

(No Model.)

2 Sheets—Sheet 1.

G. W. ELWELL & B. FAY.

HAT SIZING MACHINE.

No. 306,598.

Patented Oct. 14, 1884.

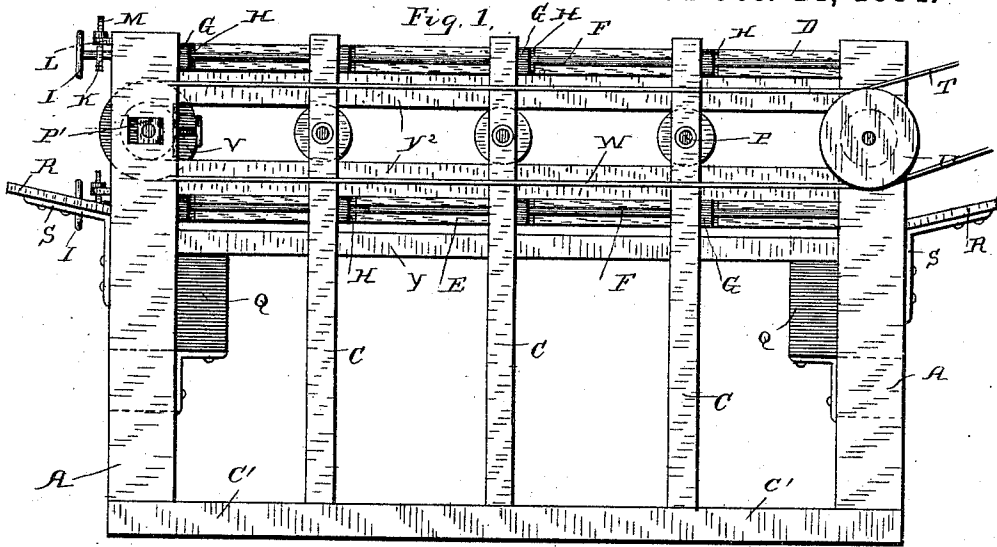


Fig. 4.

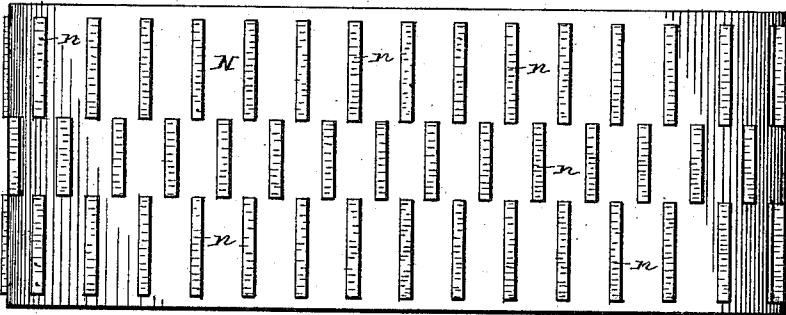
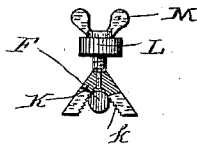


Fig. 5.



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Inventors,
 George W. Ellwell and
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 By A. M. Worcester
 atty.

(No Model.)

