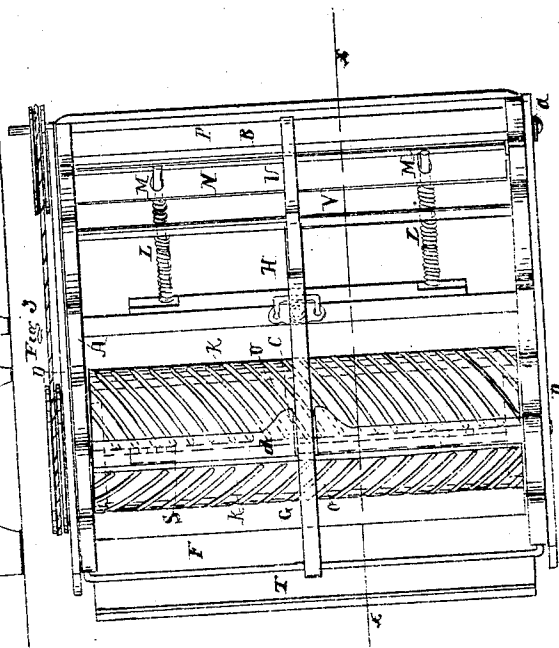
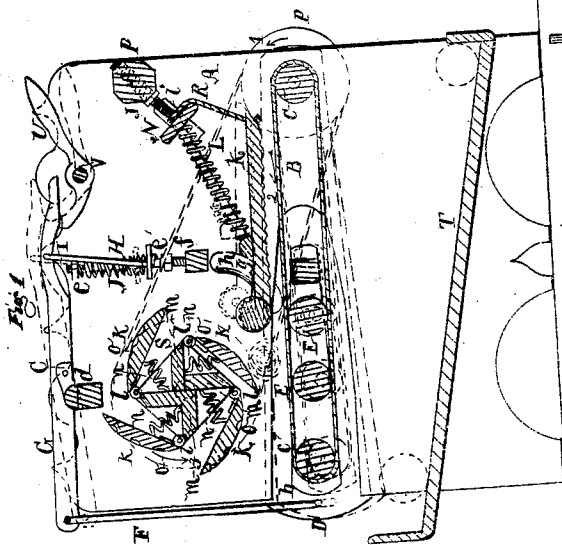
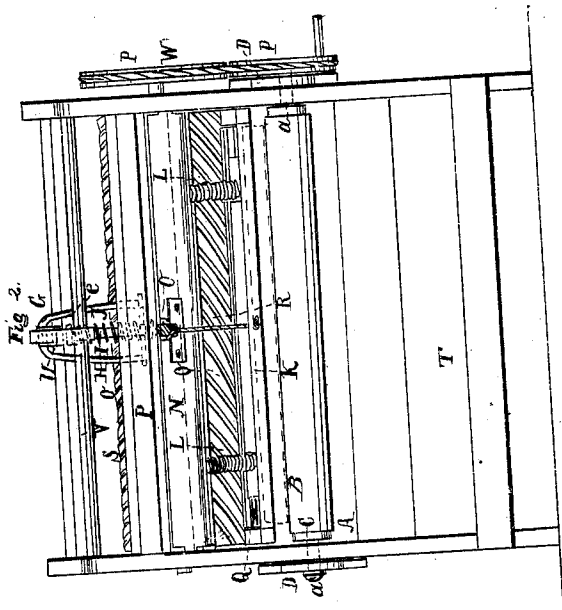


W. H. Hoyt.
Felting Machine.

Patented April 15, 1862.

No. 34,963.



Witnesses.

J. W. Coombs
J. W. Reed

Inventor.

W. H. Hoyt
per Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. HOYT, OF BETHEL, CONNECTICUT.

IMPROVEMENT IN APPARATUS FOR FELTING HATS.

Specification forming part of Letters Patent No. 34,963, dated April 15, 1892.

To all whom it may concern:

Be it known that I, William H. HOYT, of Bethel, in the county of Fairfield and State of Connecticut, have invented a new and Improved Hat Felting and Sizing Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *xx*, Fig. 3. Fig. 2 is a front elevation of the same. Fig. 3 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of an adjustable endless apron, feeding-plate, and a rotary pressing or rubbing cylinder, placed within a suitable box or case and arranged substantially as hereinafter fully shown and described, whereby hat-bodies may be felted and shrunk to the desired dimensions in a very perfect manner and with but trifling labor on the part of the attendant.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a rectangular box or case which contains the working parts of the machine, and B is an endless apron within said box or case and passing over rollers C C', the roller C being at the front part of the case and the roller C' at its back part. The roller C has its journals *a* fitted in the sides of the case; but the roller C' has its bearing fitted in arms D D, which are placed one at each side of the case and have their back ends fitted on the journals *a a* of roller C. (See Fig. 2.) This arrangement admits of the arms D D swinging or working on the journals *a a*, and an up-and-down adjustment is consequently allowed the apron B, a slot *b* being made in each side of the case for the roller C' to rise and fall in, as well as rollers E E, which serve as intermediate bearings or supports for the apron, and which have their journals also in the arms D D. The apron B is held in proper position by a curved rod or bar F, the lower ends of which are attached to the arms D D, near their back ends, and has its upper part passing through a lever G on the top of the case, the fulcrum *c* of said lever being on a

cross-bar *d* and the back end of the lever connected to a yoke H, which is fitted on a vertical guide I, on which a spiral spring, J, is placed, to act upon the yoke and sustain the lever and apron. This will be fully understood by referring to Fig. 1. The upper end of the guide-rod I has a nut *e* upon it, to serve as a bearing for the upper end of spring J and for regulating the pressure of the same. On the guide-rod I there is placed a spiral spring *e'*, on which the yoke H rests. This spring *e'* rests on a nut *f*, by which the position of spring *e'* may be regulated—that is to say, raised or lowered on I, as desired.

