

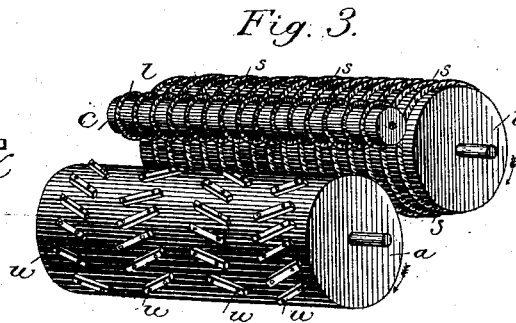
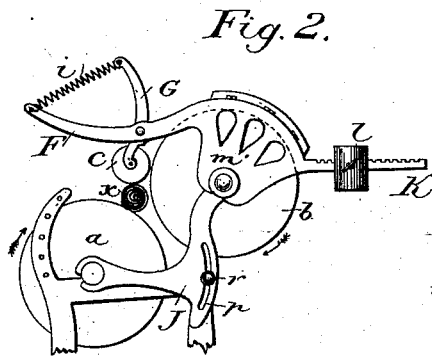
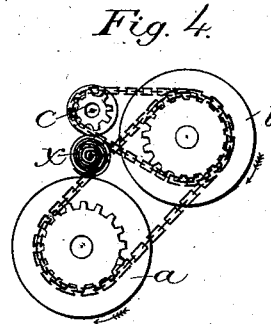
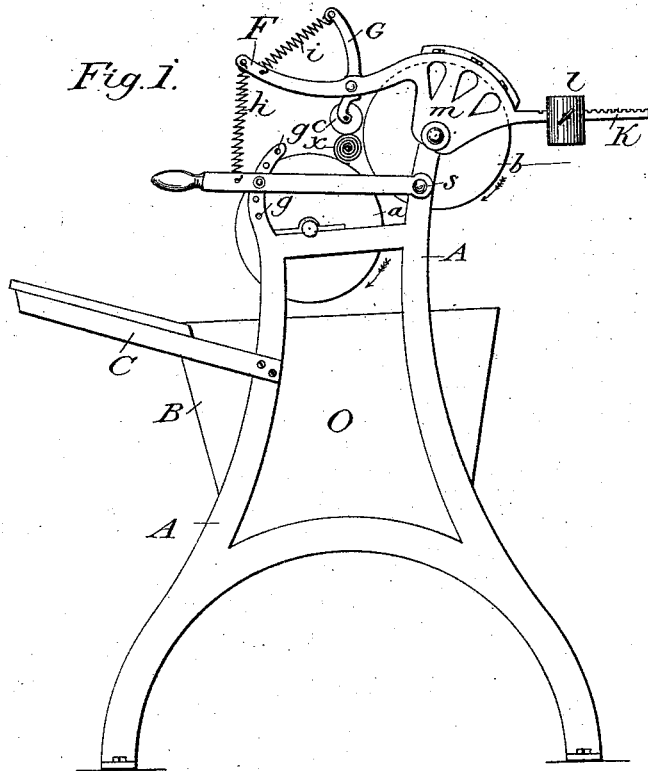
(No Model.)

J. S. TAYLOR.

MACHINERY FOR SCALDING AND FELTING HAT BODIES.

No. 302,055.

Patented July 15, 1884.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MACHINERY FOR SCALDING AND FELTING HAT-BODIES.

SPECIFICATION forming part of Letters Patent No. 302,055, dated July 15, 1884.

Application filed October 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. TAYLOR, of Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machinery for Scalding and Felting Hat-Bodies; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to scalding and felting machines for hats and other feltable fabrics; and it consists, mainly, in certain improvements, hereinafter specified, in a hat felting or sizing machine for which Letters Patent were granted to me in the United States Patent Office June 26, 1883, and officially numbered 280,095. In said patented machine were described two rollers revolving in stationary bearings, and a third upper roller supported in bearings in a pivoted yoke, so held by a spring in the rear that it exerted less than its normal weight on the roll of material to be felted, the degree of pressure on said material being controlled by a foot-lever and suitable connections.

The object of my present invention is to render the machine during its operation more easily controlled by the operator, and to secure a more uniform felting action on the roll of felting material while in the working-chamber of the machine.

