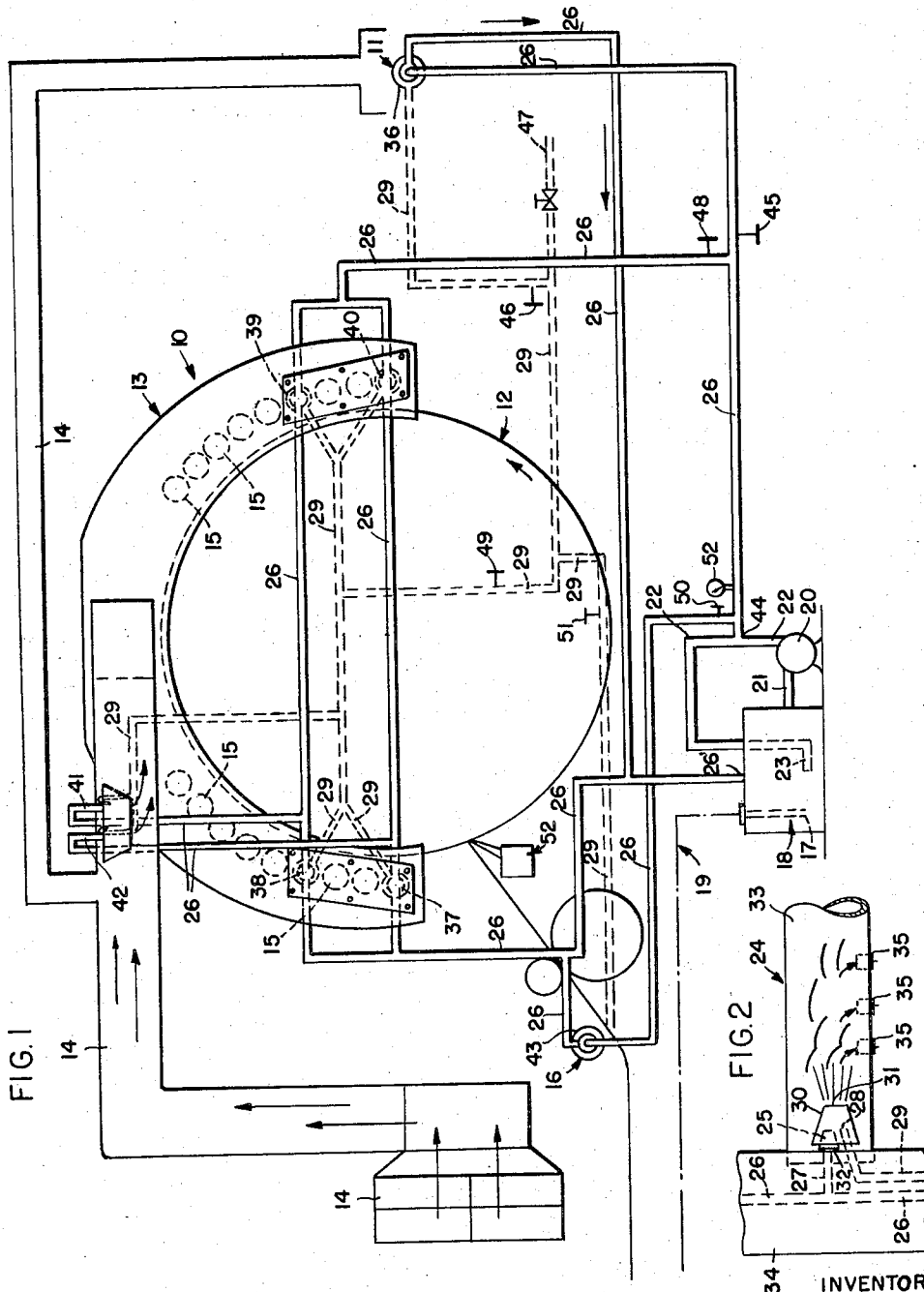


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FIBROUS MATERIAL PRODUCT CONTAINING
LANOLIN AND METHOD FOR MAKING SAME
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FIBROUS MATERIAL PRODUCT CONTAINING LANOLIN AND METHOD FOR MAKING SAME

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This invention relates to an improved fibrous material paper product containing lanolin uniformly dispersed therein and a method for incorporating or introducing the lanolin uniformly into the fibrous material thereof. More in particular this invention relates to a fibrous material paper sheet product containing lanolin uniformly dispersed therein and a method for introducing the lanolin into the fibrous material thereof.

