

H. Hayward.
Hat Fabric.

N^o 80,263.

Patented Jul 21, 1868.

Fig: 1.

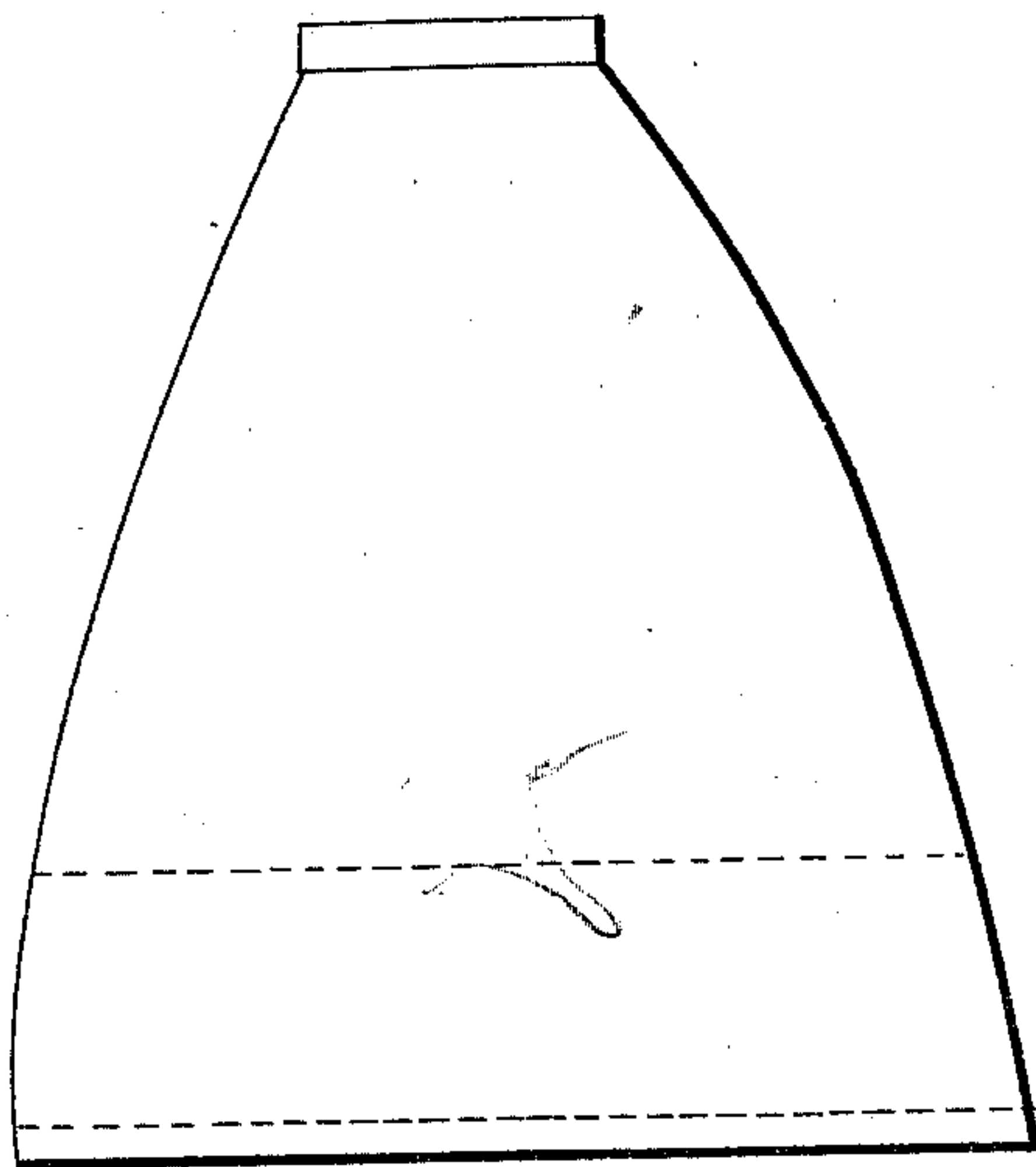


Fig: 2.

