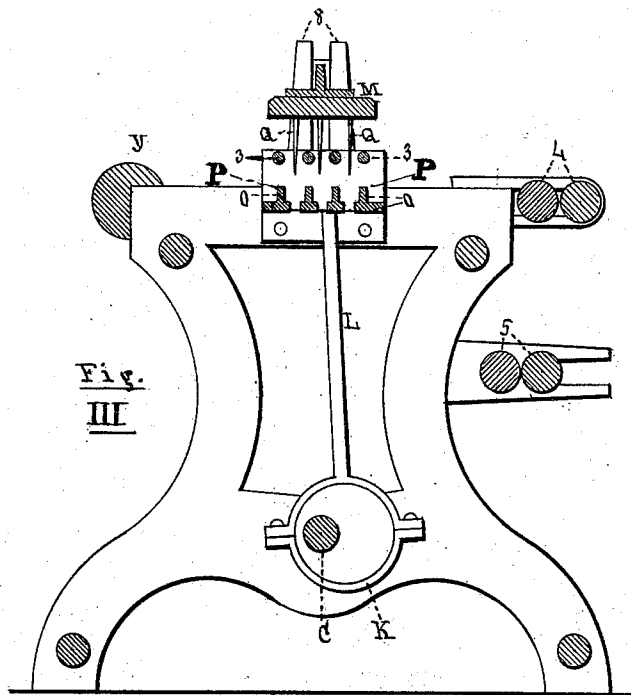


L. W. WHIPPLE.

MACHINE FOR MAKING FELTED AND NAPPED FABRIC.

No. 173,704.

Patented Feb. 15, 1876.



In presence of
Geo. T. Tilden.
Frank C. Zerrahus.

Lyman W. Whipple
by his Attorney
John M. Batchelder.

UNITED STATES PATENT OFFICE.

LYMAN W. WHIPPLE, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR MAKING FELTED AND NAPPED FABRIC.

Specification forming part of Letters Patent No. **173,704**, dated February 15, 1876; application filed October 7, 1875.

To all whom it may concern :

Be it known that I, LYMAN W. WHIPPLE, of New York, in the State and county of New York, have invented an Improvement in Machines for Making Felted or Napped Fabrics, of which the following is a specification :

My invention relates to the machine used in the manufacture of felted and other compound fabrics described and set forth in Letters Patent of the United States heretofore granted—to wit, a patent granted to Milton D. Whipple, January 30, 1872, for wadding and batting machine, and numbered 123,136, and a patent granted to Lyman W. Whipple, June 15, 1875, entitled “an improvement in napped fabrics,” and numbered 164,626.

This improvement consists in the bed or platform situated below the vibrating needles, and upon which the bat, web, or lap rests while it is passing forward to receive the thrust of the barbed or roughened needles that enter the bat or fabric from above or below; also, in a novel arrangement of lever and cam for reciprocating the needle-bar.

The process consists in the mode of interlacing or combining the fibers of one or more laps or bats of the same or different materials, or in combining fibrous substances with cloth previously woven. For example, a cotton cloth can be filled with woolen fiber, so as to produce an entire surface of wool upon one or both sides, while the cotton cloth forms a strong foundation or base at the middle or upon one side of the finished fabric.

Many varieties of cloth are thus produced which have not been weakened or injured by the process of napping or raising the surface by teasels or cards.

Figure I is an end elevation. Fig. II is a front elevation. Fig. III is an end view, showing the relative position of the needles and the adjustable bars.

The letters of reference relate to the same parts in all of the figures.

The power is applied to the pulley A, which is mounted upon the shaft C, and, through the intervention of gearing 16 and 17 and cross-shaft 10, and the pulleys and bands *a b*, drives the feeding-rollers 4 and the rollers 5, upon the outer one of which the finished fabric is wound, the other roller of the lower se-

ries 5 acting as a compressor by means of the spiral springs 6, which are placed upon each side of the machine. The upper series of rollers 4 draw the bat or sheet which passes between them at such a velocity as to allow the needles herein described sufficient time to interlace and combine the fibers. The bat of fiber, previously prepared on a carding-machine, passes over the bar Y, and thence approaches several series of vertical pins or needles, Q Q. When a foundation of woven cloth is used it passes over the bar Y with the prepared fiber or bat, with which it lies in contact. The needles are of sufficient length to pass freely through the bat. They are set in the horizontal top bar M, which is moved up and down by the pitmen or rods L L', which are carried by the eccentrics K K' attached to the bottom shaft C, the needle-bar M being retained in its place by the vertical guides 8 8. The rods L L' are jointed at R R' to ends of the needle-bar M, so that it may traverse freely in the vertical guides 8. The needles may be set diagonally; and in order to assist in clearing them, and to prevent the bat from rising or falling too far when the needles are withdrawn, a vertically-adjustable slotted plate, O, provided with vertical parallel bars or ribs P, is placed below the needle-bar, and a series of round bars, 3 3 3, are affixed to brackets upon the plate O. The bat or sheet of fiber which is to be operated upon passes between the ribs P P and the bars 3 3 3, where it receives the thrust of the roughened needles Q. The depth of their penetration into the bat is regulated by adjusting the height of the plate O and its bars 3 3, which plate is attached to the frame by the binding-screws Z Z', Fig. I, held in the vertical slots V V'. By placing these screws higher or lower in the slots the plate O is adjusted, and more or less of the fiber can be carried through the bat, or the combined bat and cloth. At the end of the cross-shaft 10 there is attached an eccentric, H, which moves the upright lever 12, fulcrumed at 13, to the right and left. The top of the lever has a jointed connection, 14 15, with the needle-bar M, which is thus moved back and forth horizontally. This lateral movement, combined with the onward motion of the bat, causes the needles to perforate

every part of the surface. A separate series of needles may be placed in a reverse direction, and thrust upward through the bat when a more firm and compact fabric is required.

By means of this invention fibrous substances—such, for example, as cotton, linen, jute, and the like, which are not capable of being felted—are made into a firm and condensed fabric by the mechanical interlacing of the fibers, this product being used for various purposes. The bat may consist of felting and non-felting fibers—such, for example, as wool and cotton mixed in the carding or other process—and when this fabric is treated in hot water the wool holds the cotton in place.

In lieu of mixing two kinds of fibers together, as above described, a bat of wool and a bat of cotton may be laid one upon the other and passed through the machine, thus giving to the fabric an excess of one or the other of the materials upon opposite sides.

A box, open at the top, may be placed below the lower tier of bars, to receive the dust and waste.

I claim—

1. In combination with the reciprocating needle-bar M, the vertically-adjustable plate O, provided with ribs P and bars 3 3, all arranged and operating together as and for the purpose set forth.

2. I also claim, in combination with the needle-bar M and plate O, provided with ribs P and bars 3 3, arranged as described, the lever 12 and cam H, as and for the purpose set forth.

LYMAN W. WHIPPLE. [L. S.]

In presence of—

JAS. W. HALE,
T. W. STAKE.