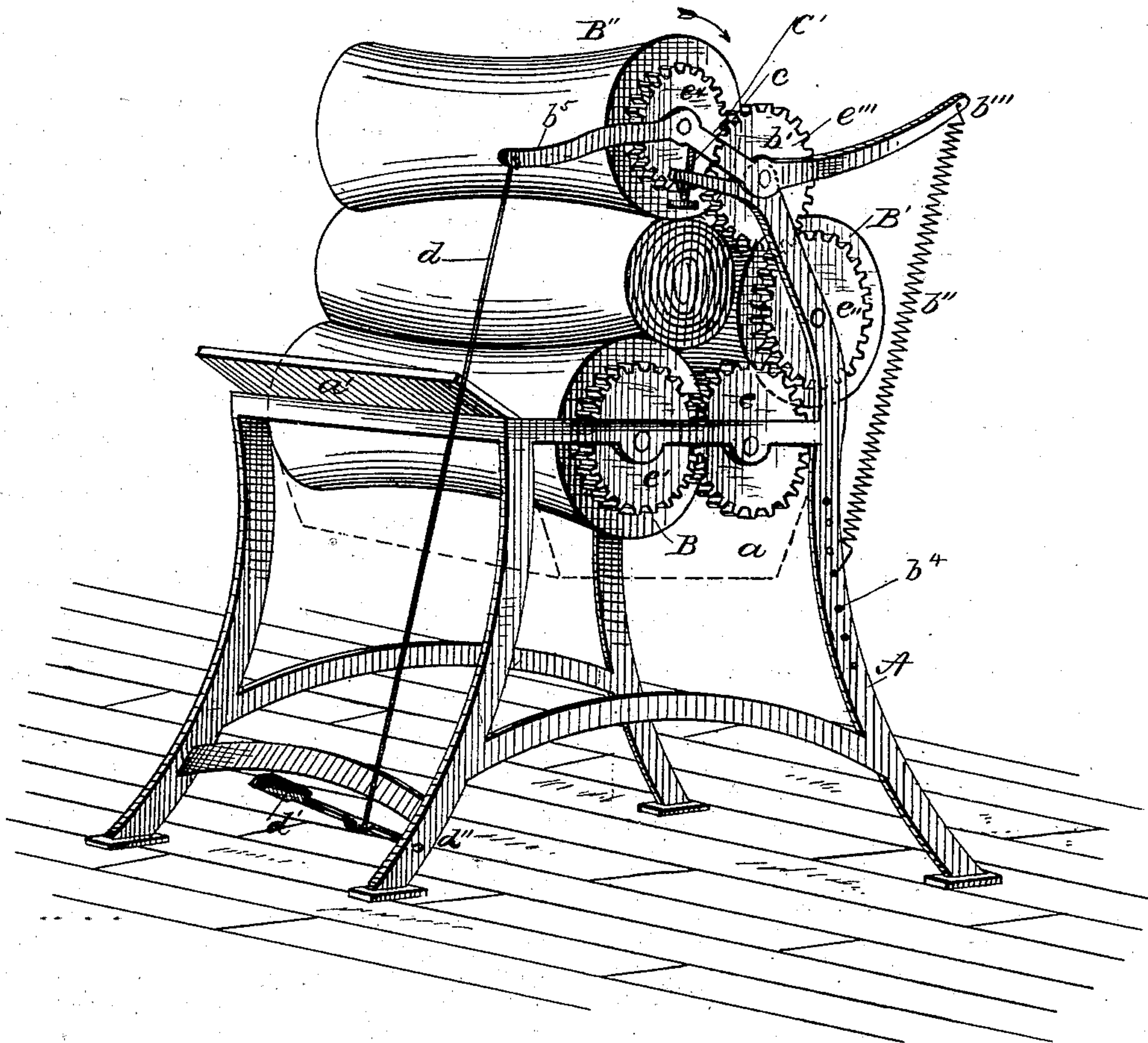


(No Model.)

J. S. TAYLOR.  
HAT SIZING OR FELTING MACHINE.

No. 280,095.

Patented June 26, 1883.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES S. TAYLOR, OF DANBURY, CONNECTICUT.

## HAT SIZING OR FELTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,095, dated June 26, 1883.

Application filed October 18, 1882. (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 Improvements in Hat Sizing and Felting Machines, of which the following is a specification.

This invention relates to a machine specially intended for wool-hat felting, but applicable also to the felting of other fabrics.

It consists in the arrangement of the rollers forming the open receiving-chamber, whereby the goods may be freely entered and removed without the use of a treadle or other appliance for opening the chamber, and whereby, further, an elastic or yielding pressure may be exerted upon the goods during the felting operation and the pressure made constant or increased at pleasure, as hereinafter particularly described.

The drawing represents a perspective view of my improved machine.

Similar letters of reference indicate similar parts.

A is the frame of the machine, within which is placed a vat or tank, *a*, commonly used in felting-machines for wetting or saturating the goods, and having an inclined plank, *a'*, upon which the goods are rolled.