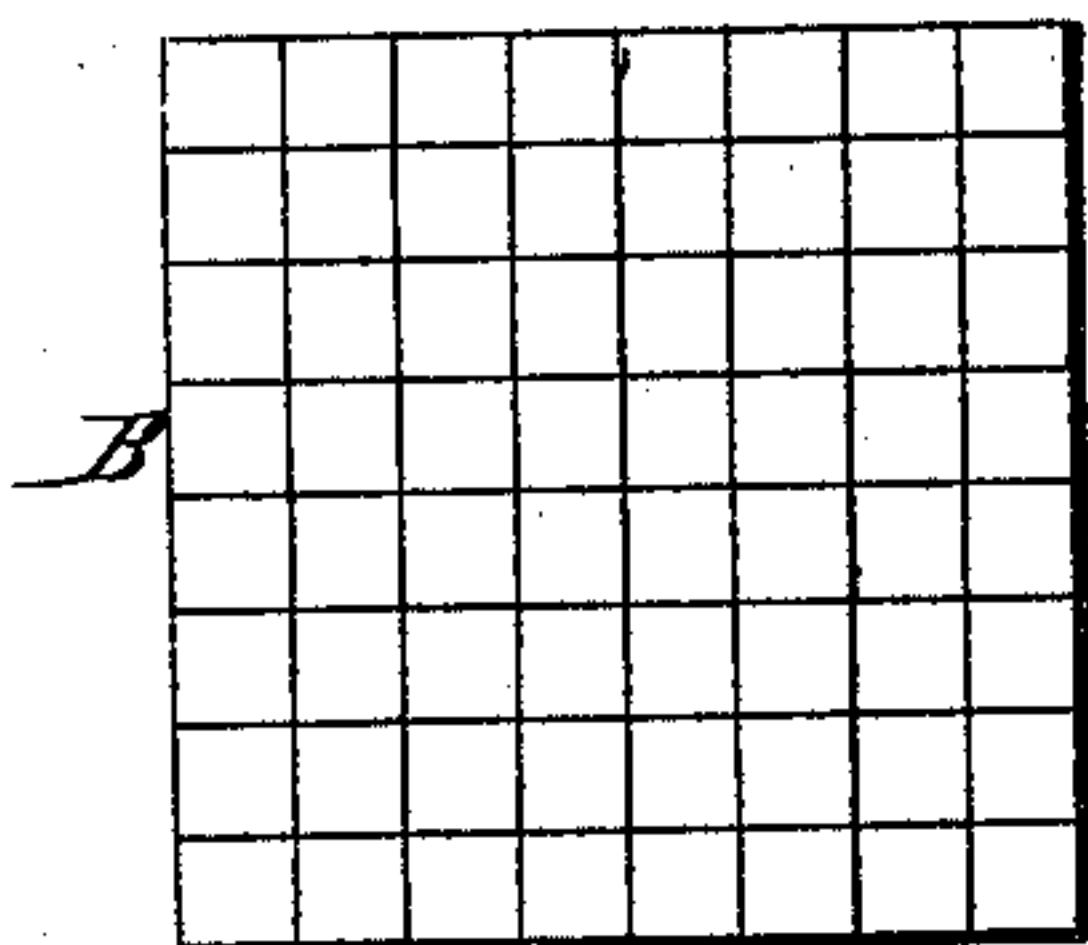


Fig: 3.

