Sheet 1 - 2 Sheets.

J. T. Waring.

Felting Mach. & Fabric.

No. 82904 Patented Oct. 6. 1868

Fig: 1

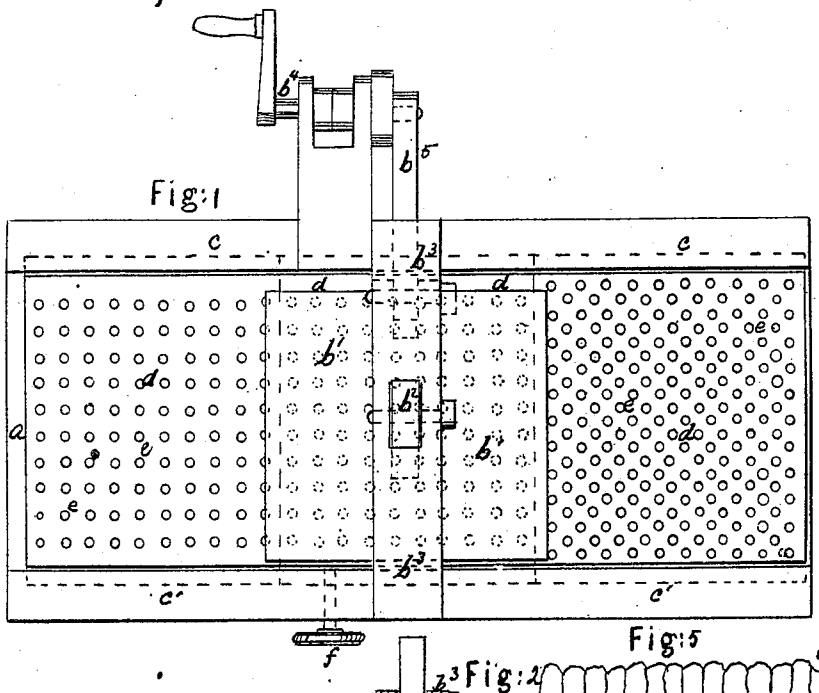

Fig: 3

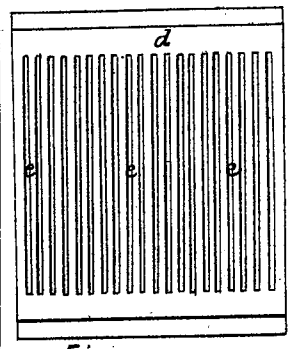

Fig: 4

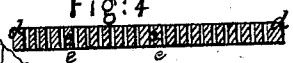

Fig: 5

Fig: 2

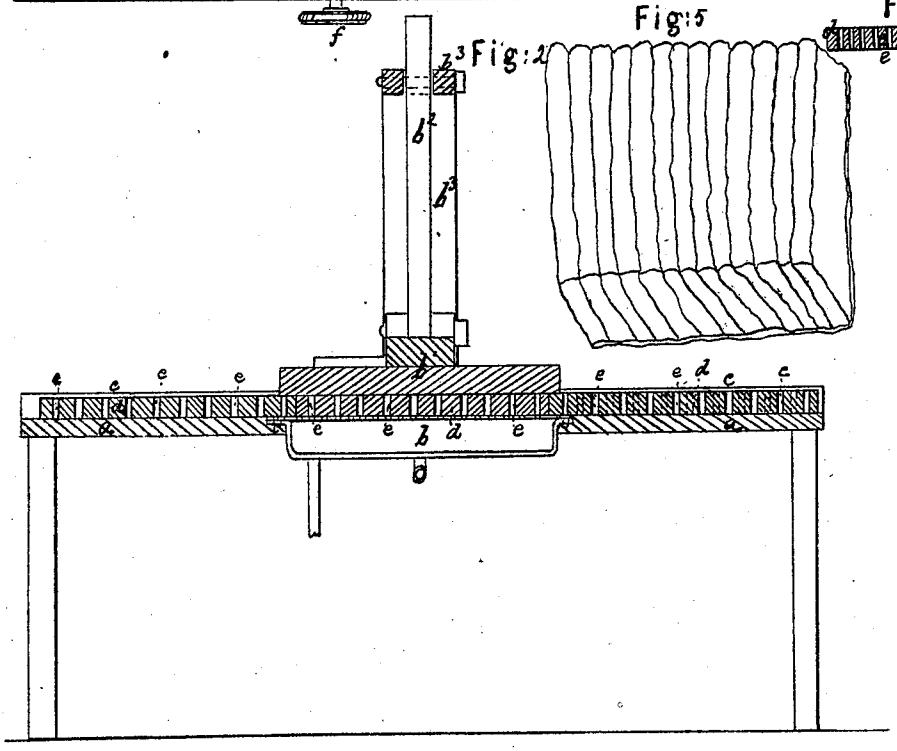

Fig: 12.