Particularly in the manufacture of very thin paper sheet products for uses such as facial tissue and toilet tissue and the like, it is desirable to obtain a strong and very thin, usually less than 2 mils thick, sheet product having high absorbent properties, soft and silky to the sense of touch, of uniform textured crepe and substantially lint-free characteristics.

Heretofore the paper-making industry has been successful in making a paper sheet product having but a limited and unsatisfactory degree of the above mentioned desirable qualities. Undoubtedly one of the reasons for the industry's inability to make such a desirable product lies in the fact that an inherent difficulty is encountered in paper making machinery due to the formation of a static electrical charge created during the drying and calendering operations. Although devices have been employed to remove such static charge the paper due to its dielectric characteristics always retains at least a portion of the static charge the presence of which causes considerable difficulty in the manufacture of particularly the thin types of absorbent paper described. The potent electrical field created by such static charge causes a loosening of the matted fibrous material comprising the paper sheet product so that small particles of fiber become freed resulting in lint-formation. Thus it can be seen that if the formation of a static electric charge in the paper making process can be substantially eliminated a major advancement in the art of making a paper sheet product is accomplished. Furthermore it has been found that the substantial elimination of the formation of a static charge during manufacture of paper results in a paper product of improved quality.

It became apparent that in order to produce a paper product of the kind described at least one additional ingredient must necessarily become incorporated in the product. Furthermore in the case of facial tissue or toilet tissue products such ingredients in the amounts required must not be injurious to animal or human skin. Lanolin, consisting essentially of cholesterol esters of higher fatty acids obtained from the fat of sheep's wool, has long been used in the cosmetic industry as a beneficial aid to skin. It was found, according to this invention, that under certain conditions lanolin could be introduced uniformly into fibrous material during manufacture of paper and it was also found that the introduction of lanolin to fibrous material under the same conditions substantially eliminated the formation of static electric charge during the process and surprisingly the resulting paper product possessed the improved properties heretofore discussed.

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Accordingly it is a prime object of this invention to make a fibrous material paper product of improved properties containing lanolin dispersed uniformly in the fibrous material thereof.

Another important object of this invention is to make a fibrous material paper sheet product of improved properties having soft, silky and uniform crepe texture.

A further important object is to make a fibrous material paper sheet product of improved properties having substantially lint-free and high absorbent characteristics.

A still further object of this invention is a method of introducing lanolin uniformly into fibrous material during the process of manufacture of paper.

A yet further object of this invention is a method of introducing lanolin uniformly into fibrous material during the process of manufacture of thin and absorbent paper tissue whereby the formation of a static electric charge is substantially eliminated throughout the process.

These and other desirable and important objects inherent in and encompassed by the invention will be more readily understood from the ensuing description, the appended claims and the annexed drawings wherein:

Figure 1 is a schematic diagram of a commonly known Yankee Fourdrinier paper machine modified to include apparatus for introducing lanolin to the fibrous material of the paper in accordance with an embodiment of this invention.

Figure 2 illustrates, schematically, apparatus for atomizing a composition containing lanolin whereby a liquid composition is maintained at a predetermined temperature before and after the atomizing operation.

Although a Yankee dryer type paper making machine is illustrated in Figure 1 of the drawing, a standard Fourdrinier paper making machine has been modified in accordance with this invention with similar results. From the following discussion of an embodiment of this invention it will be readily apparent to one skilled in the art of paper making that the standard Fourdrinier machine is equally adapted for practicing this invention. The term "process" as used herein refers to the conventional means of paper making and the term "method" as used herein refers to the means according to this invention for modifying the conventional paper making process.

