(No Model.)

J. S. TAYLOR.

HAT SIZING MACHINE.

No. 393,866. Patented Dec. 4, 1888.

Fig. 1.

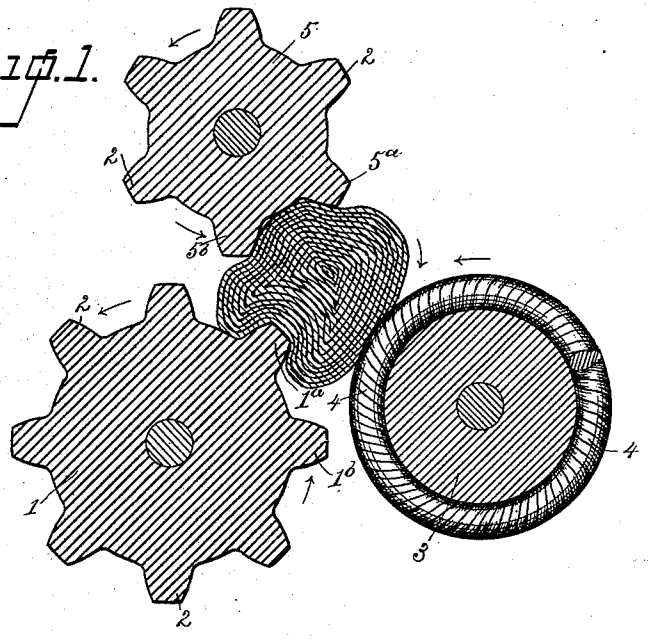
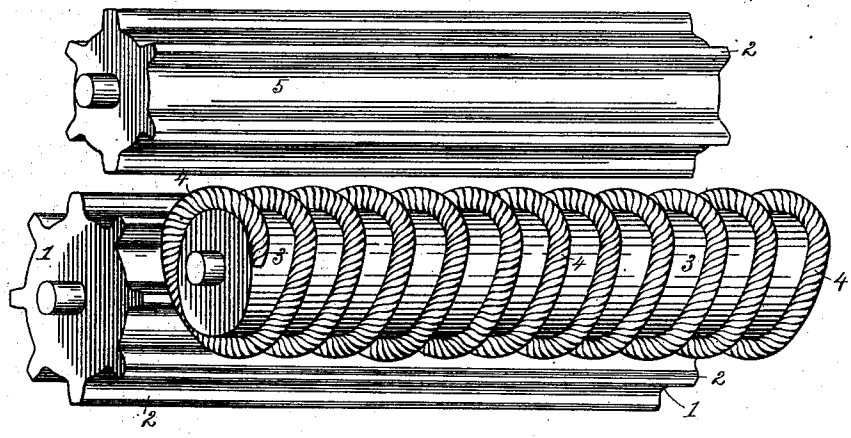


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES S. TAYLOR, OF DANBURY, CONNECTICUT.

HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 393,866, dated December 4, 1888.

Application filed May 22, 1888. Serial No. 274,719. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. TAYLOR, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat-Sizing Machines; and I 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.

My invention relates to machines for scalding, sizing, and felting hat-bodies, and is an improvement upon the machine illustrated and described in my former patent, No. 263,075, dated August 22, 1882, the object of my present invention being to greatly improve the operation of this class of machines by a special construction and combination of rollers—in other words, to give to the bundle or roll of hat-bodies a positive rolling, squeezing, pulling, and felting action, and at the same time to retain the hot water with which the bundle is at all times saturated. This result is accomplished by the action of the rollers constructed and arranged in the manner I will now describe in a much more perfect and satisfactory manner than has heretofore been possible.

In the accompanying drawings, forming part of this specification, Figure 1 is a section of the three rollers in use, showing the manner in which the felting action is performed upon a bundle of hat-bodies; and Fig. 2 is a perspective of the three rollers detached, illustrating their position in use.

The usual or any preferred frame-work and gearing may be employed. As my present construction relates to the rollers only, I have simply illustrated the rollers in the drawings.