K is a board or plate, of rectangular form and fitted in the case A at its front part, directly over the apron B. The under surface of the plate is corrugated or fluted longitudinally, and it extends the whole width of the case. The inner part of the plate K has rollers *g g* attached to it, one at each side, and these rollers are fitted in curved inclined slots *h h* at the inner sides of case A. (See Fig. 1.)

L L are spiral springs, which are placed on inclined rods M M, attached to the plate K, near its back part, and having their upper ends pass through a horizontal bar N, the ends of which are provided with tenons that are fitted in inclined slots *i i* in the inner sides of the case, as shown in Fig. 1. The bar N has a screw O attached to it at its center, and this screw has a nut *j* upon it. The outer part of the screw O fits in a hole at the center of a cross-bar P, at the front end of the case. The outer ends of the springs L L bear against the bar N, and the nut *j* of the screw O, in consequence of bearing against the cross-bar P, serves to brace bar N. By adjusting nut *j* the pressure of the springs L L may be regulated as desired, and said springs have a tendency to keep the rollers *g g* at the lower ends of the slots *h h*, and consequently the inner part of plate K depressed to its fullest extent, as will be understood by referring to Fig. 1. To the inner end of the plate K there is attached a fluted roller Q, which extends nearly or quite the whole length of said plate, and the outer end of the plate is sustained by a spring R from bar P.

S represents what may be termed a "rubbing-cylinder" or "rotary rubber," which is formed of a series of segment-plates *k*, at-

tached at one end by hinges *l* to flanges *m m*, the journals of the shaft of which are fitted in the sides of the case A. Each plate *k* has a spiral spring *n*, bearing against its inner side, and these springs have a tendency to keep the segment-plates *k* pressed outward from the flanges *m* to their fullest extent. The outer surfaces of the segment-plates *k* are grooved obliquely, as shown at *o* in Fig. 3, each plate having its grooves *o* in a reverse direction to those of its adjoining plates. In the case A, directly underneath the apron B, there is placed an inclined board or chute T, said board or chute being inclined downward from the back to the front end of the case, as shown clearly in Fig. 1.

The rubbing-cylinder or rotary rubber, as well as the board or plate K and case A, are of wood. The endless apron B may be of any suitable textile or other fabric.

U is a lever, which is placed on a shaft V in the case A, and projects underneath the lever G; and W is a band, which passes around pulleys *p p*, placed, respectively, on one of the journals *a* of the roller C of apron B, and on one end of the shaft of the rotary rubber S.

The operation is as follows: The hat-body to be operated upon is rolled in a cloth, as usual, the body being saturated with hot water. Motion is given to the roller C in the direction indicated by the arrow 1, and the rolled hat-body is inserted between the apron B and the outer end of plate K. The apron B moves in the direction indicated by arrow 2, and the plate K serves as a feeder by pressing the roll down on the apron and enabling the latter to carry it along underneath the plate, and the plate also serves to complete the rolling of the body within its cloth if such operation had not been completed prior to its insertion between the apron and plate. The rolled hat-body is thus conveyed underneath the rubbing-cylinder or rotary rubber S, and is kept in contact with the latter in consequence of the spring J acting upon it through the medium of the yoke H, lever G, and rod F. While the rolled hat-body is in this position, to wit—underneath the rubbing-cylinder or rotary rubber—the latter by its rotation (the direction of which is indicated by arrow 3) acts upon it, the plates *k* subjecting it to a necessary degree of rubbing and friction, which is imparted to it intermittingly, there being a cessation of pressure from the time one plate leaves it until the adjoining

one comes in contact with it. The oblique grooves *o* in the faces of the plates *k* give a lateral pressure to the hat-body both to the right and left, and aid greatly the felting operation. This intermittent pressure closely resembles the ordinary hand-pressure, and also greatly facilitates the felting of the hat-body. The hat-body while being thus acted upon by S is rotated on the apron B directly over the rollers E E, which serve to support the apron, while the roller Q prevents the hat-body being forced back underneath K, the springs L L resisting the backward pressure of the hat-body, and also keeping the plate K down on the hat-body while the latter is being fed to or underneath the rubbing-cylinder or rotary rubber. When the hat-body has been sufficiently acted upon, the operator depresses the outer end of lever U, and thereby actuates lever G and forces down the back end of apron B, so that the hat-body may roll from the apron B and drop on the upper end of the inclined board T, which conducts it to the front part of the case, as shown in red, Fig. 1, from which it is taken by the operator, unrolled, and rolled up in a reverse direction and again passed through the machine, the operation being repeated until the hat-body is thoroughly felted and brought to the proper or desired size.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The adjustable endless apron B, and pressure or feeding plate K with or without roller Q, in connection with a rubbing-cylinder or rotary rubber S, arranged for joint operation, substantially as and for the purpose set forth.

2. The peculiar construction of the rubbing-cylinder or rotary rubber S, as herein shown and described—to wit, having plates *k*, of segment form, hinged to flanges *m* or their equivalents on a rotary shaft and acted upon by springs *n*, in order to give the necessary pressure intermittingly to the hat-body, as set forth.

3. The combination of the inclined board or chute T with the adjustable apron B, rubbing-cylinder or rotary rubber S, and pressure or feeding plate K, as and for the purpose specified.

WM. H. HOYT.

Witnesses:

SAMUEL A. COUCH,
ANDREW L. BENEDICT.