Witnesses:

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William McIntyre

Inventor:

John T. Waring

Sheet 2. 2 Sheets.

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Felting Mach. & Fabric

No. 82904. Patented Oct. 6. 1868.

Fig: 6

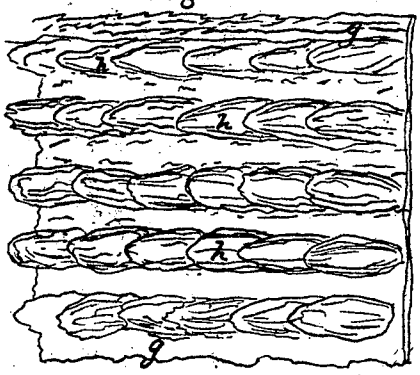


Fig: 7

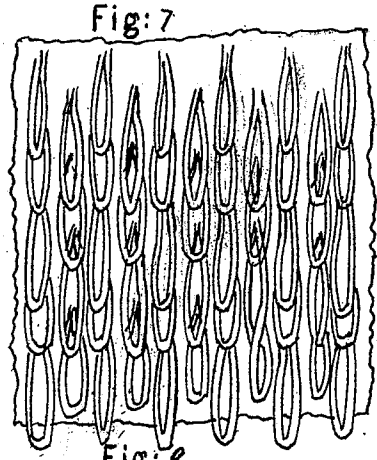


Fig: 8

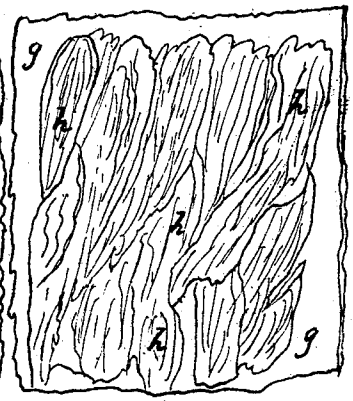


Fig: 9

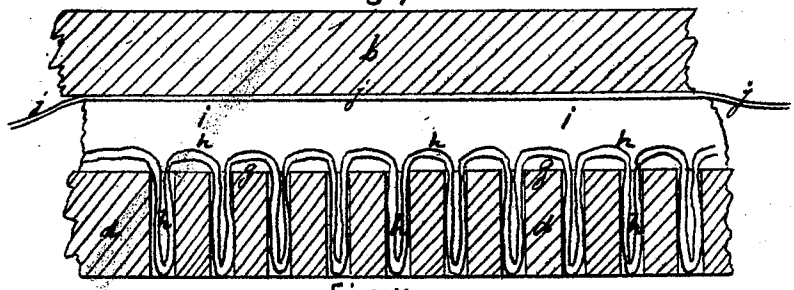


Fig: 10

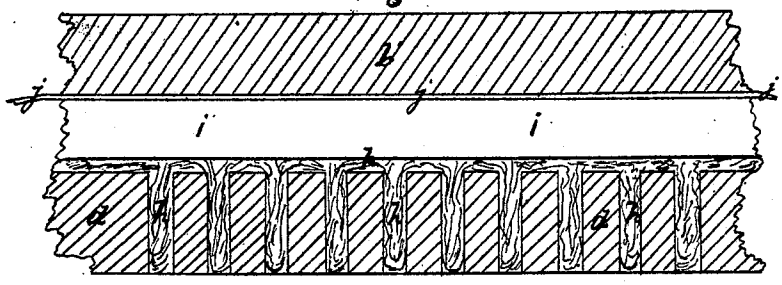
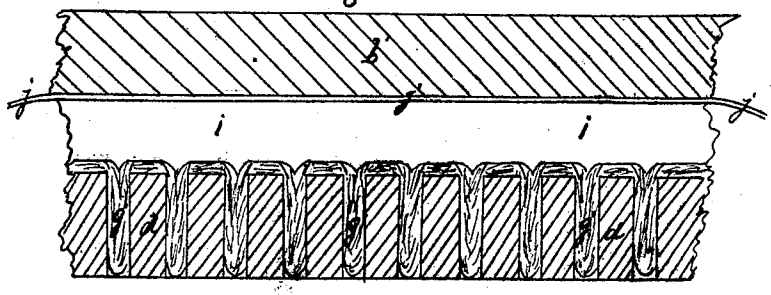


Fig: 11



Witnesses:

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Inventor:

John T. Waring

United States Patent Office.