Referring to Figure 1 the numeral 10 indicates generally in schematic form a commonly known Yankee dryer type paper making machine. Fibrous material in the form of pulp of cellulose structure (usually obtained from wood) is mixed with water copiously and pulverized in a beater (not shown), as a first stage operation. The mass of finely comminuted cellulose particles with water is conducted as a second stage operation to an endless wire moving belt commonly referred to as "the wire" generally indicated at 11. At the wire 11 the pulp mass of fibrous material in water is spread evenly over the moving wire screen. The screen serves to filter a large portion of the water which is returned to the beater for re-use. The surface of the wire screen 11 with the mass of pulp and water mixture spread thereon is moved forwardly with a sidewise joggling or shaking movement to assist in the matting or webbing of the fibrous material as it drains a portion of the water. As the mixture of water and fibrous material progresses forwardly on the wire screen the mixture passes over a suction box which assists in further removing water from the matted fibrous material. After the matted fibrous material has passed the suction box, as a third stage operation the fibrous material web is conducted into a power driven grooved (or plain) couch (not shown) whereby a top couch carrying a conventional pickup transfer felt (not shown) transfers the fibrous material web through a conventional suction press (not shown) where additional water is removed. From the suction

press the fibrous material web of paper is carried by the transfer felt to a conventional pressure roll (not shown) which roll applies the web to a drying means such as one or more of a series of cylinders, one of which is generally indicated at 12 of Figure 1, of a Yankee dryer as a fourth stage operation in the process. After the fibrous material or paper sheet has been dried it is peeled or stripped from the cylinder 12 by a conventional doctor blade, generally indicated at 52 of Figure 1, which blade also serves to "crepe" the paper sheet.

Each of the rollers 12 may conveniently be provided with heated air ducts indicated generally at 13. The current of heated air maintained at about 275° F., for example, is provided from a convenient source (not shown) and is conducted to the duct 13 through any convenient means such as by the conduit 14. Often the heated air entering the conduit 14 is again heated within the duct 13 by suitably disposing steam heated radiator pipes 15 therein as indicated in Figure 1. During the fourth stage operation as above described substantially all of the water has been removed and the fibrous material takes the form of a rough surfaced dry paper. The rough surface paper sheet is then, as a fifth stage operation, conducted from the drying means or doctor blade 52 to the calender rolls generally indicated at 16. The calender rolls 16 are provided with highly polished surfaces and are in cooperative relation so that as the rough surfaced paper emanating from the drying means passes therebetween, the pressure exerted by the rollers imparts a smooth finish of varying hardness depending upon the pressure applied to the rollers. The calender rolls 16 should be adapted to be heated by any conventional means such as by steam.

The foregoing general discussion of a paper making machine and its associated process is intended to describe stage-wise briefly the commonly known conventional process and apparatus for making paper. Further discussion of the generally known process and equipment therefor is deemed unnecessary as it is common knowledge to those skilled in the paper making art. It is also well known that as during the drying stage and calendering stage large charges of static electricity constantly form and the electric field created thereby present serious problems to the paper maker particularly when thin absorbent type of paper is made.

The apparatus employed as a modification to the above described Yankee dryer type paper making machine for adapting the present invention will now be described.

It should be borne in mind that the primary objective in this apparatus is to heat and agitate a liquid composition and deliver the heated composition under pressure to one or more atomizers maintaining a predetermined temperature of the liquid composition and the fibrous material of the paper adjacent the atomizers so that the atomized composition impinges the fibrous material at the aforesaid predetermined temperature.

Referring again to Figure 1, a combination mixing tank or reservoir 17 is provided conveniently in a centrally located position with respect to the machine 10. A rubber lining in the tank 17 has been found to be beneficial for better cleanliness as well as reducing heat dissipation therethrough. In order to maintain a predetermined temperature of the liquid composition in the tank 17 an electric heater of the immersion type, generally indicated at 18, is provided which heater is energized by a source of electric power (not shown) through an electric cable indicated at 19. The heater 18 is controlled thermostatically by any conventional means.