To this end the invention consists, first, in means for adjusting one roller out of line with the other two, so as to cause more or less longitudinal motion to the roll of felting material at different points of the felting-chamber; second, in providing the rolls with certain new surface irregularities, hereinafter specified and claimed, so as to secure a better action upon the roll or bundle of felting material than has heretofore been accomplished; third, in adjusting the small worker or third co-operating felting-roller so that its action on the material during the operation of the machine will be more easily under the control of the operator; fourth, in certain details of construction and organization, hereinafter described in the specification, and pointed out in the claims.

In the drawings accompanying this specification, Figure 1 is a side elevation of a machine embodying my improvement. Fig. 2 is a similar view, its front portion being removed and the position of the rollers indicated. Fig. 3 illustrates the construction of the rollers. Fig. 4 is a detail view illustrating one way of gearing the rollers.

In suitable bearings upon the frame A A of the machine are mounted two rollers, *a b*, the latter being placed partially above and back of the former, with a suitable large space between them. These rollers may be made of any suitable material, but are preferably constructed of wood. They may be either of a plane-like surface or both concave, or one concave and the other convex in contour. The lower roller, *a*, is mounted in fixed bearings. The end of the upper roller, *b*, (shown in Fig. 1,) is supported in a fixed bearing, but is capable of a slight movement to allow for the adjustment of this roller at the other end, as will presently be explained.

Supported on the axis of the roller *b*, or pivoted concentrically therewith, is a yoke provided with arms F F, extending forward and connected with a hand-lever, D, and frame connected therewith by suitable springs, *h h*. Swinging on bearings in the arms F F of this pivoted yoke is a frame, G G, carrying a small roller or worker, *c*. This worker is held elastically against the roll of goods by springs I I. The roller *b* is wound with some suitable material. I find hempen rope well suited for this purpose, though some more yielding or elastic substance may be used—such as rubber—or a harder substance—as lead or copper—instead; or a spiral groove may be cut in the face of the roller. I preferably use a rope, as above stated, which is wound with its successive convolutions a slight distance apart. The worker *c* is wound in a similar manner, although it is not in most cases necessary.

Upon the surface of the roller *a* are secured lugs *w w w*, of any suitable material—as wood, metal, or rubber—placed nearly or quite parallel with the axes of said roller. The rollers *a b* are driven by gearing, such as shown in Fig. 4, that will permit of the adjustment of the roller *b*, though such a mode of communicating motion as described in my Patent No. 280,095 might be used. The worker *c* derives

its motion from either of the other rollers, as shown in Fig. 4. I prefer, however, for certain purposes to have it receive its motion from the turning of the roll or bundle of felting material upon which it rests or presses. The roller *b* may be set out of parallel with the other rollers by a device shown in Fig. 2. A hinged arm, *J*, which is bent and provided with a slot, *p*, supports one end of roller *b*. The other extremity of this bent arm is pivoted preferably concentrically with roller *a*. Adjustment is secured by loosening a set-screw, *r*, changing the roller *b*, and then tightening the screw until the roller is fixed in its desired position. The top yoke, *m'*, supporting the idler or supplemental roller *c*, is balanced or centered at a point on the line of the center of the back roller, *b*, for the purpose of keeping the two rollers *b c* at an equal distance apart in any position the said supplemental roller may be while in the act of felting the goods—a feature very essential, and not shown in my Patent No. 280,095.

To facilitate the entrance of the roll of goods into the chamber I place projections or lags on the surface of the roller *a*, in a line nearly or quite in a line of the longitudinal center thereof, so as to present a broken or uneven surface in the line of the circumference of said roller, the said broken or uneven surface being requisite to force the roll of goods into the chamber as it is placed into the receiving-space, and without which the roller *a* would slip and the goods be not drawn into the working-chamber, especially when any amount of pressure is applied to the roller *c*.

In order that the rollers *b* and *c* may present the least resistance to the revolving motion to the roll of goods to be felted, I place the surface of the projections or coils on said rollers nearly or quite smooth in the circular direction thereof, as shown in Fig. 3, the relative relation of the rollers with the corresponding surfaces or projections thereon being a special feature of this invention.