1 denotes a roller having longitudinal projections 2; 3, a roller having diagonal or annular projections 4—for example, a rope from three-quarters to one inch in diameter wound spirally around it; and 5 is an upper roller, also provided with longitudinal projections 2, which is vertically movable in the usual or any preferred manner.

I have shown roller 1 as provided with eight projections or lags and roller 5 as provided with six projections or lags. A definite number of projections or lags upon the rollers is not an essential feature of my invention. It is essential, however, that the diameter of said rollers and the number of projections thereon shall be so proportioned relatively to each other that in operation only two of the projections on either roller will act on the bundle of hat-bodies at the same time, a long radius of one roller having longitudinal projections acting at all times in connection with a short radius of the other roller having longitudinal projections. By the term "long radius" I mean a line drawn from the center of the roller to the top of one of the projections, and by the term "short radius" a line drawn from the center of the roller to the surface between the projections. It will, of course, be understood by those familiar with the art that these rollers act in connection with a tank of boiling water. (See, for example, my said former patent.)

In practice rollers 1 and 3 usually make about one hundred and twenty revolutions a minute. It will be apparent that roller 5 must be speeded proportionately, so that a long radius thereof will at all times be acting in connection with a short radius of roller 1. The projections upon roller 3 are preferably made of three-quarter-inch rope wound spirally, as shown, and placed about three inches apart. The hat-bodies are saturated with hot water, rolled in bundles and wrapped in a cloth in the usual manner, and then subjected to the action of the projections on the rollers for fifteen or twenty revolutions before being rerolled. In the operation of sizing, each bundle is taken out a number of times and the hats saturated with hot water and then rerolled and wrapped in the cloth.

The object of my present construction is to produce a squeezing, wringing, and working action upon the hat-bodies in the bundle while saturated with hot water, which shall be similar to the working by a skillful operator in the operation of sizing by hand. The rollers of course all rotate in the same direction, as indicated by arrows in the drawings. The action of the rope roller having spiral projections is to press the bundle of hat-bodies against the other rollers and to keep it rotating, the projections thereon acting to squeeze the water endwise in the bundle of bodies, and, the projections being arranged spirally,

it follows that the location of this endwise squeezing action is necessarily continually changing in the successive revolutions of the rollers and bundle of bodies.

The action of the two rollers having longitudinal projections is clearly shown in Fig. 1. As the rollers all rotate from right to left the bundle of hat-bodies must rotate from left to right. At the instant illustrated in Fig. 1 the principal operation of the longitudinal projections upon the bundle of hat-bodies is by the projection denoted by 1^a on roller 1. This projection acts as it rotates toward the left to force a portion of the bundle of bodies up between projections 5^a and 5^b on roller 5. An instant later the same action will be taking place upon another portion of the bundle of hat-bodies, and will be performed by projection 5^a upon the upper roller, which will act as projection 1^a is acting in Fig. 1 and squeeze a portion of the bundle of bodies in between projections 1^a and 1^b on roller 1, the action of said projections 1^a and 1^b being at that instant the same as projections 5^a and 5^b in Fig. 1. It will be seen that the squeezing action of the longitudinal projections on rollers 1 and 5 forces the water sidewise in the bundle of bodies, and the action of the annular or spiral projections on roller 3 is to squeeze it endwise, as already explained. There are thus two simultaneous squeezing and working actions in opposite directions upon the bundle of bodies. The bundle is rolled over and over and the squeezing and working motion in different directions is produced continuously upon it, the portions of the bundle acted upon being continuously changing.

By this special construction and combination of rollers I am enabled to produce an entirely different and a much better effect than has ever heretofore been produced in the sizing of hats by machinery.

Having thus described my invention, I claim—

In a machine of the class described, the combination, with a roller having annular or spiral projections thereon, of two rollers having longitudinal projections, said rollers with longitudinal projections being so proportioned relatively to each other that a long radius of one roller will act in connection with a short radius of the other roller having longitudinal projections, whereby in use continuous squeezing actions, both endwise and sidewise, are maintained upon constantly-changing portions of a bundle of hat-bodies, thereby retaining the water in the bundle.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES S. TAYLOR.

Witnesses:
W. H. HITCHCOCK,
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