

UNITED STATES PATENT OFFICE.

GEO. G. BISHOP, OF NORWALK, CONNECTICUT.

IMPROVEMENT IN THE MANUFACTURE OF FELT CLOTH.

Specification forming part of Letters Patent No. 16,783, dated March 10, 1857.

To all whom it may concern:

Be it known that I, GEORGE G. BISHOP, of Norwalk, in the county of Fairfield and State of Connecticut, have invented sundry new and useful improvements in certain parts of the process of manufacturing cloth by felting without spinning or weaving, of which the following is a full description.

The process of manufacturing cloth by felting may be divided into three parts: first, the picking, breaking, and carding of the fiber and forming it into a bat of suitable length, breadth, and thickness; second, the condensing and interlacing and hardening of the fibers of the bat into a compact sheet or web by the conjoint action of steam, a vibratory motion, and pressure; and, third, the fulling and dressing of the sheet or bat so condensed and hardened.

My invention and improvements relate to the first branch of the process; and it consists in the new and useful art or process hereinafter described of working and preparing wool or other fibrous material for making batting for felt cloth by the introduction and use of well-known machinery, but never before used in this branch of the manufacture. The wool or other fibrous material being cleansed and thoroughly worked through the ordinary wool-picker is then taken to the double lap-picker and weighed in given quantities and placed in equal sections marked upon the apron of this machine. From the apron it passes through the double lap-picker and is wound upon a lap-roller, which being filled is removed and another put into its place.

The side drawings being attached to one side of the breakers, or the front drawings being attached to the breakers in front of the doffer, whichever may be elected, one of the rollers filled with laps is then placed upon its bearings back of the first breaker. The lap-bat is carded through this breaker, which renders the work more even by more perfectly intermixing and distributing the material than is effected when the wool is fed by hand upon the feed-sheet of the breaker. The sliver as it is doffed from the doffer is passed to and through the side or front drawing attachment upon a spool, which is the last part of the attachment. This spool when filled with roping is to be removed and an empty one put in its place, which is filled as above, and so on.

Twenty-four of these filled spools are next placed upon their bearings on the spool rack or creel and wound or creeled upon a spool four feet long, being the width of the breaker. This spool being filled with ropings is to be replaced by an empty one, which is filled as above, and so on. Two of these long spools filled are next placed upon bearings on the feed-stand back of the second breaker, the feed-table being dispensed with. The ropings are then taken alternately from the spools last mentioned and passed through the spaces in the feed-guide to and between the feed-rollers into and upon the breaker. The sliver in passing from the second breaker is doffed and roped by means of either the side or front drawing attachment, as before stated. The spools of ropings are taken from the second breaker and wound on long spools, as before stated, of a length to suit the width of the machine or machines used immediately in carding and forming the material into a bat, each roping occupying the width or space of an inch, or thereabout, on the card and the web forming the bat. The feed-guide used with these last carding-machines may be so constructed as to vibrate a short distance parallel to the feed-roller, thereby causing a more perfect distribution of the material and improving the web. The long spools filled as above are placed upon their bearings at the back of the carding-machines last mentioned in the same manner as they are placed at the back of the second breaker, one above the other, and the ropings taken alternately from the spools and passed through the feed-guide and upon and through the carding-machine. The bat is then formed from the ropings thus prepared and placed back of the forming carding-machines in several ways. One of them is by placing an endless-apron arrangement of any desired length directly in front of the last-mentioned carding-machine, and the web on being doffed from the doffer of this machine passes upon the revolving endless apron, and by continuing this operation the bat is formed of any desired thickness by a succession of thin layers, and then severed and wound upon a stick or rod into a roll and removed, and another bat is then formed in like manner, and so on. Another way of forming a bat is by placing a drum parallel to the doffer, to which drum both a rotary and traversing

motion may be given, and upon which the web as it is doffed from the carding-machine passes, and thus forming a bat which when of the desired thickness is severed and rolled upon a rod, and then another bat is formed upon the drum, and so on. And these modes of forming the bat may be used with the patent to John Arnold, and the patent to John Arnold and myself, for crossing the fibers at right angles, or making plaid goods when the ropings are of different colors.

By the introduction of ropings in forming the bat different colors can be used, and by arranging them upon long spools in any desired proportions plaids may be formed in the bat in the last-described way of forming the bat, and stripes may in like manner be produced in the bat formed in the way first herein described, and the ropings being properly arranged in forming the bat by the mode secondly above described, diamond plaids will be produced in the bat.

The doffers of the carding-machines used in forming the bat in the several ways I have described herein, being so constructed as to have a traversing motion, will produce a mottle in the bat when the ropings of different colors are arranged for that purpose upon the long spools.

The advantages resulting from the introduction and use of the before-enumerated machin-

ery in preparing the bat for felting are as follows: The lap-picker improves the material for this purpose, and the sections or tokens upon the feed-table produce uniformity in the material passed through it and formed into the bat. The side and front drawing attachments rope and draw out the fibers of the material lengthwise, and not only causes greater perfection in the carding, but by the lateral position of the fibers obtained by this means a much improved bat is produced, and considerable saving of material is thereby effected.

The body of the cloth manufactured from the bat produced by the foregoing process is much firmer than any heretofore produced, and, having a more firm bottom, a much improved finish is obtained.

Having thus fully described the nature and object of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

In contradistinction from forming a bat for felt cloth by carding from laps, a bat made from ropings or rovings carded and formed substantially in the manner herein described.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

GEO. G. BISHOP.

Witnesses:

STEPHEN OLMSTEAD,
WM. K. JAMES.