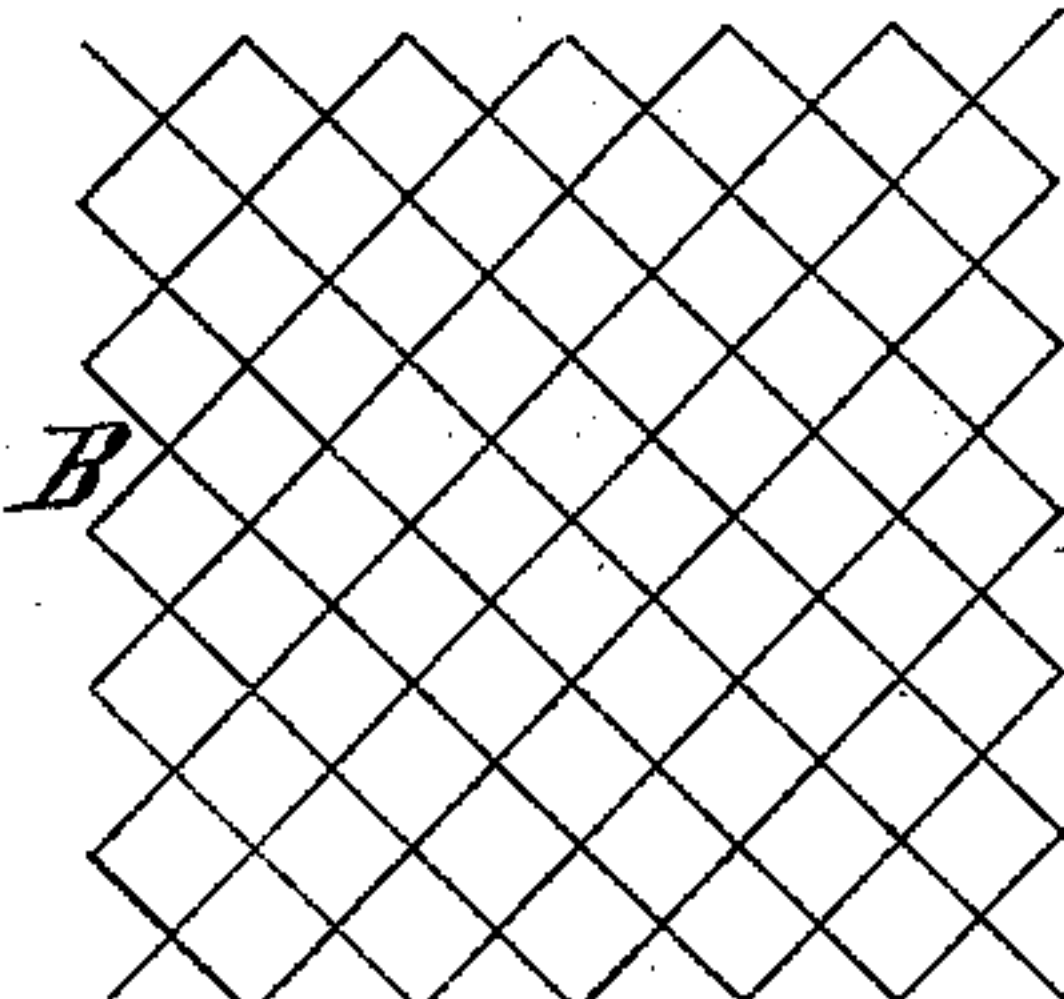


Fig: 4.

