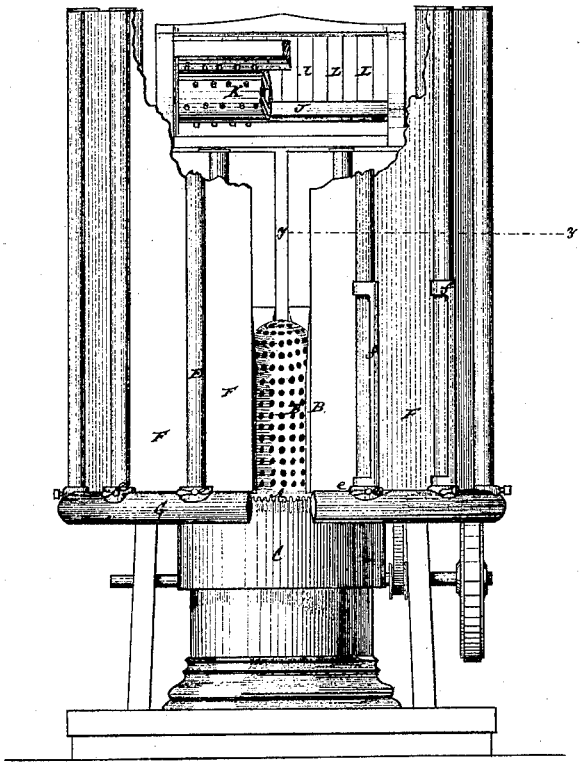
2 Sheets. Sheet. 1.

I. Nutt,

Forming Bats.

No. 108175. Patented. Oct. 11. 1870.

Fig. 1



WITNESSES.

Fred. Haynes

Arthur Kinnes

Inventor.

Josiah Nutt

2 Sheets. Sheet 2.

I. Nutt.

Forming Bats.

No. 108,175. Patented. Oct. 11. 1870.

FIG. 2.

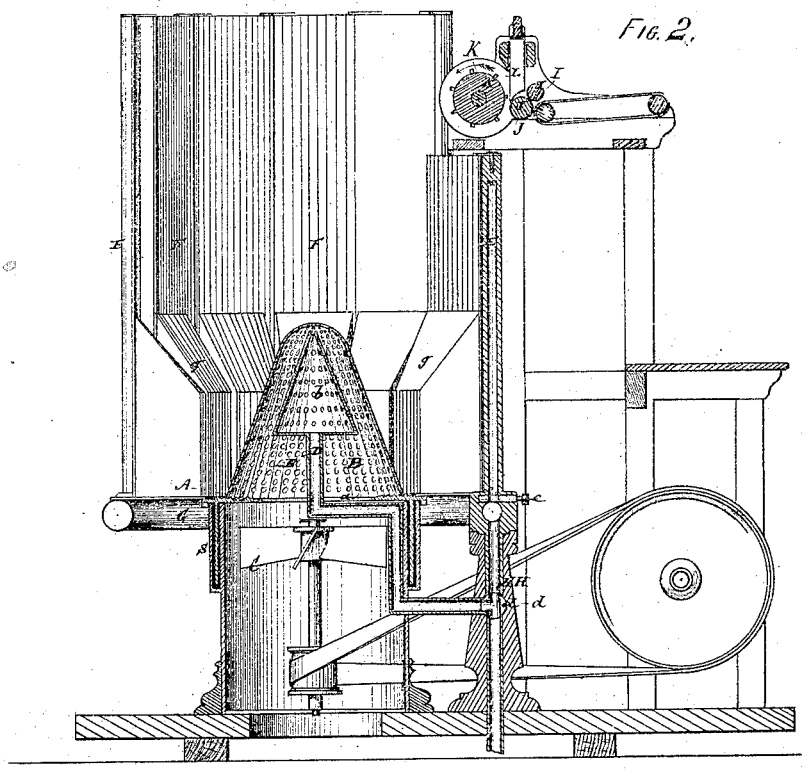
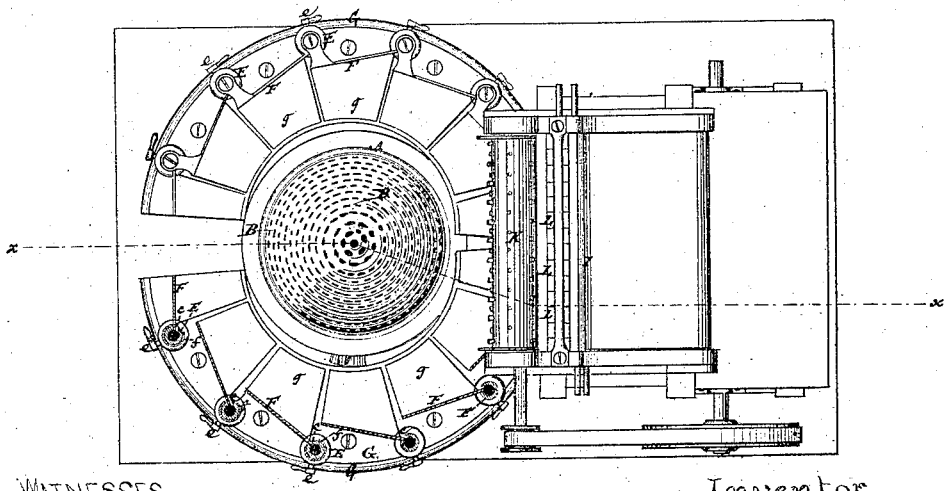


