

UNITED STATES PATENT OFFICE.

GUSTAV GOLDMAN, OF BALTIMORE, MARYLAND.

PROCESS OF MAKING FABRIC CONTAINING HAIRCLOTH.

No. 840,841.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed December 4, 1903. Serial No. 183,824.

To all whom it may concern:

Be it known that I, GUSTAV GOLDMAN, of Baltimore, Maryland, have invented a new and useful Process of Making Fabric Containing Haircloth, which process is fully set forth in the following specification.

This invention relates to a fabric consisting of a matted or felted mass of fibers with a sheet of haircloth incorporated therein. In an application, Serial No. 183,823, of even date herewith I have described and claimed a fabric of this kind; and the object of the present invention is to provide a process by which such fabric may be rapidly and cheaply made.

With this object in view the invention consists in laying down a layer of animal, vegetable, or mineral fibers, or mixtures of these, in a loose fluffy condition, superimposing a layer of haircloth thereon, and then laying another layer of the fibers upon the haircloth, after which the whole is treated in such way as to unite the two fiber layers and the haircloth layer into a coherent mass. This treatment for uniting the layers may vary considerably in character without departing from the invention. Preferably the treatment consists in uniting the fibrous mass together and to the haircloth by means of a binding material which is introduced in a dry finely-divided form between the fibers of the mass and then converting the dry material into an active binding agent by the application of heat or of moisture, or of both heat and moisture, preferably in the presence of pressure, after the manner set forth in my application, Serial No. 171,288, filed August 29, 1903. In some cases, however, when the fibers or mixture of fibers employed is of a character which will permit of the uniting of the fibers into a coherent mass by rubbing, as in the process of making felt, the treatment for uniting the fibers with the haircloth between them consists in rubbing the fibers in the presence of a suitable binder, as a soluble soap, then passing through a fixing solution, (as an alum solution,) and then rubbing again in the presence of heat and pressure. This results in a mass of fibers closely bound and knit together with the haircloth incorporated therein.

While it is generally preferred to place the haircloth between two films or layers of fibers, as indicated above, this is not essential, as haircloth with large open meshes may be laid upon a film or layer of the fibers, some of

which will project through the meshes of the haircloth, and the subsequent treatment will serve to bind the whole together.

In the actual practice of the invention the following specific method is preferred and has been found to give the best results—viz., a film or layer of the desired fibers is laid down in a light fluffy condition, preferably as it comes from the doffer of a carding-machine. Zinc resinate in a dry finely-divided condition is then dusted upon the layer of fibers, and because of their light fluffy condition much of this finely-divided zinc resinate sifts in among the fibers, while part of it remains upon the fibers composing the upper part of the film or layer. A layer of haircloth is then superimposed upon the fibrous layer and finely-divided zinc resinate dusted or otherwise distributed thereon, though this distribution of the zinc resinate upon the haircloth may be omitted in some cases. A film or layer of the fibers in light fluffy condition is then laid upon the haircloth and finely-divided zinc resinate dusted thereon. The two layers of fibers with the haircloth between them are then subjected to heat and pressure, preferably in the presence of steam. For mechanical convenience, continuity of operation, and economy of production this is accomplished by including the fibers and haircloth between two belts, one or both of which carry moisture, and passing said belts between heated rollers, thus fusing the zinc resinate and converting it into an active waterproof binding agent, serving to unite the whole into one coherent mass. With certain kinds of fibers, as wool or mixtures containing wool, the moisture is an advantage, as the resulting fabric is more resilient; but with other fibers—as cotton, for example—the heated rollers are used in the absence of moisture unless a very hard stiff product is desired.

It will be understood that the haircloth layer may be of the kind in which both the weft and the warp are of hair or in which one of these is of hair and the other of any different fiber.

While the binding material is herein described as being introduced among the fibers in a "dry" form, it is not meant to thereby state that the material is wholly free from all trace of moisture, but only that it is so far dried that it can be finely divided and readily introduced between the fibers.

