kind of adhesive employed and the calendaring pressure. None of these changes require any extensive change in the apparatus.

It will be apparent that the above described method of applying adhesive to woven gauze material to stabilize the positions of the threads in such material, may also be employed for stabilizing thread positions in knitted material which also embodies projections or knuckles where thread portions cross one another. In the appended claims, the word "interlaced" is used to refer to any fabric construction in which threads are so arranged that some portions thereof cross other portions and form projections or knuckles where such thread portions cross

one another, the most common processes by which fabrics are so formed being knitting and weaving.

Various other changes in the described product and in the method of making the same may be made while retaining the principles of the invention.

We claim:

1. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other to stabilize the thread positions in the fabric, portions of some of the threads intermediate said intersections being substantially free of adhesive so as to preserve the normal softness of said intermediate thread portions whereby the normal softness of the fabric before stabilization thereof as aforesaid, is preserved to a high degree.

2. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other to stabilize the thread positions in the fabric, said adhesive being localized on surface areas of said intersecting thread portions on the face of the fabric on which one of the thread portions of each pair of intersecting thread portions crosses over its intersecting thread portion, the surface areas of said intersecting thread portions on the opposite face of the fabric being substantially free of interbonding adhesive and portions of said cross-over threads on opposite sides of said bonded intersections being also substantially free of said adhesive, whereby adhesive-hardening of the fabric is avoided to a substantial degree.

3. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other where thread portions on one face only of the fabric cross over other thread portions, thereby to stabilize the thread positions in the fabric, portions of some of the threads intermediate said intersecting thread portions being substantially free of adhesive, so as to preserve the normal softness of the said intermediate thread portions, whereby the normal softness of the fabric before stabilization thereof as aforesaid is preserved to a high degree.

4. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other to stabilize the thread positions in the fabric, thread portions which extend in the same general direction in the fabric intermediate said bonded intersecting portions being substantially free of said adhesive and thread portions which extend transversely of said general direction having adhesive thereon along their lengths intermediate said bonded thread intersections, and a non-woven layer of fibers on said fabric and attached thereto by said adhesive.

5. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other to stabilize the thread positions in the fabric, portions of some of the threads intermediate said intersections being substantially free of adhesive so as to preserve the normal softness of said intermediate thread portions whereby the normal softness of the fabric before stabilization thereof as aforesaid is preserved to a high degree, and a thin, highly permeable, layer of non-woven fibers on a face of the fabric, said fiber layer shielding the threads and the intersections thereof to thereby impart smoothness to the fiber bearing face of the fabric, said intersecting thread portions being pressed together and flattened so as to reduce the thickness of said intersecting thread portions to thereby enable said thin layer of fibers to effectively shield said intersections as aforesaid.

6. Textile fabric comprising interlaced threads, and adhesive bonding intersecting thread portions to each other to stabilize the thread positions in the fabric, portions of some of the threads intermediate said intersections being substantially free of adhesive so as to preserve the normal softness of said intermediate thread portions whereby the normal softness of the fabric before stabilization thereof as aforesaid, is preserved to a high degree, and a non-

woven layer of fibers attached to a face of the fabric, said fiber layer having a basis weight in the range of about 1½ grams to 6 grams per square yard and being approximately uniformly distributed over said fabric, whereby there is such a paucity of fibers in relation to the area of the fabric that such a large proportion of the fibers in said layer will be disposed in contiguous, directly attached relation to the threads of the fabric as to attain secure anchorage of said fiber layer as an entirety to said threads to provide high resistance to displacement of the fiber layer from the threads.

7. Wrapping material for enclosing an absorbent bandage pad, comprising a web of interlaced textile threads having blobs of adhesive on surface areas of intersecting thread portions on a face of the web, said blobs of adhesive serving to bond said intersecting thread portions to each other, portions of said interlaced threads intermediate said bonded intersections being substantially free of adhesive and said bonded intersections being also substantially free of adhesive on the other face of the web, and a nonwoven layer of fibers attached to said adhesive bearing face of said web, the weight and density of said layer of fibers being so low that permeability of the wrapping material is not significantly impaired and such that there is a paucity of fibers in relation to the area of the web so that a large proportion of the fibers are in direct engagement with and attachment to said web so as to provide effective resistance to displacement of the fiber layer from said web, said fiber layer being operative notwithstanding its said light weight and density to provide significant shielding over the threads of said web and the intersections thereof to impart smoothness to said face of said web.

