

(No Model.)

2 Sheets—Sheet 1.

T. F. JUDD & C. A. MALLORY.
APPARATUS FOR FORMING NAP BATS.

No. 424,791.

Patented Apr. 1, 1890.

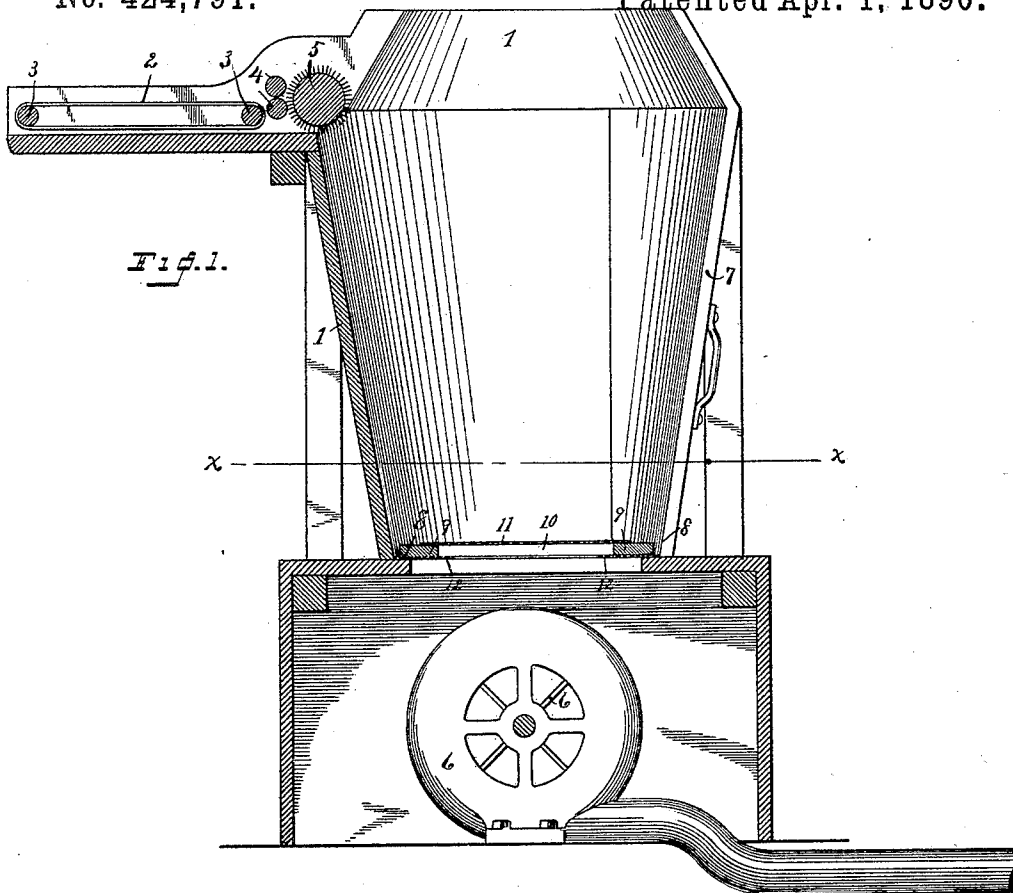
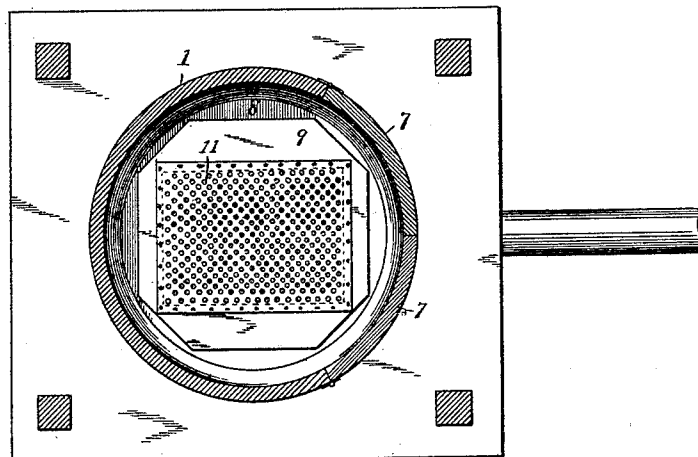


Fig. 2.



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Fig. 3.

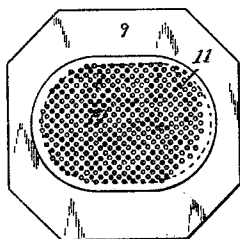


Fig. 4.

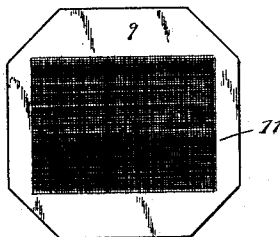


Fig. 5.



Fig. 6.

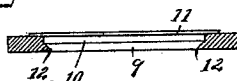


Fig. 7.