Adjacent the tank 17 is mounted a liquid impelling pump 20 having its inlet communicatively connected to the tank 17 by a conduit 21. The outlet side of the pump 20 is also communicatively connected to the lower portion of the tank 17 through the conduit 22; the lower end portion 23 of the conduit 22 being positioned within

the tank 17 so that the fluid discharged therefrom will churn or agitate violently the fluid within the tank 17. Thus the fluid within the tank is uniformly heated and agitated.

The machine 10 is provided with a series of atomizers disposed adjacent the path of the moving fibrous material at various stages of the paper making process. The construction of each atomizing unit or header will now be described.

Referring now to Figure 2 an atomizing unit generally indicated at 24 may be comprised of a jet nozzle or orifice 25 communicatively connected to a liquid under pressure containing feeder pipe 26 by a conduit 27. Adjacent the orifice 25 is a second orifice 28 communicatively connected to a compressed air containing pipe line 29 leading from a source of compressed air (not shown) connected at 47. Surrounding the two orifices 25 and 28 is disposed a conical section chamber 30 having open ends 31 and 32. As the orifice 25 emits sprayed or atomized liquid composition of this invention the compressed air from the orifice 28 mixes with the sprayed composition and is aspirated by the chamber 30 and the air with the composition in a mist-like form is directed at high velocity through the open end 31 into a large duct 33. The large duct 33 is communicatively connected to a hot air feed duct 34 which is in communication with a source of hot air heated to about 275° F., under low pressure which may conveniently be the hot air conduit 14 previously described. The large duct 33 is provided with a plurality of small apertures 35 which apertures are positioned in close proximity with the moving fibrous material of the paper making operations in the machine 10. It will be noted that the feeder pipe 26 and the compressed air pipe line 29 are within the hot air feed duct 34 and the orifices 25 and 28 are within the large duct 33 so that the liquid composition emanating from the orifice 25 and the compressed air from the orifice 28 are preheated and maintained heated at the apertures 35. Thus an atomizer has been described for efficiently atomizing a liquid composition while at all times maintaining the composition at a predetermined temperature.

Referring again to Figure 1 it will be seen that at least one atomizer unit 24 is disposed at 36 adjacent the wire or endless screen 11 of the second stage operation, at any one or more positions 37, 38, 39, 40, 41 and 42 in the fourth stage or drying means stage operation, and adjacent the fifth stage calender 16 at 43. It was found more advantageous if the position 43 is situated for spraying the composition immediately after the paper has been calendered as this reduces any tendency toward a harder and more brittle paper product. The feeder pipe 26 associated with each of the atomizers 24 is communicatively connected to the conduit 22 at 44 as connection to a source of liquid composition delivered to each atomizer 24 from the pump 20. The pressure gauge 52 connected to the feeder pipe 26 serves to assist in controlling the rate of flow to the atomizers 24. It will be noted that the feeder pipe 26 also delivers or by-passes back to the reservoir 17 at 26' any of the liquid composition pumped into the feeder pipe 26 by the pump 20 which is not atomized by any of the atomizers in the circuit. This arrangement prevents the composition from stagnating anywhere in the feeder pipe 26 circuit. The feeder pipe 26 may conveniently be insulated by a jacket to minimize heat dissipation of the liquid composition flowing therethrough.