8. A thread web having thread portions which intersect each other in spaced relation to provide a web having the openness of a piece of woven gauze having a thread count construction within the range of about 18 x 14 to about 4 x 4, and adhesive bonding at least some of said intersecting thread portions to each other at their intersections to stabilize the positions of said thread portions in the web, a majority of said thread portions which extend in one general direction having portions of their lengths intermediate said bonded intersections substantially free of adhesive, and a majority of other thread portions which extend in a direction transverse to said general direction having adhesive thereon intermediate said bonded intersections but discontinuously along their lengths so as to provide adhesive free lengths on said other thread portions, said adhesive free lengths serving to retain to a substantial degree in the web, the normal softness of said thread portions before stabilization of the web as aforesaid, said adhesive being present on surface areas of said thread portions so as to be adapted for laminating the web to other material.

9. A thread web having thread portions which intersect each other in spaced relation to provide a web having the openness of a piece of woven gauze having a thread count construction within the range of about 18 x 14 to about 4 x 4, and adhesive bonding at least some of said intersecting thread portions to each other at their intersections to stabilize the positions of said thread portions in the web, a majority of said thread portions which extend in one general direction having portions of their lengths intermediate said bonded intersections substantially free of adhesive, and a majority of other thread portions which extend in a direction transverse to said general direction having adhesive thereon intermediate said bonded intersections but discontinuously along their lengths, so as to provide adhesive free lengths on said other thread portions, said adhesive free lengths serving to retain to a substantial degree in the web, the normal softness of said thread portions before stabilization of the web as aforesaid, and a layer of fibers attached to said web by said adhesive, some of said fibers being adhered

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to spaced thread portions to thereby further stabilize the web.

10. A thread web having thread portions which intersect each other in spaced relation to provide a web having the openness of a piece of woven gauze having a thread count construction within the range of about 18 x 14 to about 4 x 4, and adhesive bonding at least some of said intersecting thread portions to each other at their intersections to stabilize the positions of said thread portions in the web, said adhesive being applied to the web at a rate which is equivalent to the application of adhesive within the range of about .3 to 5 grams per square yard of woven gauze having a thread count construction of 18 x 8, a majority of said thread portions which extend in one general direction having portions of their lengths intermediate said bonded intersections substantially free of adhesive, and a majority of other thread portions which extend in a direction transverse to said general direction having adhesive thereon intermediate said bonded intersections but discontinuously along their lengths, so as to provide adhesive free lengths on said other thread portions, said adhesive free lengths serving to retain to a substantial degree in the web, the normal softness of said thread portions before stabilization of the web as aforesaid, and a layer of fibers attached to said web by said adhesive, some of said fibers being adhered to spaced thread portions to thereby further stabilize the web, said fiber layer having a basis weight within the range of about 1½ grams to 6 grams per square yard of the web.

11. A thread web having thread portions which intersect each other in spaced relation to provide a web having the openness of a piece of woven gauze having a thread count construction within the range of about 18 x 14 to about 4 x 4, and having substantially uniformly distributed thread intersections adhesively bonded by adhesive which is substantially confined to one face of the web, some of the thread portions intermediate said thread intersections being substantially free of adhesive.

12. A thread web having thread portions which intersect each other in spaced relation to provide a web having the openness of a piece of woven gauze having a thread count construction within the range of about 18 x 14 to about 4 x 4, and having substantially uniformly distributed thread intersections adhesively bonded by adhesive which is substantially confined to one face of the

web, said bonded intersections being those which occur where thread portions which extend in one general direction cross over other thread portions on said face of the web, the intersections which occur where said thread portions which extend in said general direction cross under other thread portions on said face of the web remaining free of adhesive on said face of the web, some of the thread portions intermediate said thread intersections being substantially free of adhesive.

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