

(No Model.)

J. KITTEL.
FELTING MACHINE.

No. 480,592.

Patented Aug. 9, 1892.

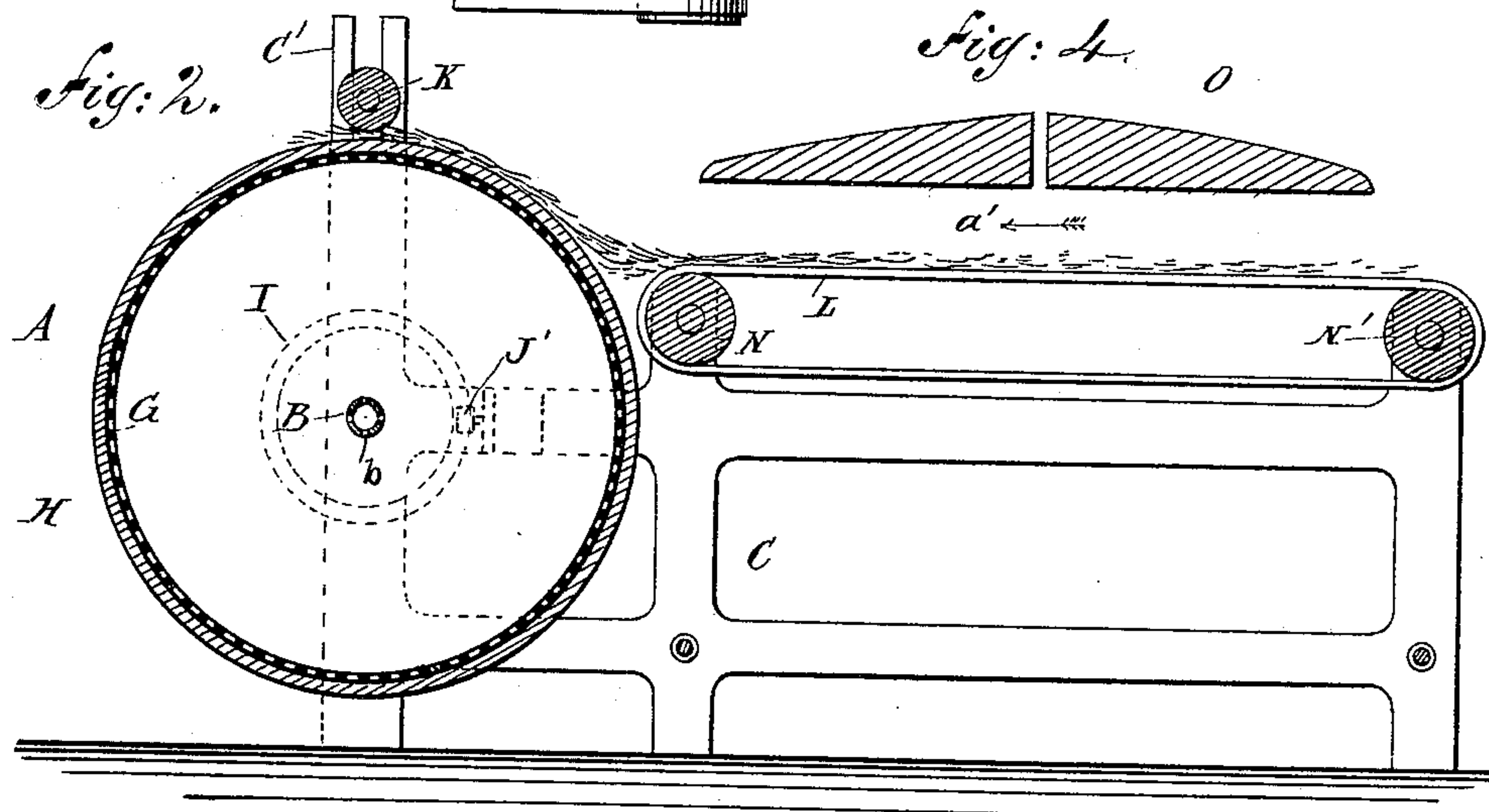
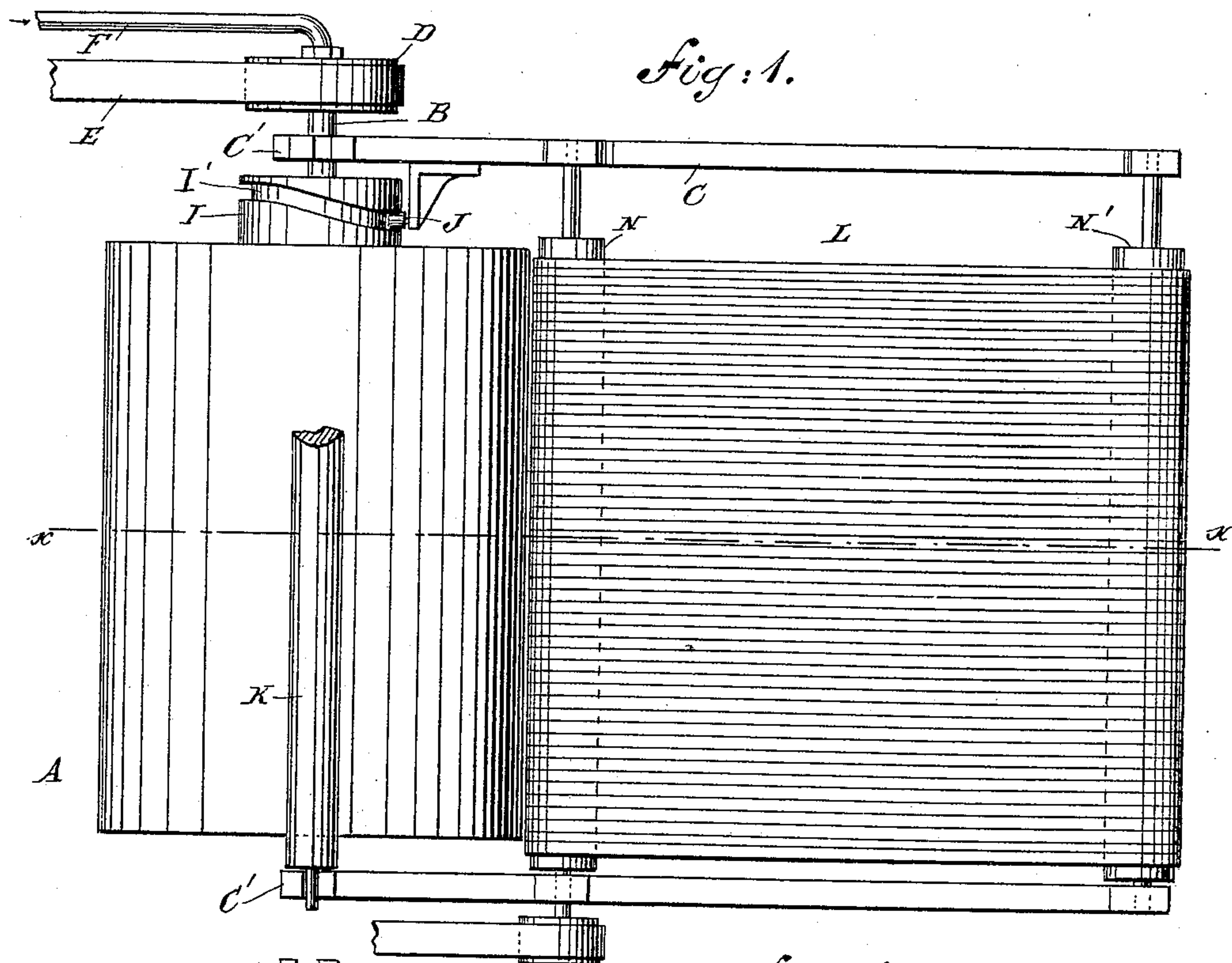