In the manufacture of certain types of paper according to this invention it may not be necessary to introduce the liquid composition in the tank 17 to more than one atomizer in one stage of the operation of the machine 10. Accordingly valve 45 is provided for shutting off liquid composition in the feeder pipe 26 leading to atomizer 36 of the second stage operation as well as

valve 46 in the compressed airpipe line 29. Similarly valves 48 and 49 terminate flow to atomizers 37, 38, 39, 40, 41 and 42 of the third stage drying means. Also valves 50 and 51 terminate flow to atomizer 43 adjacent the calender 16. The number of stages in which the atomizers are employed is governed by the amount of lanolin desired in the paper. In the case of thin absorbent type papers the lanolin content of the finished product should not exceed one-fourth of one percent by weight as otherwise it becomes somewhat oily and sticky resulting in an impairment of its absorbent properties. From the above it can readily be seen that the fibrous material moving through the machine 10 during the process of paper making may be treated by impinging a heated mist-like formation of the liquid composition of this invention during the second, fourth or fifth stages of operation or any combination thereof. It should be obvious that, although not shown in the drawings, an atomizer 24 could also be positioned at the third stage operation but it was found unnecessary to do so. It should also be apparent that if the pump 20 and the source of compressed air at 47 is shut off, the machine 10 manufactures paper according to and in conformance with the well known paper making process.

The liquid composition employed in this invention will now be described in detail.

The lanolin successfully employed herein is known as lanolin-anhydrous which is a yellowish-white semi-solid fat from sheep's wool and consists mainly of cholesterol esters of higher fatty acids. It will be understood that the term "lanolin" as herein employed conforms to the aforesaid definition. It should be borne in mind that an object of this invention is to provide a method to introduce lanolin either by impregnating or coating, or both, uniformly into the fibrous material to improve the properties of finished paper over the properties of paper made under the conventional process. Lanolin melts at approximately 100-108° F., and is substantially insoluble in water and in order to obtain a heterogeneous composition of lanolin in water for the purposes of this invention it is necessary not only to heat such a composition to a temperature above the melting point of lanolin but also to churn or agitate rather violently the aggregate or the two ingredients will substantially separate themselves from each other. For purposes of this invention it was found that the lanolin and the fibrous material used in the paper making process must necessarily be held at a temperature not less than 120° F., from the time or stage of the paper making process where the lanolin is introduced to the fibrous material and that the fibrous material containing the lanolin must be maintained at a minimum temperature of 120° F., thereafter until substantially all water has been removed therefrom.

It may be appreciated from the above that a true colloidal suspension which would remain in a colloidal state at temperature not below 120° F., is most desirable. In order to at least approach a colloidal suspension of lanolin in water it would be necessary to include a third ingredient in the composition which would serve as a dispersing or emulsifying agent. While numerous substances would obviously perform such a function it was found that a small quantity of anhydrous sodium carbonate, commonly known as soda-ash, or a water soluble salt of polyphosphoric acid such as sodium polyphosphate, adequately served as a dispersing agent or emulsifying agent in the composition employed in this invention.

Another important factor became apparent in that in order to obtain uniform introduction of lanolin into the fibrous material an additional or fourth ingredient in the composition employed was necessary. The surface tension characteristics of lanolin and the fibrous material is not conducive to good adherence with each other either with or without the presence of water. Thus a fourth

ingredient in the composition to compensate for the unfavorable surface tension characteristics between lanolin and the fibrous material is necessary. Such a fourth ingredient of the composition employed for the purpose of improving the surface tension characteristics described is commonly referred to as a "wetting agent." Obviously there are many known wetting agents which could be employed in the composition of this invention with equal success. In this instance a wetting agent known in the trade as "Triton X-100" as produced by Rohm and Haas Company which is understood to be an alkyl aryl polyether alcohol, being non-ionic, water soluble and compatible with soap and sulphonated castor oil, was found to be an excellent wetting agent or fourth ingredient of the composition employed in this invention.

From the above, broadly speaking, the composition employed in this invention consists of up to 20% by weight of lanolin, up to 2% by weight of a dispersing agent or emulsifying agent, up to 2% by weight of a wetting agent, and the balance of water, the composition being agitated and maintained at temperature not below 120° F.