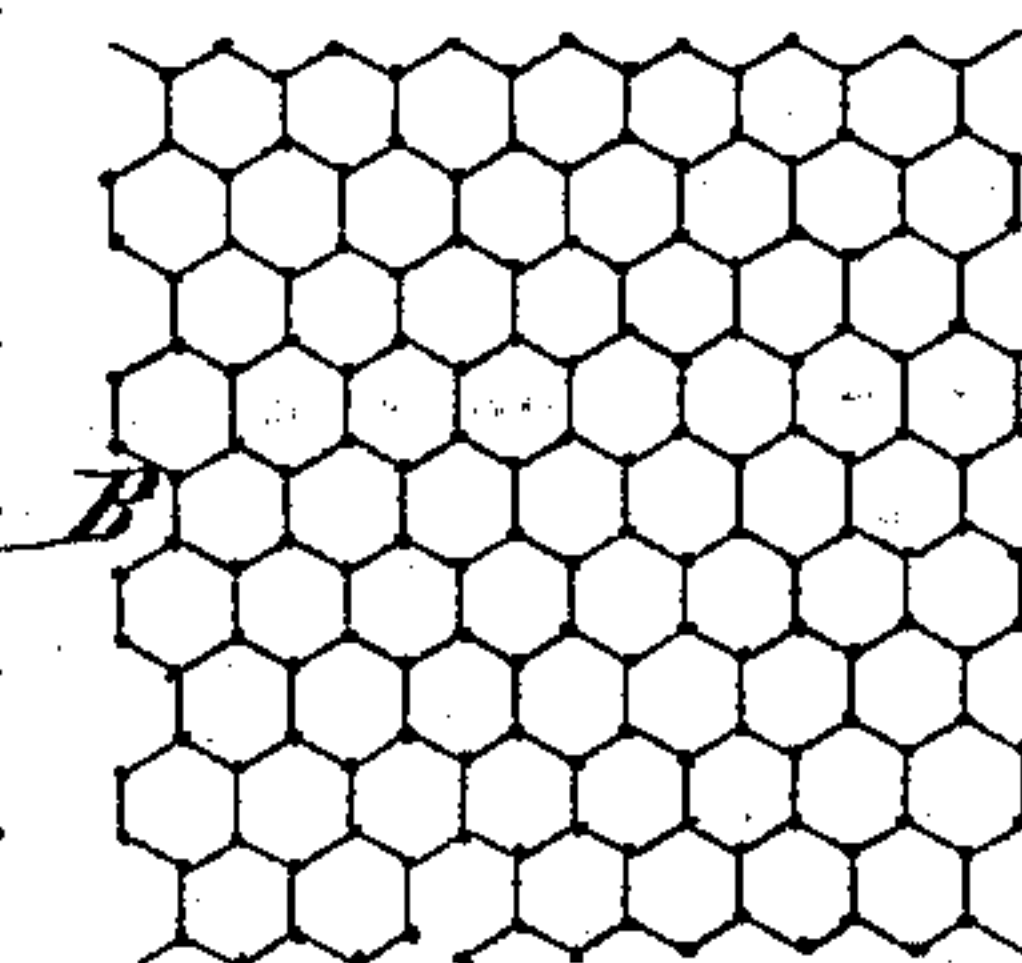
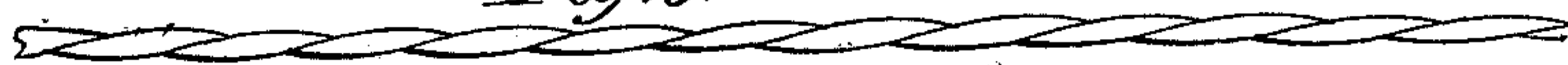


Fig: 5.



Fig: 6.



Witnesses:

C. C. Livings
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Inventor:

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United States Patent Office.

HENRY HAYWARD, OF NEW YORK, N. Y.

Letters Patent No. 80,263, dated July 21, 1868.

IMPROVEMENT IN FELTED FABRICS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY HAYWARD, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Felted Fabrics; and I do hereby declare that the following is a full and exact description thereof.

My invention relates to imparting a stiffness and body to the material by incorporating within the body of the felt a fabric of open-wrought hair-cloth.

Horse-hair may be incorporated in single strands, not wrought together, if preferred, and some portion of the benefit of my invention may be realized from such an arrangement, but it is far preferable to work the horse-hair together in loosely-woven, knitted, or other open-worked fabrics.

I will proceed to describe what I consider the best means of carrying out my invention.

The accompanying drawings form a part of this specification.

Similar letters of reference indicate corresponding parts in all the figures.