Manifestly the two films or layers of fibers

might be first treated with the binding material after the manner set forth in my application Serial No. 171,288 above referred to, and the haircloth then interposed between them with suitable means, as zinc resinate, for binding the fibrous layers to the haircloth and then treated with heat and pressure; but the method hereinbefore described is preferred as being more economical and producing a superior product.

While I have described herein the specific process of incorporating the haircloth in the fibrous mass by rubbing in the presence of a binder, such as soap, and then passing through a fixing solution, as an alum solution, and again rubbing, because said specific process is within the broad invention herein set forth and is meant to be included in the broad claims hereof, nevertheless the said specific process is not specifically claimed herein, as it forms the subject-matter of another application of even date herewith. Furthermore, the fabric resulting from the practice of the invention of the present application is also described and claimed in still another application of even date with this application.

Having thus described the invention, what is claimed is—

1. The process of forming a fibrous fabric with a layer of haircloth incorporated therein which consists in placing a layer of haircloth upon the fibers so that some of them project through the meshes of the cloth, dusting a dry finely-divided binding material upon the haircloth and fibers, and then converting the said material into an active binding agent for the haircloth and fibers.

2. The process of forming a fibrous material with a layer of haircloth incorporated therein, which consists in interposing a layer of haircloth between two layers of fibers with a dry finely-divided binding material distributed among the fibers, and then converting said material into an active binding agent for the fibers.

3. The process of forming a fibrous material with a layer of haircloth incorporated therein, which consists in laying down a layer of fibers, dusting a dry finely-divided binding material among the fibers, superimposing a layer of haircloth thereon, then placing a layer of fibers upon the haircloth, dusting a dry finely-divided binding material among the fibers of said layer, and then converting said binding material into an active binding agent, whereby the fibers and haircloth are united in a coherent mass.

4. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in placing a layer of haircloth within a mass of loose fibers having a dry finely-divided binding material distributed therethrough, and then converting said binding material into an active binding agent,

whereby the fibers are united together and to the haircloth.

5. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in superimposing a layer of haircloth on a mass of fibers, and uniting the whole mass of the fibers to each other and to the haircloth by a resinate.

6. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of loose fluffy fibers, and then uniting the whole mass of the fibers to each other and to the haircloth by a resinate.

7. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in superimposing a layer of haircloth on a mass of fibers, and uniting the fibers and the haircloth by a zinc resinate.

8. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of loose fluffy fibers, and then uniting the haircloth and fibers by a zinc resinate.

9. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry finely-divided resinate distributed therethrough, and then converting said resinate into an active binding agent.

10. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry finely-divided resinate distributed therethrough, and then converting said resinate into an active binding agent by the application of heat.

11. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry finely-divided zinc resinate distributed therethrough, and then converting said resinate into an active binding agent.

12. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry finely-divided zinc resinate distributed therethrough, and then converting said resinate into an active binding agent by the application of heat.

13. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry finely-divided resinate distributed therethrough, and then converting said resinate into an active binding agent by the application of heat in the presence of moisture.

14. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry
5 finely-divided zinc resinate distributed there-through, and then converting said resinate into an active binding agent by the application of heat in the presence of moisture.

15. The process of forming a fibrous material with a layer of haircloth incorporated therein which consists in interposing a layer of haircloth in a mass of fibers having a dry
10 finely-divided resinate distributed there-through, and then converting said resinate into an active binding agent by the application of heat and pressure in the presence of
15 moisture.

16. The process of forming a fibrous material with a layer of haircloth incorporated
20 therein which consists in interposing a layer of haircloth in a mass of fibers having a dry

finely-divided zinc resinate distributed there-through, and then converting said resinate into an active binding agent by the application of heat and pressure in the presence of
25 moisture.

17. The process of coating haircloth with fibrous material which consists in treating haircloth and a fibrous mass with a dry finely-divided binding material applying the hair-
30 cloth to the fibrous mass, and then converting the binding material into an active binding agent, whereby the fibers are bound together and to the haircloth.

In testimony whereof I have signed this
35 specification in the presence of two subscribing witnesses.

GUSTAV GOLDMAN.

Witnesses:

ARTHUR LEE BROWNE,
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