Example 1

The following is a specific example of the method according to this invention for modifying the process of paper making in the manufacture of very thin and absorbent paper of the facial tissue type containing lanolin. The composition employed was first prepared according to the following formula, for an eight hour run producing 7-8 tons of facial tissue paper:

Lanolin	-----lbs--	8
Water (approx. 15 gallons)	-----lbs--	125
Soda-ash	-----oz--	6
Triton X-100	-----oz--	6

The composition of the above formula was charged to the mixing tank, heated to approximately 150° F., and agitated by the pump mechanism described previously. The paper making machine was of the Fourdrinier Yankee dryer type modified by disposing atomizers at the second, fourth and fifth stages of operation as previously described and shown schematically in the drawings. During a 24 hour period of continuous production the mixing tank was initially charged with a quantity of the composition according to the foregoing formula, and re-charged again with the same quantity of composition again at the end of 8 hours production and a further re-charge of a similar quantity of the composition at the end of 16 hours production. At the end of 24 hours of continuous production, the composition was exhausted through the atomizers at the second, fourth and fifth stages and approximately 44,000 lbs. (22 tons) of lanolized facial tissue paper having a fibrous material of wood pulp origin was produced. The product was uniformly of soft crepe texture having high absorbent properties. The formation of lint during the entire period was negligible as compared with a similar production of facial tissue without lanolin as evidenced by the cleanliness of the machine. Furthermore the formation of electric static charge during the entire production of the lanolized product was negligible whereas when facial tissue was made by the normal process (i. e. without employing the lanolin composition) the formation of static electric charge was high and obnoxiously troublesome.

Example 2

This example describes a specific method of introducing lanolin to fibrous material during the first stage of the paper making process (i. e. in the beaters) as previously described.

To each 2000 lbs. (one ton) of fibrous material in

the form of air dried pulp the following was added to the normal water requirements in the beater.

	Lbs.
Lanolin -----	5
Soda-ash -----	1
Triton X-100 -----	2

The beaters were heated to maintain the temperature of the mixture at 120° F., or above. After the beating operation (first stage) was completed the mass was conducted through a Yankee dryer Fourdrinier type paper making machine wherein the mixture was maintained at a temperature of at least 120° F., at all times until substantially all water had been removed during the drying stage. The resulting product was similar as that described in Example 1 and again the lint formation was negligible as evidenced by the cleanliness of the machine as well as substantially no formation of static electric charge.

Particularly in thin types of papers such as facial and toilet tissues it was found advantageous to introduce the lanolin composition in the fourth stage (drying means) and, or, the fifth stage (calender) because the water in the beaters (first stage) or the drainage of water at the second stage (wire screen) being repeatedly re-used does not become progressively charged with any of the ingredients of the composition.

From the foregoing description it should be obvious that since the paper sheet product may be treated with the lanolizing composition at the calendering operation, finished paper such as toilet or facial tissue may also be lanolized at converting machines either before or after the slitting, cutting and perforating operations.

Having thus described an embodiment of the invention it can now be seen that the objects of the invention have been fully achieved and it must be understood that changes and modifications may be made which do not depart from the spirit of the invention nor from the scope thereof as defined in the appended claims.

What is claimed is:

1. A soft and pliable fibrous material paper sheet product having high absorbent properties consisting essentially of cellulosic fibres and up to one-fourth of one percent by weight of lanolin uniformly dispersed throughout.

2. A method of making an improved fibrous material paper product containing lanolin uniformly dispersed therethrough consisting of the steps of beating water and pulverized fibrous material heated to a temperature not less than 120° F., introducing into said beating water and fibrous material a composition consisting of up to 20% by weight of lanolin uniformly suspended in water, said composition being agitated and maintained at a temperature not less than 120° F., removing substantially all of the water from the mass obtained therefrom at a temperature not less than 120° F., resulting in a soft fibrous material paper product substantially lint-free and possessing high absorbent properties.