FIG. 3.



WITNESSES.

Fred: Haynes

Arthur Kinnier

Inventor.

Josiah Nutt

UNITED STATES PATENT OFFICE.

ISAIAH NUTT, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF, JOHN WHARTON, AND ABRAHAM C. WHEATON, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR FORMING HAT-BODIES.

Specification forming part of Letters Patent No. **108,175**, dated October 11, 1870.

To all whom it may concern:

Be it known that I, ISAIAH NUTT, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Machines for Forming Hat-Bodies, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making a part of this specification, and in which—

Figure 1 represents a partly-broken front view of a machine for forming hat-bodies, constructed in accordance with my invention; Fig. 2, a vertical section thereof, taken as indicated by the line *x x* in Fig. 3, which is a partly-sectional plan, the section being taken through the one half or portion of the machine, as indicated by the line *y y* in Fig. 1.

Similar letters of reference indicate corresponding parts.

In my improved machine I dispense with a trunk or intermediate structure for conveying the fur or other material from the picker to the cone, and introduce the material direct from the picker over the cone, which latter is arranged within blast-pipes and wind-guides of an open and adjustable character, for the purpose of effecting a more perfect distribution of the material in its way to or over the cone, and to adapt the machine to different-sized cones. Furthermore, I provide for the thickening of the body toward that portion which forms the brim of the hat, by introducing a blast within the upper portion of the cone, for operation in concert with a suction or exhaust current within the lower portion thereof.

The invention also includes a peculiar construction of the picker, or combination, with the picker-cylinder and feed-rollers, of a sectional picker shell or back, operating to secure a closer and more perfect action of the picker, and automatically preventing the passage of "dags" or lumps from the picker to the cone, whereby that loss by imperfect hats consequent upon the introduction of "dags" or thick substances, so common in other machines, is prevented.

Referring to the accompanying drawing, A represents the revolving cone-table, which is provided with a lower edge or ring, arranged to fit freely within a water-trough, S, to make a perfect joint, and prevent the fur or other material from being drawn or passing, by the action of the operating current or currents, below the table or into the fan by which the necessary exhaust-current is produced. Said cone-table is driven by any suitable means, and provided with a central opening, *a*, for establishing within the perforated cone B the necessary suction or exhaust current to draw the material onto the cone. This exhaust-current may be established by a fan, C, below, and the table A be suitably formed or constructed on its face to accommodate different-sized cones.

Projecting up through the table A, to a greater or lesser distance above its face, and within the cone, is a blast-pipe, D, provided with a perforated distributer, *b*, arranged to distribute a forced blast or current of air within the upper portion of the cone, and which operates in an antagonistic manner to the exhaust-current, as produced by the fan C, so far, at least, as the upper portion of the cone is concerned. This forced blast or current of air it is preferred to derive from an adjacent heated chamber or space by any suitable fan or blower; but no restriction is placed either upon the arrangement, number, or description of the apparatus or devices used to maintain either the exhaust or blast current.