In order to adjust the supplemental roller *c* in any desired position, so as to exert the requisite pressure on the roll of goods to be felted, I attach the lever *D*, having its fulcrum at *S*, and connected to the arm *F* by means of the connection *h*, sustained in any desired position by means of a pin attached to said lever, and entering holes at *g g*, formed in the upright of the frame of the machine, as shown in Fig. 1. An elastic or spring force is applied to the side of the lever *D*, in order that the same may be with the least resistance thrown out or into the connections formed by the pins and holes *g g*, also for the purpose of keeping the said arm and pins firmly inserted in said holes until it becomes necessary to change it. The weight *l* is used as a counterpoise to the roller *c*, so as to cause it to exert less than its weight on the material to be felted and counterbalanced by the power applied to the lever *D*, as above described. A tub or kettle, *O*, for holding scalding water, is placed nearly or quite

under the series of rollers, for the purpose of saturating the goods with scalding-water in the process of felting the same.

The operation of my machine is as follows: The roll of felting material, which may be hat-bodies or other fabrics, which is to be scalded and felted is first saturated in scalding water by immersion, as occasion may require, in the water contained in the tank supported in the lower part of the frame and heated by means of the steam-pipe *O*. The material is then rolled or manipulated by the operator upon the plank *C*, rolled in a bundle, and inclosed in a cloth and placed in the machine between the rollers *a* and *c*, the lever *D* being loosened or raised to allow the easy insertion of the roll of goods while in the raw or tender stage of its fibers. The lever *D* is then secured in a position yielding the required pressure by inserting the pin in a lower or higher hole, *g g*, as the pressure is to be greater or less. Motion is to be imparted from any suitable source to a pulley on roller *a*, (not shown,) the rollers *a b* moving in the relative direction indicated by the arrows. The worker *e* will exert a yielding pressure upon the roll of goods to be scalded and hardened, which is great or little, according to the adjustment of the lever *D*. The roll of material may be given a longitudinal traveling movement by reason of the roller *b* being placed out of line, and will finally reach one end of the machine, where it will be automatically discharged, an opening sufficiently large for the purpose being left at one end.

I find the surface form of the rollers *a b*, Fig. 3, to suit better in practice than rollers of any other surface, the combination shown at *a b*, Fig. 3, being particularly well adapted to a speedy and safe felting operation.

The roll of goods is drawn into the machine by means of the projections on the roller *a*, while the smooth surface of the convolutions on roller *b* force the roll of goods against the worker *e*, and thus prevent the roll of material from being choked in between rollers *b* and *c*, which would be the result were the surface of either or both of the rollers *b* and *c* covered with a surface having projecting lays, as in roller *a*.

I do not claim herein a felting-machine with rollers having protuberances upon their surface, nor do I claim a felting-roller provided with a spiral or circular groove or effect, as all these features individually are old; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hat scalding and felting machine, the combination of the supplemental ungeared roller with a spirally grooved or wound roller and one or more rollers having protuberances in a parallel direction thereon, in the order named, and for the purpose specified.

2. In a scalding and felting machine, the combination of two or more rollers revolving in fixed bearings with a roller adapted to be thrown out of line therewith by shifting the

position of one end thereof, substantially as described.

3. In a scalding and felting machine, means for securing the automatic discharge of the
5 roll of felting material, consisting of a roller adapted to be thrown out of line with the other rollers forming the felting-chamber, thus securing a longitudinal movement to the material, and a space at the discharging end of the
10 chamber through which said material may pass, substantially as described.

4. In a scalding and felting machine, the combination of a roller in fixed bearings, a second roller adapted to be thrown out of line
15 with the first, and a third roller forming a felting-chamber with the other two, and adjusted in bearings, so as to exert a yielding combined vertical and lateral pressure, substantially as set forth.

20 5. In a scalding and felting machine, the combination of the two lower rollers with a third upper roller pivoted in a frame, substantially as shown, having bearings in a hinged yoke, said upper roller being held by

an elastic vertical and lateral pressure by 25 means of the springs and their connections, as set forth.

6. In a scalding and felting machine, in combination with the balanced yoke supporting the supplemental roller or worker, the application of the hand-lever with its projecting
30 pin for sustaining the increased or decreased pressure on the roll of goods, substantially as described.

7. In a scalding and felting machine, the
35 balanced yoke supporting the supplemental worker or roller, having its center bearing-point on or near the center of one of the other rollers of the machine, substantially as described.
40

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES S. TAYLOR.

Witnesses:

W. J. TAYLOR,
LUMAN L. HUBBELL.