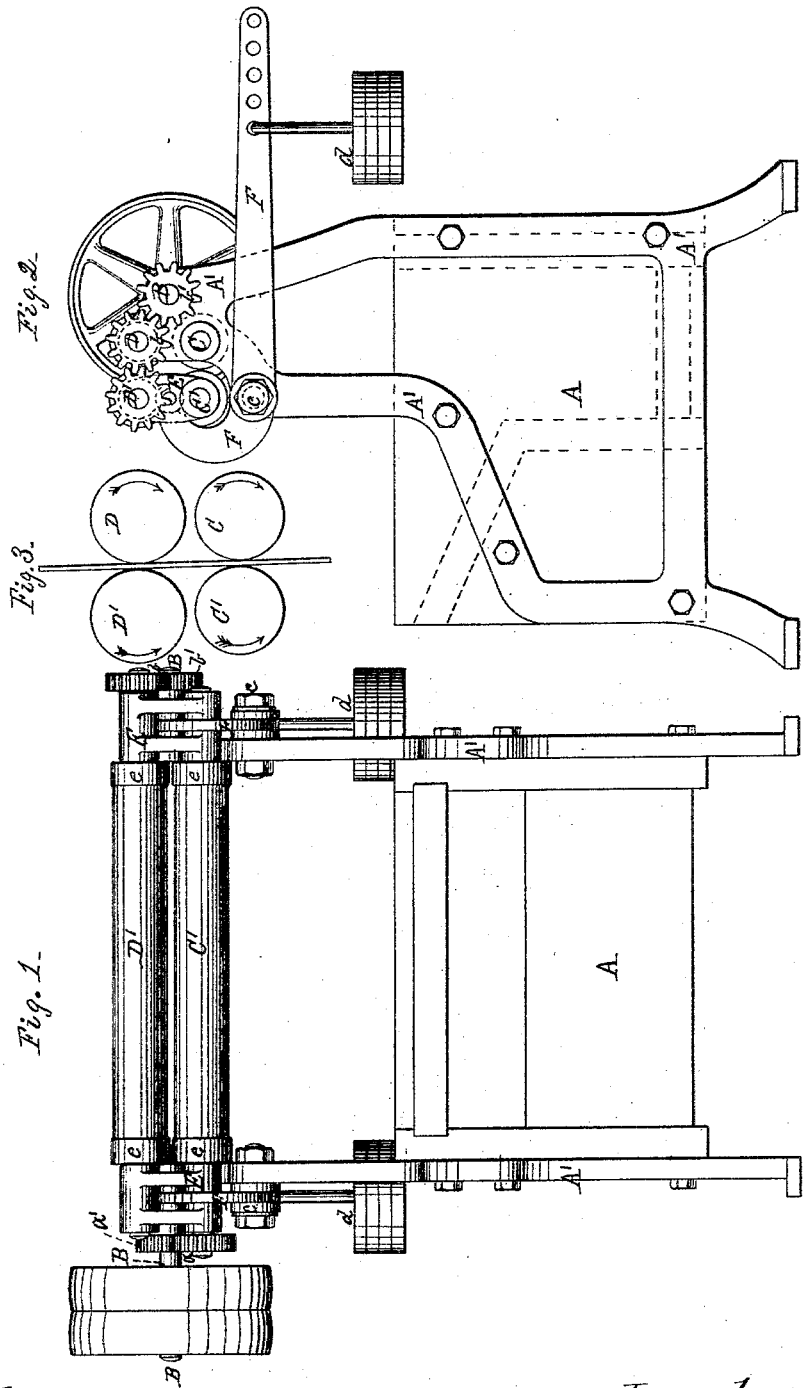
R. EICKEMEYER.

Pinning out Stretchers for Hat Bodies.

No. 210,770. Patented Dec. 10, 1878.



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RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN PINNING-OUT STRETCHERS FOR HAT-BODIES.

Specification forming part of Letters Patent No. **210,770,** dated December 10, 1878; application filed November 18, 1878.

To all whom it may concern:

Be it known that I, RUDOLF EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Pinning-out Stretchers for Hat-Bodies; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description thereof.

After the operation of felting or "sizing," whether by hand or in a fulling-mill, it is well known that hat-bodies are generally wrinkled, and more or less irregular in shape, and have uneven edges, which necessitates what is known as "pinning-out," said operation heretofore having been performed, in part, by a workman with a rolling-pin and table, and in part by frequent pulling at the hands of the workman, whereby the felt is compressed and hardened, and the hat-body so prepared as to be ready for succeeding operations.

The object of my invention is to perform mechanically the pinning-out and the accompanying stretching operation simultaneously, economically, and effectively.