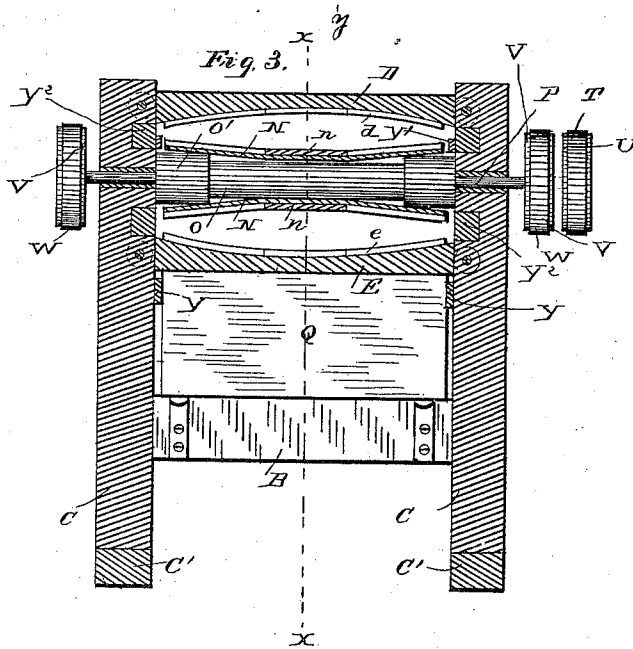
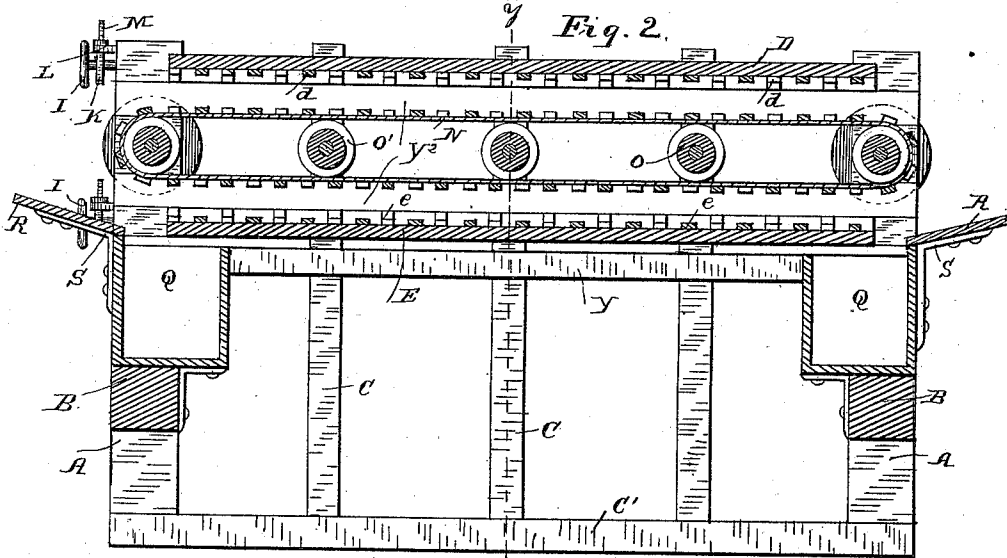
2 Sheets—Sheet 2.

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Witnesses.

O. A. Jones,
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Inventors.

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UNITED STATES PATENT OFFICE.

GEORGE W. ELWELL AND BERNARD FAY, OF DANBURY, CONNECTICUT.

HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 306,598, dated October 14, 1884.

Application filed June 6, 1884. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. ELWELL and BERNARD FAY, 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 Hat-Sizing Machines; 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 has for its object to so improve the construction of this class of machines as to greatly increase their capacity, while at the same time perfect evenness in the quality of work is insured. With this end in view we have devised the simple and novel construction which we will now proceed to describe, referring by letters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the entire machine, one of the side pulleys being removed; Fig. 2, a longitudinal section on the line *x x* in Fig. 3; Fig. 3, a transverse section on the line *y y* in Fig. 2; Fig. 4, a plan view of the endless apron, and Fig. 5 a detail of one of the clutches which hold the adjusting-rods.

Similar letters indicate like parts in all the figures.

A represents the corner posts, B end pieces, C side posts, and C' bottom pieces into which the side and end posts are mortised, the whole constituting the frame-work of the machine. This frame-work requires to be made solid, wood being preferably used, although metal may be substituted, if desired. The material or shape of this frame-work, however, forms no part of our present invention. D represents the roof, which is preferably made concave, as shown in Fig. 3, and is provided on its under side with two or more series of ribs or projections, *d*, secured thereto in any preferred order, as will be more fully hereinafter described.