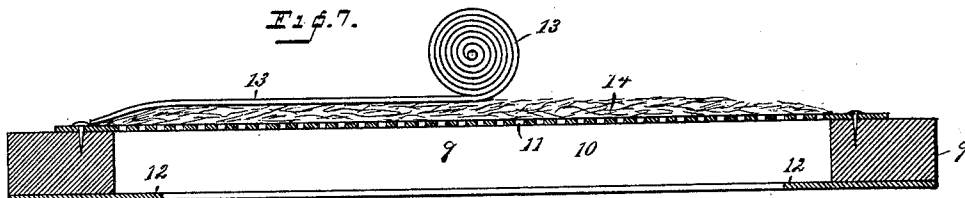


Fig. 8.

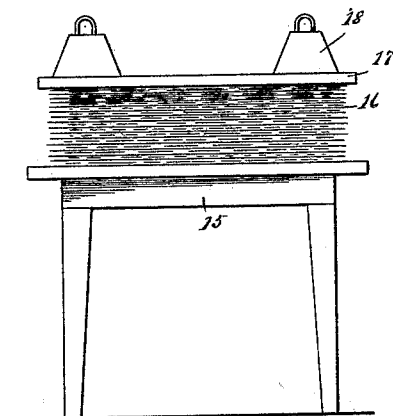
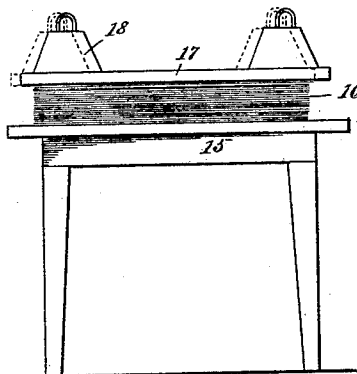


Fig. 9.



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UNITED STATES PATENT OFFICE.

THEODORE F. JUDD AND CHARLES A. MALLORY, OF DANBURY, CONNECTICUT.

APPARATUS FOR FORMING NAP-BATS.

SPECIFICATION forming part of Letters Patent No. 424,791, dated April 1, 1890.

Application filed October 16, 1889. Serial No. 327,189. (No model.)

To all whom it may concern:

Be it known that we, THEODORE F. JUDD and CHARLES A. MALLORY, citizens of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Apparatus for Forming Nap-Bats; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to the manufacture of nap-bats for use in the manufacture of napped hats, and has for its object the production of a novel bat-forming frame adapted to be used in lieu of a cone in an ordinary hat-forming machine and without change of parts other than the substitution of our novel frame for the cone.

In the manufacture of napped hats the bodies are formed upon a cone in the usual manner and then sized and stiffened. The fur from which the nap is formed is of a very much finer quality than that used in making the bodies. The fur for the nap is mixed with more or less cotton, ordinarily about ten per cent. and formed into suitable bats or strips. Pieces of the bat are laid upon the portions of the body where it is desired to raise the nap and are sprinkled with water and pounded gently with a brush to cause the bat to adhere to the body. The bodies are then scalded to cause the pelt ends of the fur fibers to adhere to the body and become firmly attached thereto, leaving the outer ends loose to form a nap. After scalding, the bodies, with the pieces of the nap-bat upon them, are subjected to an operation called "beating up" the nap, which removes all the cotton and completes the operation of napping. It will of course be apparent that the fur of the nap-bats is in a very loose and fluffy condition, and that in order to form an even nap upon a hat-body it is necessary that the bats should be formed of uniform size and thickness, so as to produce an even napped surface upon the hat-bodies, and that the bats should be handled with great care during the various steps until they are firmly attached to the bodies. It will be apparent, therefore, that nap-bats, to be applied neatly, must be perfectly flat, of uniform size, and by no

means of large size, so that as a matter of fact it is not practicable to form nap-bats upon cones such as are used in forming the bodies.

Heretofore nap-bats have been formed in various ways, originally by an operation known as "bowing." This was a slow and expensive operation and added greatly to the cost of napped hats owing to the amount of time required in forming the bats, and also to the great difficulty of forming the bats of uniform thickness. Various hand devices have also been devised for forming nap-bats. None of these, however, so far as we are aware, have been satisfactory in use owing to the amount of time required in forming the bats and to the fact that it was practically impossible to form the bats of uniform thickness. In order to overcome these objections and enable us to produce nap-bats of perfectly uniform thickness with great rapidity and at but slight expense, and, furthermore, to enable us to produce nap-bats made uniformly thinner at the edges, we have devised the novel bat-forming frame to be used in ordinary hat-forming machines, which we will now describe, referring by numbers to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a hat-forming machine, except that the rotating table, upon which the cone rests, and the mechanism for rotating it are omitted, as we find in practice that there is no necessity for rotating the frame. Fig. 2 is a cross-section on the line *xx* in Fig. 1. Figs. 3 and 4 are plan views of different styles of bat-forming frames detached, the changes, however, being in the details of construction and not affecting the principle of operation; Figs. 5 and 6, cross-sections, respectively, of the forms illustrated in Figs. 3 and 4; Fig. 7, a cross-section of one form of the frame on a greatly-enlarged scale, showing the manner in which the bat is formed upon the frame and the reduced thickness at the edges, and also the manner in which the bat is covered upon the frame when it is taken from the machine; and Figs. 8 and 9 illustrate the manner in which the bats are placed one above another on a table and hardened or felted sufficiently, so that they may be handled without difficulty in attaching them to the bodies.