The main feature of my invention consists in the combination of two or more pairs of geared rolls, progressively speeded in pairs, whereby a hat-body introduced between the initial pair of rolls will be condensed by pressure and passed to the next pair, which also compress and by their increased speed pull and stretch the hat-body while engaged by the initial pair of rolls. In practice I find that two pairs of rolls perform effective service, and although variable gearing may be employed for varying the speed of the rolls, I prefer to gear them evenly, and have the diameter of the second pair greater than the first, which accomplishes the same result, and this varied diameter of the rolls constitutes one feature of my invention. These rolls are preferably mounted on standards above a vat or basin for containing the hat-bodies in hot water, as is usual, preparatory to pinning-out, and good results may be attained if the rolls be permanently adjusted as to pressure upon an interposed hat-body; but my invention further consists in the combination, with two or more variably-speeded rolls, fixedly mounted in their bearings, of two or more rolls which are mounted in movable yokes, and controlled by a weighted lever or levers for inducing pressure between each pair of rolls.

My invention further consists in the combination, with an upper and a lower pair of geared rolls, of a driving-shaft parallel with the rolls, and provided at each end with a gear for engaging, respectively, with the gearing of each pair of rolls. With this system of gearing all the rolls are positively driven with uniform gearing. The driving-shaft occupies a plane between the planes occupied by the pairs of rolls, and therefore its two gears are of the same size, and one can properly engage with the gearing of the lower and the other with the gearing of the upper pair of rolls.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents one of my machines in front elevation. Fig. 2 represents the same in side elevation. Fig. 3 represents, on an enlarged scale, a sectional view of the four rolls, with a hat-body interposed between the two pairs, as in operation.

It being essential for good service that the hat-bodies be wet and hot during the operation of "pinning-out" and stretching, the machine is provided with a suitable tank, A, which, in this instance, is mounted between the skeletonized frame-plates A′, each of which, at its top, is provided with three fixed journal-boxes, in which, respectively, the main shaft B, one lower roller, C, and one upper roller, D, are mounted. The main or driving shaft has its bearings in a plane which is equidistant from the upper and lower roller-bearings, but to the rear thereof. The roll C has at one end a gear, *a*, which engages with a fast gear, *a′*, near one end of the driving-shaft, and roll D has a gear, *b*, which engages with a gear, *b′*, on the opposite end of the driving-shaft.

This method of gearing permits the use of gears of uniform size, and one lower and one upper roll are thereby positively driven at uniform speed.

The lower front roll, C′, and the roll C constitute one pair of rolls, and the upper front froll, D′, and roll D constitute another pair.

The rolls D and D′ are of slightly greater

diameter than the lower rolls, so that although all are geared with uniformity, the surface-speed of the upper will be correspondingly greater than the speed of the lower rolls.

If more than two pairs of rolls are used, the several pairs are progressively speeded in like manner.

The lower front roll, C′, and the upper front roll, D′, are each provided at one end with a gear, which engages with the gear of its fellow roll, and the bearings of both front rolls are mounted in yokes E, which are pivoted, respectively, to one end of curved levers F, which are, in turn, pivoted at *c* to the sides of the frame-plates A′. These levers are provided with a series of hook-holes at their outer ends, for receiving the hooks of weights *d*, and permitting a graduation of pressure. It will be seen that these weights force both front rolls toward the rear rolls. To prevent that injury to tender hat-bodies which would be liable to occur if the rolls should too tightly engage therewith, I provide each roll, at or near its end, with a flat rib, *e*, which prevents the working faces of each pair of rolls from approaching too nearly to each other, and the space thus assured enables the workman to readily introduce a hat-body between the lower rolls.

In operation, the hat-bodies are taken from the vat and singly passed upward through the rolls in a flattened condition, and then repassed in various positions until properly pinned out and stretched.

It is obvious that the two pairs of rolls may be fixedly mounted and valuable service performed therewith, and that the rolls may be variably speeded by means of variable gearing, and I therefore do not limit the main feature of my invention to the variable and adjustable pressure-rolls, or to the variation in the diameters of the rolls.

Practical operations with a machine embodying my improvements have demonstrated its value in performing, without injury to hat-bodies, the service stated, in a rapid and economical manner.

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

1. In a pinning-out stretcher for operating on hat-bodies, two or more pairs of geared rolls which are progressively speeded, substantially as described.

2. In a pinning-out stretcher, two or more pairs of geared rolls progressively increased in diameter, substantially as described.

3. The combination, in a pinning-out stretcher, of two or more positively-driven rolls, variably speeded and fixedly mounted in their bearings, with two or more variably-speeded rolls, mounted in yokes and controlled by a weighted lever or levers, substantially as described.

4. The combination, in a pinning-out stretcher, of an upper and a lower pair of rolls with a driving-shaft provided at each end with a gear, for engaging, respectively, with the gearing of the two pairs of rolls, substantially as described.

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