E represents the bottom, having ribs or projections *e*. The shape of the bottom and the number, size, and shape of the ribs thereon are made to correspond in every respect with

the roof. Both bottom and roof are made adjustable toward or from each other. This adjustment may be accomplished in any convenient manner; but we preferably adjust both roof and bottom by means of shafts F, running the entire length of the machine. These shafts are provided at suitable distances apart with gears G, which mesh with racks H upon the edges of the roof and bottom. The shafts and gears are operated by hand-wheels I, and are held at any desired adjustment by clutches K, which are supported by lugs L. The clutches are provided with serrations *k*, and are arranged to straddle the adjusting-shafts.

M M are thumb-screws threaded to engage correspondingly-threaded openings in lugs L, and swiveled to the clutches, which are operated to hold or release the adjusting-shafts by a slight turn of the thumb-screws.

N is an endless apron, which is supported by a series of rolls, O, secured on shafts P, which are journaled in the side and corner posts of the machine. This apron may be constructed of rubber, leather, canvas, or any suitable material, and has secured upon its outer side series of ribs or projections corresponding with those upon the roof and bottom.

Neither the size, shape, number, nor arrangement of the ribs or projections upon the apron, and the roof and bottom, is of the essence of our invention, but may be varied to suit the judgment of the constructor.

In the drawings (see Fig. 4) we have shown three series of ribs upon the apron, the middle series being slightly shorter, and alternating between the two outside series. In other words, the arrangement of the ribs is in the form of steps diagonally across the apron. It is of course obvious that the ribs upon both bottom and roof should substantially correspond in arrangement with those upon the apron. (See Fig. 2.) Rolls O are provided at their ends with flanges O', which act to slightly tilt the opposite ends of the apron. (See Fig. 3.) We thus form two independent concave chambers—one between the top of the belt and the roof, the other between the under side of the belt and the bottom. We thus double the capacity of the machine, as the action on the bundle of hats is the same in both

chambers. In Fig. 3 we have clearly illustrated these chambers, the belt being shown in the position it assumes when the machine is in operation, the bundles of hats being omitted for the sake of clearness in the drawings. The shafts P, which pass through the corner-posts, are journaled in boxes P', by means of which we are enabled to take up the slack in the apron as it becomes stretched in use.

Q represents troughs, which, when the machine is in use, are kept filled with hot water.

R represents ordinary tables for folding, supported on brackets S at each end of the machine.

The operation is as follows: Having adjusted the roof and bottom to their proper positions equidistant from the apron by means of the adjusting shaft, racks, and gears, and secured them by means of the clutches and set-screws, the machine is ready for use. An operator, standing at the front of the machine, or the left in Fig. 1, sprinkles or dips the bundles of hat-bodies and places them upon the apron, the upper side of which moves away from the operator. In the drawings we have shown the machine as driven by a belt, T, from a main or counter shaft. (Not shown.) This belt passes over a pulley, U, on either of the end transverse shafts, P, to which it imparts motion. The shafts at the ends of the machine are each provided with pulleys V, which are connected by belts W on each side of the machine. The distance at which the bottom and roof are adjusted from the apron is a matter wholly within the judgment of the operator, and will depend largely upon the class of work being done. Y represents longitudinal tie-strips, which act as stops to limit the descent of the bottom. Y' represents stops which limit the descent of the roof, so that it will be impossible under any circumstances for the projections in the roof to come in contact with those on the apron; and Y² represents longitudinal side strips mortised into the side posts, which serve to brace and strengthen the machine and to close the concave chambers at the sides. When the bundles of hat-bodies are placed upon the apron, the center thereof, not being supported, sinks down upon the body of the rolls O, thus forming depressions corresponding substantially with the curvature of the roof, the two forming the upper concave chamber. (See Fig. 3.) As the bundles of bodies are carried along upon the apron, they of course come in contact with the ribs or projections upon the roof, the effect of which is to keep the bundles continually rolling over and over in a direction opposite to their forward movement. As the bundles travel along the effect is the same as if they were exposed to a continual series of thumps or blows from above and below. The bundles of bodies of course travel forward but half as fast as the apron, so that in their passage through they get the full thumping and beating effect of all of the ribs both on the apron and the roof.

