

UNITED STATES PATENT OFFICE.

JAMES E. POLLARD, OF NORFOLK, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF FELT-CLOTH.

Specification forming part of Letters Patent No. **143,528**, dated October 7, 1873; application filed April 16, 1873.

To all whom it may concern:

Be it known that I, JAMES E. POLLARD, of Norfolk, in the county of Norfolk and State of Massachusetts, have invented an Improvement in the Manufacture of Felt-Cloth; and I do hereby declare that the following is a description of my invention sufficient to enable those skilled in the art to practice it.

In the manufacture of felt-cloths it is customary to form bats of the fiber upon a carding-engine, and then to felt the cardings to form them into a close compact structure, the sheet thus made being treated in a fulling-machine to condense and thicken the fabric. As the action of the beaters of the fulling-mill exerts considerable strain upon the fibers, short and tender stock, or stock of lower grade, cannot be used to make good cloth, the fulling-mill attenuating the cloth in spots and leaving a fabric without uniformity of thickness or structure, and with spots of no strength or thickness.

In my invention I have sought to obviate this difficulty so far as to enable me to use stock of lower grade to form felt-cloth possessing a good degree of strength and a uniformity of texture. To accomplish this I form bats suitable for felting in the carding-machine in the usual manner, and place together as many of these as are required to produce the thickness of cloth which I wish to manufacture. I next treat this bat in a felting-machine in the same manner as usual when it is to be fulled; but, instead of fulling this fabric from the felting-machine, I either dry it or so far dry it that it is only moist or damp, and pass it between heavy calender-rolls heated by gas or other suitable means. The effect of the heated calender-rolls is to condense and compact the fabric similar to the process of fulling, besides giving it firmness of texture and a thorough union of the fibers. This operation also surfaces the cloth, and is a new feature.

My invention consists, in part, of this method of forming felt-cloth—that is to say, in forming the cards or bats in a carding-machine, then treating the bat in a felting-ma-

chine, and afterward finishing it by passing it between calender-rolls, said rolls being heated, and by their pressure and heat compacting the fibers, perfecting the structure and surfacing the cloth. The invention also consists of the cloth of even finish, uniform texture, and surfaced felt fabric made by this process, which is so different from the ordinary felted cloth as to be readily distinguished from it by any one expert in this kind of goods. The cloth thus produced can be made from fibers which cannot be formed into good cloth by the common process in which the fabric is fulled.

For some kinds of goods I vary the process by having one of the calender-rolls engraved of any suitable design or pattern which I desire to emboss upon or give to the surface of the cloth. This modification constitutes another part of my invention and enables me to form various different patterns in imitation of woven cloth, and is applicable to all kinds of felt-cloth.

I do not claim forming corrugated felt by having ridges or figures upon the plates of a felting-machine, nor the forming of felts so as to imitate cloth by forming them upon the cloths to be imitated in the felting-machine; nor do I claim the finishing of felted cloths by passing them between steam-heated calender-rolls, such as used in calendering paper; but

What I claim is—

1. The process herein described, for the manufacture of felt-cloth, consisting in forming carded bats, treating them in a felting-machine, and subsequently subjecting the fabric thus formed to the action of heated calender-rolls, either plain or figured, so as to make the process of fulling unnecessary, substantially as specified, and for the purpose set forth.

2. The improved felted fabric herein described, produced by hot-calendering a felted bat, in the manner described.

JAMES E. POLLARD.

Witnesses:

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A. G. DUNCKLEE.