Fig: 3.

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UNITED STATES PATENT OFFICE.

JULIUS KITTEL, OF CRANFORD, NEW JERSEY.

FELTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,592, dated August 9, 1892.

Application filed January 20, 1891. Serial No. 378,455. (No model.)

To all whom it may concern:

Be it known that I, JULIUS KITTEL, of Cranford, in the county of Union and State of New Jersey, have invented a new and Improved Felting-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine specially designed for conveniently making felt to be used in the manufacture of piano-hammers.

The invention is embodied in a perforated steam-drum covered with burlap and means for feeding the felt material to the same, as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with part of the roller broken out. Fig. 2 is a sectional side elevation of the same on the line $x x$ of Fig. 1. Fig. 3 is a transverse section of the felt on the drum, and Fig. 4 is a transverse section of the finished felt.

The improved machine is provided with a revoluble drum A, secured on a shaft B, mounted to turn in suitable bearings in the frame C. On one outer end of the shaft B is secured a pulley D, connected by a belt E with suitable machinery for imparting a rotary motion to the said shaft B and consequently to the drum A. The shaft B is made hollow and is provided within the drum A with perforations b , as is plainly indicated in Fig. 2. One outer end of the shaft B is connected with a steam-pipe F, so that steam can pass from the said pipe F into the hollow shaft B and through the perforations in the latter into the drum A to heat the same. The rim of the drum A is made of perforated sheet metal, the outside of the rim being covered by a layer H of burlap or other suitable material. The steam in the drum A can pass through the perforations in the rim to the burlap H, so as to heat the latter, for the purposes hereinafter more fully described.

On the shaft B on one side of the drum A is secured a cam-wheel I, having an annular cam-groove I', engaged by a friction-roller J, held in suitable bearings secured to the main frame C, as is plainly indicated in Figs. 1 and 2. When the shaft B is rotated, as previously de-

scribed, a longitudinal sliding motion is imparted to the shaft B and its drum A by the said cam-wheel I and the friction-roller J. Other suitable means may be employed for imparting a lateral sliding motion to the said drum.

On top of the drum A on the outside of the layer of burlap H is held a roller K, journaled in forked posts C', formed or secured on the frame C and permitting the said roller K to rise or fall, according to the thickness of the material passing onto the burlap H. The felt material to be treated passes from a carding-machine (not shown) onto an endless belt L, passing over rollers N and N', of which one is driven by suitable machinery, so that a traveling motion is imparted to the said belt L in the direction of the arrow a' . The roller N extends close to the layer of burlap H, so that the felt material is readily discharged from the endless belt L onto the revolving drum A. (See Fig. 2.)

The operation is as follows: When the drum A has been sufficiently heated by the steam, as previously described, a rotary and longitudinal sliding motion is imparted to the drum A, as previously described. At the same time felt material is discharged onto the traveling belt L, as before mentioned. The felt material passes from the traveling belt L onto the layer of burlap H on the drum A and is carried in a thin layer to the roller K, which latter by its weight presses onto the fibers of the felt material, and as the drum A has a longitudinal sliding motion the fibers are pressed crosswise by the said roller K, so as to interlock the fibers, thereby forming a substantial and solid layer of material on the outside of the burlap H. The heat from the heated drum A and the burlap H also acts on the felt material, so that the first layer of such material becomes quite hard and securely adheres to the said burlap. The first layer of felt on the burlap H extends nearly throughout the length of the said drum, as is plainly shown in Fig. 3. When the first layer is of the desired thickness, the felt material fed onto the belt L is decreased in width, so that a second layer of felt material is pressed onto the first layer and adheres to it by the pressure of the roller, but forms a layer of felt of a less width than the first layer on the burlap. Ad-

ditional layers of decreasing width are formed successively on the drum A, so that finally an annular piece of felt O is formed or produced, composed of a series of layers O', O², and O³, &c., decreasing in width, as plainly illustrated in Fig. 3. It is understood that the several layers become less heated from the heated drum A as the thickness of the felt increases, as the heat from the drum cannot so readily penetrate the burlap, the first hard layer O', and the succeeding layers O² O³, &c. When the felt has finally been finished, it is cut transversely on the periphery of the drum, so as to form a sheet of felt, which is again cut lengthwise in the middle, as plainly indicated in Fig. 4, so as to form two strips of felt about wedge-shaped, as indicated in the said figure. The felt thus produced is ready to be used in the manufacture of piano-hammers.

The use of burlap as a covering for the steam-drum has been experimentally demonstrated to possess great advantage over other materials commonly employed. In fact it has been found to be indispensable to the production of a perfect product. The burlap is sufficiently rough to enable it to take up the felt material as it is fed onto the drum and to hold it securely for the required time. If it were dispensed with, the steam, condensing to water, would saturate the felt material, whereas the steam now passes through the burlap in sufficient quantity to merely moisten such ma-

terial to the degree required to produce good felt.

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

In a machine for making piano-hammer felt, a drum having a perforated rim and provided with a perforated shaft for connection with a pipe for supplying the interior of the drum with steam, mechanism, substantially as described, for imparting simultaneously a rotary and endwise motion to the said drum, and a burlap covering held on the outer surface of the perforated drum-rim and covering the perforations therein, in combination with a roller arranged in line with and journaled loosely above the said drum and resting by its weight on the felt material passing along under the roller and an endless traveling feed-belt discharging layers of felt material onto the said burlap at one of the said drum sides and below the said roller to heat the felt material previous to its passing under the said roller to be acted on in a diagonal direction by the forward revolving and transverse sliding motion of the said drum under the said roller, substantially as described.

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Witnesses:

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