JOHN T. WARING, OF YONKERS, NEW YORK.

Letters Patent No. 82,904, *dated October* 6, 1868; *antedated September* 28, 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, JOHN T. WARING, of Yonkers, in the county of Westchester, and State of New York, have invented a certain new and useful Manufacture of Felted Fabrics, and machinery used therein; and I do hereby declare that the following is a full and correct description thereof, reference being had to the annexed drawings, and to the letters of reference thereon.

The nature of my invention consists in a new tufted fabric, composed of a body of felted wool or other material, suitable to be felted, and tufts of wool or other fibrous material unfelted or partially felted, and attached to the fabric by the process of felting in the manufacture of the fabric. The body of the fabric may be of wool, fur, or other felting-materials, or it may have portions of cotton, silk, or hair, or other non-felting materials mixed with it, so long as the material or mixture has sufficient felting properties to be felted from a bat into a body of felted cloth. The tufts may be of wool or other fibrous material, and may be made from a sliver, from the comb or carding-engine, or a thin bat, or from rovings, or from yarns of wool, worsted, or other fibrous materials.

The object of my invention is to obtain a fabric which shall have a felted back and tufts projecting from it that are unfelted or only partially felted, but secured to the body or back of the fabric by the process of felting in the process of manufacture of the fabric.

In order to carry out my invention of the new tufted felted fabric above mentioned, I have also invented certain improvements in machinery, which are essential to the manufacture of said fabric, and which I will now proceed to describe.

Upon a jiggering-table, such as is used in hardening wool-hat bodies, and which is provided with a steam-box, perforated on the top side with small holes and a jiggering-board, as usual, I place parallel guides or slides lengthwise of the table, a little wider apart than the width of the fabric I intend to make, and fit to the slides a series of flat perforated boards or plates, of about the thickness of the length of the tufts, so that, a board or plate having been entered in the slides, it may be pushed along over the table until it comes over the steam-box, and beyond the same until it passes out of the slides at the other end of the table, and be followed step by step, as it is pushed along over the table, by succeeding boards or plates of the said series of boards or plates fitted to the slides. I use these perforated boards or plates to sustain the body of the fabric while it is being hardened or felted by the action of the jiggering-board, and also to protect the tufts from being hardened or felted while the fabric is being felted, and also to preserve the length of the tufts; therefore the perforations in the boards correspond, in number, size, and distribution to the required number, size, and distribution of the tufts, and the holes being made to match, in figure, upon the different boards of a series intended for a given pattern, a continuous fabric may be made by preparing the fabric to be felted on the perforated boards at one side of the steam-box, and gradually pushing it forward, step by step, as the portion under the jiggering-board is completed or hardened, and releasing the fabric from the perforated boards or plates as they pass from over the steam-box and from under the jiggering-board.

I prepare my new fabric for felting by use of these perforated boards or plates, as follows:

When the tufts are made from a sliver or bat of wool or fibrous material, I lay the sliver or bat loosely on the perforated board or section thereof, or overlapping two perforated boards, and punch the fibres of the sliver or bat into the holes by a barbed needle, such as figured in the drawings, or a cluster of such needles fixed in block, at such distance apart as to correspond with the distribution of the holes in the boards. If one sliver be not sufficient to make the required tufts, I use successive slivers or a bat of sufficient thickness. This operation leaves a portion of the sliver on the face of the perforated board connected with the portion which is pushed down into the holes, and over this I lay on a bat of wool or wool and other materials suitable to be felted, and over all I lay a cloth of linen, as usual in hardening hat-bodies, and then push the perforated board or plate with the fabric thus prepared under the jigger-board, which brings it over the perforated plate of the steam-box.