To make a felted skirt, having provided a form of wood or other suitable material, of proper size, and arranged to be rotated in connection with the carding-engine, according to the best-approved plan, I proceed to wind thereon the webs of wool, crossing each other at various angles, until about half the quantity of wool which is required for the skirt is laid on. I now take the horse-hair fabric, of the proper width, usually preferring to have it from one (1) to two (2) feet in width, and apply this so that it winds quite around the skirt, holding it in place, it may be either by the hands or by stitches, or by other means, and proceed to wind more web, as before. After the proper quantity has been laid on, I remove the skirt from the former, and proceed to treat it under a jigger, or with other approved apparatus, to cause the wool to felt together firmly.

The open character of the horse-hair fabric allows the fibres of the wool to traverse through the said stiffening-fabric, and to felt firmly the one side fast to the other, thus holding the horse-hair fibre completely embedded in the felt.

With felt of ordinary thickness, the stiffening-fabric will be for the most part concealed, but this is not material.

I propose in some instances to weave or otherwise produce a stiffening-fabric, thinner at the upper edge than at the lower edge. The effect of this is to reduce the horse-hair gradually, so that no sudden change is observed at the point where the stiffening-fabric ends. I can, if preferred, in any case, wind the stiffening-fabric around more than one complete revolution. In such case, I prefer to put a small quantity of wool between, by running on a few layers of web from the carding-engine, and take care to properly distribute the joints or ends where the stiffening-fabric abuts together.

I propose usually to locate the lower edge of the stiffening-fabric about one inch or one and a half inch above what will be the lower edge of the skirt when finished.

I can extend the horse-hair fabric quite to the top, if desired.

I propose to make other felted goods with my horse-hair material embraced within the wool, as described, laying the wool on so that the fibres shall cross each other, and felt through, by any approved construction of machinery.

I propose to make felt hats in this manner, making the stiffness greater in the brim, and to diminish it towards the tip, by making the horse-hair work thinner and more open at the centre or tip of the hat-body.

I can, in case of very conical or irregular-shaped work, such as hats, weave the horse-hair stiffener in an approximately corresponding form by putting it together with machinery adapted thereto.

It is essential only to my invention that the horse-hair fabric be open work, be adapted to add stiffness to the skirt, without being seriously out of harmony therewith, and shall be embedded at or near the centre of the wool, so that the surface shall be felt while the stiffening effect is entirely inside of the fabric, and the whole shall form a single fabric in substance.

I propose, when the stiffening-fabric is woven in a loom, to make the warps of horse-hair combined with

threads of linen, cotton, or other suitable material. Fig. 6 shows this combination. It makes a very strong and proper stiffening, whereby the horse-hairs may abut together, or be lapped upon each other, as may be preferred.

Referring to the drawings—

A are the under webs or compound layer of wool.

B is the open-worked stiffening-material.

C are the outer webs or compound layer of wool.

a and *c* represent the fibres, forming the compound layers A and C, which reach through the openings in the stiffening-material B, and bind the whole firmly together.

I propose in some cases to felt in my horse-hair material, as above described, in the form of narrow strips interspersed at intervals in the felt.

I propose to make of this stiffened felt, in addition to the foregoing, curtains, furniture-cloth, saddle-cloth, false insoles for boots and shoes, gun-wads, and all articles of felt which require stiffening.

My material gives a peculiar advantage when used as gun-wads, by reason of the gentle but efficient abrasive or cleaning effect due to the action of the ends of the stiffening-hairs against the inner surface of the barrel of the gun.

Figure 1 of the drawings shows a side view of a skirt complete, the dotted lines showing the boundaries of the stiffening.

Figures 2, 3, and 4 show different constructions of the open work stiffened.

Figure 5 is a magnified cross-section of a piece of the goods, and

Figure 6 shows a warp-yarn magnified.

Colors are only used to aid the eye in distinguishing parts, and do not imply differences of material.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The within-described felted fabric, compounded of the two layers of felt, A and C, with a layer or partial layer of open-worked horse-hair cloth enclosed between, the whole being firmly confined together by the interlaced fibres *a* and *c* of the felted material, substantially as and for the purposes herein set forth.

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Witnesses:

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