1 denotes the casing of the forming-ma-

chine; 2, the apron carried by rollers 3; 4, the feed-rollers; 5, the picker-cylinder; 6, the exhaust-fan; 7, the door of the casing, and 8 a ledge within the casing, which is utilized as a support for the bat-forming frame. All of these parts, with the exception of the frame, may be of the ordinary or any preferred construction, our invention being applicable to any of the well-known hat-forming machines now in use. 9 denotes the bat-forming frame as a whole. This frame is ordinarily made of wood and is light and strong, although the special construction thereof is not of the essence of our invention. The frame is provided with a central opening 10, which is preferably either oval, as in Fig. 3, or rectangular, as in Fig. 4. Over this opening I place a perforated strip 11. This strip may be either a perforated metallic plate, as in Fig. 3, or a strip of wire-netting, as in Fig. 4.

In order that the pieces of bat may match together evenly and overlap slightly at the edges, but without producing ridges or uneven places in the nap after beating up, it is very desirable that the edges of the nap-bats should be made thinner than the central portion thereof, the thinning out of the edge, however, being uniform entirely around the bat, so that all will be alike. In order to produce this result, we place around the edge of opening 10, upon the under side of the frame, a shoulder 12, all portions of the outer edge of said shoulder being of course equally distant from the edge of the opening. This shoulder may be a strip of metal secured to the under side of the frame, as shown in Figs. 1, 5, and 7; or the lower edge of opening 10 may be beveled downward and inward, as in Fig. 6, the shoulder in this instance being of wood and formed integral with the parts of the frame; or, if preferred, strips of wood may be secured thereto. The effect of shoulder 12 is to lessen the suction around the edge of opening 10, so that, while all portions of the bat formed within the shoulder will be of equal thickness from the line of the shoulder outward all around the bat, the thickness of the bat will taper outward uniformly to the edge, substantially as indicated in Fig. 7.

The operation of forming the nap-bats is as follows: The frame is placed upon the ledge, as shown in Fig. 1, and the door closed in the same manner as when forming hat-bodies, the only difference being that in forming hat-bodies the cone is placed upon the rotating table; but in forming nap-bats I prefer not to rotate the frame. A sufficient quantity of mixed fur and cotton to form each bat is weighed out and placed upon the apron, from which it is picked up by the feed-rollers and fed to the picker-cylinder, which picks it up thoroughly, so that it falls upon the frame in a light and fluffy condition. As soon as the amount of fur and cotton weighed out for the bat has passed the picker-cylinder and been drawn down upon the frame by the suction-fan the

same as in forming hat-bodies, the door is opened and a hardening skin or cover of any suitable material (denoted by 13) is placed over the bat upon the frame, as clearly indicated in Fig. 7. The frame, with the bat upon it, is then carried to a suitable table, where the bats are deposited one above another, as shown in Fig. 8, sheets of tissue-paper being placed between the bats. In piling up the bats the operator removes the hardening skin and with a quick motion turns the frame with the bat upon it, so as to deposit the newly-formed bat upon the pile. In practice I preferably use two or more frames at the same time, and preferably place three operators at the machine—one to feed the mixed fur and cotton to the machine and two to insert and remove the frames—place the hardened skin over the newly-formed bats, and pile the bats one above another on the table with sheets of tissue-paper between them.

In the drawings, the bats are denoted by 14, the table by 15, and the sheets of tissue-paper by 16. In practice a number of these bats—ordinarily two dozen—are placed upon the table, as shown in Fig. 8. A top board 17 is placed over the pile, and weights 18 are placed upon the top board. The operator then places his fingers upon the top board, and by means of gentle pressure and a vibratory motion imparted to the top board quickly hardens and felts the pile of bats until they are made sufficiently compact, so that they may be handled without difficulty. In practice a pile containing two dozen bats as formed upon the machine will be about eight inches high. The operation of hardening—that is, the vibratory or jiggering motion of the top board—requires but a few seconds and quickly reduces the height of the pile to about two inches.

Having thus described our invention, we claim—

1. A frame for making nap-bats having an opening through it, a perforated strip over the opening, and on the under side of the frame and around the edge of the opening a shoulder 12, whereby in use in a hat-forming machine the suction around the edge of the opening is lessened, so that the edges of the completed bats will diminish uniformly in thickness.

2. The combination, with a bat-forming machine of ordinary construction having a ledge 8, of a frame 9 of proper size to rest on said ledge, said frame having an opening, a perforated strip over said opening, and on the under side of said frame an inwardly-projecting shoulder, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

THEODORE F. JUDD.
CHARLES A. MALLORY.

Witnesses:
E. A. MALLORY,
CHAS. RIDER.