Steam being let on, and the jigger-board set in rapid motion, the operation of felting goes on, as in wool

hat-bodies, in a similar machine, with the difference that the tufts, being enclosed in the holes of the perforated board, are protected from being felted by the pressure and motion of the machine, and only the body of the fabric is felted, the tufts being merely hardened a little by the action of the steam passing up through the holes. The holes should be large enough to receive the tufts, and also to permit the steam to pass through them as freely as required to the upper surface of the perforated boards or plates.

Instead of a series of perforated plates, an endless band, of the proper thickness, of vulcanized rubber, perforated with holes at a suitable distance apart, might be used, but the plates will answer every purpose of making a continuous fabric, by overlapping them with the fabric in the preparation for felting. After the fabric is felted in this manner, it may be washed in warm soap suds, and the tufts may be spread out thereby or in any convenient manner, so as to resemble the shaggy covering of an animal.

When the tufts of the fabric are made from rovings or yarn, I prefer to first lay a sliver or bat of wool over the perforated boards or plates, and then push down the rovings in loops through the sliver or bat into the holes, and then place the bat to form the rest of the body of the fabric on top of the sliver or bat, and proceed as before, but tufts of rovings may be felted to a bat in the same way as tufts from slivers or thin bats.

The tufts may be disposed in stripes across the fabric, by using a board perforated with channels like gratings across the whole width of the boards.

The tufts may be of different colors, or parti-colored, and the fabric itself may be of the same or different color from the tufts.

But, more particularly to describe my said invention, I will refer to the drawings, which illustrate the fabric, process of manufacture, and machinery.

Figure 1 of the drawings represents a plan view of a jiggering-table, with the tuft-holding plates.

Figure 2, longitudinal section of the same.

Figure 3, a plan view of the channelled tuft-holding plate; and

Figure 4, a section of the same.

Figure 5, view of tufted fabric made with channelled tufts.

Figure 6, a view of fabric made with tufts of rovings.

Figure 7, view of the fabric made with tufts of yarn of different colors.

Figure 8, view of fabric made with tufts from a sliver or bat.

Figures 9, 10, and 11 are broken sections, illustrating the mode of preparing the fabric.

Figure 12, view of barbed punch.

The jiggering-machine consists of a flat table, *a*, in the middle of which is a steam-box, *b*, having a perforated top plate, about level with the top surface of the table, as usual, and is also provided with the usual jigger-board, b^1, held down by the vibrating standard b^2, pivoted in the cross-frame, b^3, and with a crank-shaft, b^4, and connection-rod, b^5, by which a very short and exceedingly rapid motion is given to the jigger-board. So far the jiggering-machine is constructed in the usual manner for hardening and felting wool-hat-bodies.

Upon the face of the table I place two rebated slides, *c c'*, opposite to and parallel with each other, and fit thereto a series of perforated tuft-holding plates, *d d d*, of the width required for the fabric, the perforations, *e*, in the plates being made of the requisite size to hold the tufts, and in number and order of arrangement corresponding with the required number and order of arrangement of the tufts upon the fabric. These perforated tuft-holders are arranged to slide over the table, and, when brought over the steam-box, may be secured in place by a pinching-screw, *f*.

The mode of preparing the fabric with tufts from rovings or yarn that I prefer to use is shown at fig. 9, which shows, in section, the perforated tuft-holding board or plate *d*, the sliver or bat *g*, laid over the tuft-holding plate, the roving or yarn *h*, pushed down through the sliver into the holes of the tuft-holding plate in loops, (which may be cut, if required, by making the punch sharp at the end,) the bat *i*, for the body of the fabric, the canvas or linen hardening-cloth *j*, (which may be omitted,) and the jigger-board b^1.

Fig. 10 shows the same arrangement of the fabric, except that the sliver *g*, of fig. 9, is omitted.

Fig. 11 shows part of the sliver or bat, *g*, punched down in the holes of the tuft-holder to form the tufts, the bat *i*, to form the body, the hardening-cloth *j*, and the jigger-board b^1.

I claim as of my invention—

The new manufacture of a tufted fabric, having tufts of wool or other fibrous materials, and a felt-body wholly of wool or other suitable felting-material, or of mixed felting and non-felting materials, the body and tufts being made into a fabric by the process of felting in the manufacture of the fabric, substantially as hereinbefore described.

Also, the perforated tuft-holders, or their equivalent, in combination with the jigger-board and steam-box, substantially as herein described.

JOHN T. WARING.

Witnesses:

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WILLIAM McINTYRE.