B and B' are rollers in bearings fixed within the frame A. B'' is a third roller, mounted in a yoke or frame, *b*, pivoted to each end of the frame A at *b'*. The roller B'' is balanced so as to have a slight tendency to fall forward within the open chamber formed by the position of the three rollers B B' B''. The roller B'' is balanced in this manner by the force of spiral springs *b''*, one of which is attached to each end of the frame A and to an arm, *b'''*, projecting from each end of the pivoted yoke *b*. The tension of the springs may be varied by adjusting their lower ends to any of the holes *b<sup>4</sup>* in the frame A. An adjustable weight may be placed upon each of the arms *b'''* as a substitute for the spring. A stop, *c*, is attached to each end of the frame A, against which stops the hinged yoke *b* falls, thus limiting the downward movement of the roller B''. The distance of the fall of the roller may be further limited by means of set-screws *c'*, which can be projected within or beyond the inner surface of the stops *c* and receive the hinged

yoke *b* against them. An arm, *b<sup>5</sup>*, extends forward from one end of the hinged yoke *b*, to which a cord or rod, *d*, is attached, leading to a treadle, *d'*, pivoted at *d''* to the frame A. The rollers B B' are geared to run together by means of the driving-pinion *e*, which engages the gears *e'* *e''* of the rollers B B', respectively. The roller B'' is revolved by means of the pinion *e'''*, which engages the gear *e''* of the roller B' and the pinion *e<sup>4</sup>* of the roller B''. The relative distances apart of the axes of the pinions *e'''* and *e<sup>4</sup>* at all times remaining the same, regardless of changes in the position of the roller B'', the said gears are always maintained in proper engagement. The rollers B, B', and B'' may be plain, ribbed, corrugated, fluted, concave, or convex, or of any other suitable shape of surface. The rollers are here shown concave or of reduced diameters in their centers, whereby a convex receiving-chamber, or one having a larger diameter at its center than at its ends, is formed, by which construction of chamber the goods, during the felting operation, are compressed in or toward the direction of their center and the fibers more effectually crowded or knit together. I do not, however, restrict myself to a machine of the construction described having concave rollers, though their use is found most effective.

The operation of the machine may be readily understood. The goods, after being saturated in the liquid contained in the tank *a*, placed in a cloth and rolled up on the plank *a'*, are thrown or placed into the chamber formed by the relative arrangement of the rollers B B' B''. The roller B'', by the nice adjustment of the springs *b''*, or their equivalent, slightly rises to admit the roll of goods, and then bears upon them with a degree of force proportioned to the weight or tendency of the roller to fall and the resistance of the springs. The pressure exerted by the roller B'' is consequently elastic or yielding. Should it be desired to make the pressure constant, this may be done by forcing the roller B'' down and holding it in a depressed condition by means of the treadle *d'*. The elastic pressure of the roller may also be increased by the same means, or by the use of the treadle conjointly with a special adjustment of the springs *b''* to the holes *b<sup>4</sup>*. The intention is to so adjust or balance the roller



B" that it shall automatically open or widen the chamber sufficiently for the convenient removal of the goods during and after the completion of the felting process.

5 It is to be understood that the axes of all the rollers are parallel.

I disclaim a construction in which a yoke and upper roller are lifted by depressing a treadle.

10 I claim as my invention—

1. The combination, in a hat sizing or felting machine, of a pair of rollers in fixed bearings and a third upper roller supported and balanced in a hinged yoke in a manner to  
15 cause it to exert less than its weight upon the goods, the three rollers, by their relative arrangement, forming an open chamber, which will enlarge automatically to receive the goods, substantially as set forth.

20 2. In a hat sizing or felting machine, the combination of two rollers in fixed bearings and a third upper roller supported in a hinged yoke having an arm and adjustable spring or weight operating on said arm to balance the  
25 upper roller in a manner causing it to exert less than its weight upon the goods, the three rollers, by their relative arrangement, forming an open chamber, which will enlarge automatically to receive the goods, substantially as set  
30 forth.

3. In a hat sizing or felting machine, the combination of a pair of rollers in fixed bear-

ings and a third automatically-lifting upper roller, the three rollers forming an open chamber, which will enlarge automatically to receive the goods, the upper roller being supported and balanced in a hinged yoke having a forward arm connected with a treadle, by means of which the elastic pressure of the upper roller upon the goods may be increased or  
40 made constant, substantially as set forth.

4. In a hat sizing or felting machine, a pair of rollers in fixed bearings and a third automatically-lifting upper roller supported and balanced in a hinged yoke, the three rollers  
45 forming an open chamber, which will enlarge automatically to receive the goods, combined with stops for limiting the fall of the hinged yoke and upper roller, substantially as set forth.

50 5. The combination, in a hat sizing or felting machine, of a pair of concave rollers in fixed bearings and a third upper concave roller supported and balanced in a hinged yoke, the three rollers, by their relative arrangement,  
55 forming an open convex chamber, substantially as set forth.

In testimony whereof I have hereunto set my hand this 28th day of July, 1882.

JAMES S. TAYLOR.

Witnesses:

E. M. BULKLEY,  
F. T. HOYT.