3. In a process for making a fibrous material paper sheet product comprising progressively a first stage consisting of beating a mixture of water and pulverized fibrous material, a second stage consisting of spreading said mixture of water and pulverized fibrous material and removing the bulk of said water therefrom by filtration, a third stage consisting of further reducing the water content of said mixture of water and fibrous material by wringing said mixture between cooperating rolls, a fourth stage consisting of removing substantially all of the remaining water in said mixture of water and fibrous material by subjecting said mixture to a heated drying means for converting said mixture to a rough fibrous material paper sheet, and a fifth stage consisting of calendering said rough fibrous material paper sheet into a smooth uniformly textured fibrous material paper sheet; a method of making an improved fibrous material lanolin contain-

ing paper sheet product comprising the steps of agitating a fluid composition consisting of up to 20% by weight of uniformly dispersed lanolin in water with up to 2% by weight of a dispersing agent and up to 2% by weight of a wetting agent, said composition being maintained at a temperature of not less than 120° F., introducing said heated and agitated composition uniformly into said fibrous material during at least one stage of said process maintained at a temperature of not less than 120° F., resulting in a soft and substantially lint-free fibrous material paper sheet product having high absorbent properties.

4. A method of making an improved fibrous material lanolin containing paper sheet product according to claim 3 wherein the wetting agent of said composition is a non-ionic and water soluble alkyl aryl polyether alcohol.

5. A method of making an improved fibrous material lanolin containing paper sheet product according to claim 3 wherein the dispersing agent of said composition is a water soluble salt of carbonic acid.

6. A method of making an improved fibrous material lanolin containing paper sheet product according to claim 3 wherein the dispersing agent is a water soluble salt of polyphosphoric acid.

7. In a process for making a fibrous material paper sheet product comprising progressively a first stage consisting of beating a mixture of water and pulverized fibrous material, a second stage consisting of spreading said mixture of water and pulverized fibrous material and removing the bulk of said water therefrom by filtration, a third stage consisting of further reducing the water content of said mixture of water and fibrous material by wringing said mixture between cooperating rolls, a fourth stage consisting of removing substantially all of the remaining water in said mixture of water and fibrous material by subjecting said mixture to a heated drying means for converting said mixture to a rough fibrous material paper sheet, and a fifth stage consisting of calendering said rough fibrous material paper sheet into a smooth uniformly textured fibrous material paper sheet; a method of making an improved fibrous material lanolin containing paper sheet product comprising the steps of agitating a fluid composition consisting of up to 20% by weight of uniformly dispersed lanolin in water with up to 2% by weight of a dispersing agent and up to 2% by weight of a wetting agent, said composition being maintained at a temperature of not less than 120° F., introducing said heated and agitated composition uniformly into said fibrous material during the first stage of said process, said first through fourth stages of said process being maintained at a temperature of not less than 120° F., resulting in a soft and substantially lint-free fibrous material paper sheet product having high absorbent properties.

8. In a process for making a fibrous material paper sheet product comprising progressively a first stage consisting of beating a mixture of water and pulverized fibrous material, a second stage consisting of spreading said mixture of water and pulverized fibrous material and removing the bulk of said water therefrom by filtration, a third stage consisting of further reducing the water content of said mixture of said water and fibrous material by wringing said mixture between cooperating rolls, a fourth stage consisting of removing substantially all of the remaining water in said mixture of water and fibrous material by subjecting said mixture to a heated drying means for converting said mixture to a rough fibrous material paper sheet, and a fifth stage consisting of calendering said rough fibrous material paper sheet into a smoothly uniformly textured fibrous material paper sheet; a method of making an improved fibrous material lanolin containing paper sheet product comprising the steps of agitating a fluid composition consisting of up to 20% by weight of uniformly dispersed lanolin in water with up to 2% by weight of a dispersing agent and up to 2% by weight of a wetting agent, said composition being

maintained at a temperature of not less than 120° F., introducing said heated and agitated composition uniformly into said fibrous material during the second stage of said process, said second stage through said fourth of said process being maintained at a temperature of not less than 120° F., resulting in a soft and substantially lint-free fibrous material paper sheet having high absorbent properties.