In the operation of the machine, the exhaust-current, introduced as usual within the cone at its base end, draws the fur or material toward the surface of the cone; but the introduction of the blast as a counteracting current in the upper portion of the cone has a neutralizing action upon such upper surface, which causes the body as formed upon the cone to be thickened toward that portion which forms the brim of the hat, where more strength and body are required. Such combined action, however, of exhaust and blast currents makes it desirable to employ wind-currents outside of the cone, to direct the fur or other material onto it, in support of the exhaust-current within the cone at its base, and in opposition to the blast within the upper portion of the cone. This is attained and a more perfect distribution of the material on the cone produced by means of wind pipes and guides, as specified, the same

being composed of upright blast-pipes E, having longitudinal slots *c* in them, and wind-guides F. These blast-pipes and wind-guides may be arranged in any desired number, or at any desired angle and distance apart, so as to form a working space around the cone, and are made in sections, so as to open and close, to adapt the machine to different-sized cones, increasing or diminishing the space between them accordingly as a large or small cone B is being used. For this purpose said wind-pipes and wind-guides may be made in two sections or halves, pivoted in the rear and opening in front, as clearly shown in Fig. 3.

The upright blast-pipes E are connected with horizontal pipes G, which, in their turn, connect with a hollow pedestal or pipe, H, through which the blast, under the control of a valve, *d*, is supplied to the pipes E, each of which is furnished with a valve, *e*, to open or close and regulate the discharge from it separately or from any number of the pipes, as circumstances may require, and the slots *c* should have adjustable sliding sleeves or valves *f*, to close or open them either above or below, so that the wind, when required, may be restricted as regards its discharge from the tubes, either to the upper or lower portions thereof, in order to secure an equal distribution of the fur or material to the cone. These several adjustments, too, as regards the blast, provide for working material of different weights. The wind-guides F may be of glass or any other suitable material, but preferably glass, and be made with or without a swell or step, *g*, where they approach the cone.

The material is introduced between feed-rollers I and J to a picker, K, arranged over or within the rear portion of the blast-pipes E and guides F, so as to feed directly on the cone. The fur or other material thus entered is carried in any desired direction, and so acted upon or worked about by the wind from the blast-pipes E as to fall in a most evenly-distributed manner onto the cone. Likewise the blast, as issuing from the pipes E at the base, aids to lay the material on the cone, when the effect of the exhaust-current is so weakened by the filling of the cone or thickening of the body as to be of little or no account.

Arranged in rear or on the feed side of the picker-cylinder K, in close proximity to its teeth, and resting on the lower and larger feed-roller, J, which lies in advance of the upper feed-roller, I, is what may be termed a "sectional" shell or back, L, composed of independent bars or slides, that may either be borne down by their own weight, or any superincumbent weight or spring-pressure. This construction of the picker secures a close and fine separation of the material, and so that should a "dag" or lump pass between the feed-rollers, it would be restricted to a limited or narrow exposure of the picker-cylinder surface by passing under only a single section of the shell L, and, by the close working of the picker-cylinder's teeth to said shell, would be torn or separated into fine particles, thereby preventing an imperfect hat-body being formed, and so doing away with that loss consequent on imperfect hats which is so common in other machines by the lodgment of dags or lumps on the cone.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination, with the cone, of an exhaust apparatus and a blast apparatus, the latter introducing a forced current of air within its upper part of the cone, and the former producing an exhaust-current within the base or lower portion thereof, substantially as and for the purpose herein specified.

2. The arrangement around the cone or cone-table of upright and perforated or slotted blast-pipes E and wind-guides F, essentially as described.

3. The blast-pipes E and wind-guides F, constructed in sections, so as to be capable of opening and closing for the purpose of increasing or diminishing the space formed by said pipes and guides to suit various-sized cones, substantially as herein set forth.

4. The combination of the upright blast-pipes E and wind-guides F with the exhaust-fan C, blast-pipe D, and cone-table A, essentially as shown and described.

5. The combination of the water-trough S with the cone-table A, constructed to form a water-joint, substantially as and for the purpose herein set forth.

6. The combination of the sectional shell or back L with the picker-cylinder K and feed-rollers I and J, substantially as specified.

ISAIAH NUTT.

Witnesses:

FRED. HAYNES,

ARTHUR KINNIER.