Owing to the curvature of the apron and the roof, the bundles are kept continually in the center. It follows, therefore, that each bundle passed through the machine is subjected to an equal amount of manipulation, as they can only go straight forward in the center of the apron. When a bundle of bodies has passed through, it is re-rolled by another operator at the back of the machine, (the right in Figs. 1 and 2,) and again passed through the machine, this time between the apron and the bottom. The action is the same as before. The apron, not being supported in the center, is lifted up by the bundle of bodies, as in Fig. 3, against the body of rolls O, thus forming a curvature in the apron corresponding substantially with that of the bottom, the two, in short, forming the lower concave chamber, in which the bundle of bodies is kept continually in the center, and is rolled over and over while being subjected to the blows of the ribs upon the apron and the bottom. This operation may be repeated as many times as may be found necessary to shrink the bodies down to the proper size. It will of course be understood that as many bundles of bodies may be kept in the machine at a time as the two operators are able to manage, the ability of the operators to handle the bundles of bodies being the only limit to the capacity of the machine.

Another important advantage of our improved machine over any heretofore constructed is that the bundles of bodies may be put in as rapidly as possible one after the other, and each receives a certain amount of manipulation, and after it has passed through action upon it ceases until it has again been started forward after re-rolling. Uniform results are therefore to be depended on at all times. The pressure exerted on the rolls of bundles may be increased or diminished at any time by simply loosening the clutches and manipulating the hand-wheels.

We do not desire to limit ourselves to the exact construction shown in the drawings, as it is obvious that the details may be greatly varied without departing in the slightest from the spirit of our invention.

We claim—

1. In a hat-sizing machine, the combination, with a rigid, unyielding roof and bottom, both of which are made vertically adjustable, of an endless apron supported on rolls placed midway between said roof and bottom.

2. The concave roof and bottom having series of ribs or projections, as shown, in combination with an endless apron having corresponding ribs or projections, substantially as described.

3. A series of rolls which extend across the machine and are provided with flanges at their opposite ends, in combination with an endless apron supported on said rolls and flanges, and concave roof and bottom, whereby concave chambers are formed between the apron and the roof and bottom.

4. In a hat-sizing machine, the combination

of the roof and bottom having racks at their sides, with shafts operated by hand-wheels which extend longitudinally of the machine, and are provided with gears which engage the racks, whereby said roof and bottom may be raised or lowered, as may be desired.

5 5. The combination of the roof and bottom having racks, and the adjusting-shafts having gears engaging said racks, with serrated clutches which straddle said shafts and are operated by thumb-screws.

10 6. The adjustable roof and bottom having ribs or projections, in combination with rolls O, having flanges O', shafts P, and apron N, also provided with ribs or projections.

15 7. Rolls O, having flanges O', and apron N, in combination with concave roof and bottom and adjusting mechanism, as described, and for the purpose set forth.

8. In a hat-sizing machine, a series of rolls extending across the machine and journaled in the side pieces, the two end rolls being made longitudinally adjustable, in combination with a ribbed endless apron carried by said rolls.

9. In a hat-sizing machine, two concave chambers formed between a rigid concave roof and bottom, having ribs, as shown, and an endless ribbed apron carried by rolls, having flanges which act to tilt the edges of the apron, substantially as described.

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

GEORGE W. ELWELL.
BERNARD FAY.

Witnesses:

MORRIS MEYER,
JAS. J. MCPHELEMY.