9. In a process for making a fibrous material paper sheet product comprising progressively a first stage consisting of heating a mixture of water and pulverized fibrous material, a second stage consisting of spreading said mixture of water and pulverized fibrous material and removing the bulk of said water therefrom by filtration, a third stage consisting of further reducing the water content of said mixture of said water and fibrous material by wringing said mixture between cooperating rolls, a fourth stage consisting of removing substantially all of the remaining water in said mixture of water and fibrous material by subjecting said mixture to a heated drying means for converting said mixture to a rough fibrous material paper sheet, and a fifth stage consisting of calendering said rough fibrous material paper sheet into a smooth uniformly textured fibrous material paper sheet; a method of making an improved fibrous material lanolin containing paper sheet product comprising the steps of agitating a fluid composition consisting of up to 20% by weight of uniformly dispersed lanolin in water with up to 2% by weight of a dispersing agent and up to 2% by weight of a wetting agent, said composition being maintained at a temperature of not less than 120° F., introducing said heated and agitated composition uniformly into said fibrous material during the fourth stage of said process, said fourth stage being maintained at a temperature of not less than 120° F., resulting in a soft and substantially lint-free fibrous material paper sheet product having high absorbent properties.

10. In a process for making a fibrous material paper sheet product comprising progressively a first stage consisting of beating a mixture of water and pulverized fibrous material, a second stage consisting of spreading said mixture of water and pulverized fibrous material and removing the bulk of said water therefrom by filtration, a third stage consisting of further reducing the water content of said mixture of said water and fibrous material by wringing said mixture between cooperating rolls, a fourth stage consisting of removing substantially all of the remaining water in said mixture of water and fibrous material by subjecting said mixture to a heated drying means for converting said mixture to a rough fibrous material paper sheet, and a fifth stage consisting of calendering said rough fibrous material paper sheet into a smooth uniformly textured fibrous material paper sheet; a method of making an improved fibrous material lanolin containing paper sheet comprising the steps of agitating a fluid composition consisting of up to 20% of a uniformly dispersed lanolin in water with up to 2% by weight of a dispersing agent and up to 2% by weight of a wetting agent, said composition being maintained at a temperature of not less than 120° F., introducing said

heated and agitated composition uniformly into said fibrous material during the fifth stage of said process, said fifth stage being maintained at a temperature of not less than 120° F., resulting in a soft and substantially lint-free fibrous material paper sheet product having high absorbent properties.

11. In a process for making a fibrous material paper sheet; a method of introducing up to one-fourth of one percent by weight of lanolin uniformly into said fibrous material comprising the steps of taking a composition containing up to 20 percent lanolin, up to 2 percent dispersing agent, up to 2 percent wetting agent, and water, heating and agitating said composition to a temperature not less than 120° F., to obtain fluid emulsification thereof, heating said fibrous material to a temperature not less than 120° F., atomizing under pressure said heated composition adjacent said heated fibrous material whereby said fibrous material is impinged uniformly by said atomized composition, and thereafter maintaining said fibrous material at a temperature not less than 120° F., until substantially all water has been removed by evaporation from said fibrous material resulting in the production of a soft and substantially lint-free fibrous material paper sheet having high absorbent properties.

12. In a process for making a fibrous material paper sheet; a method of introducing lanolin uniformly into said fibrous material according to claim 11 wherein the wetting agent of said composition is a non-ionic and water soluble alkyl aryl polyether alcohol.

13. In a process for making a fibrous material paper sheet; a method of introducing lanolin uniformly into said fibrous material according to claim 11 wherein the dispersing agent of said composition is a water soluble salt of carbonic acid.

14. In a process for making a fibrous material paper sheet; a method of introducing lanolin uniformly into said fibrous material according to claim 11 wherein the dispersing agent of said composition is a water soluble salt of polyphosphoric acid.

15. In a process for making a fibrous material paper sheet; a method of introducing lanolin uniformly into said fibrous material comprising the steps of taking a composition containing in colloidal suspension up to 20% lanolin in water, atomizing under pressure said composition adjacent said fibrous material whereby said fibrous material is impinged uniformly by said atomized composition, removing substantially all water from said fibrous material by evaporation therefrom resulting in the production of a soft and substantially lint-free fibrous material paper sheet.

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