

C. P. LADD.

Felting Machines.

No. 124,828.

Patented March 19, 1872.

Fig. 1.

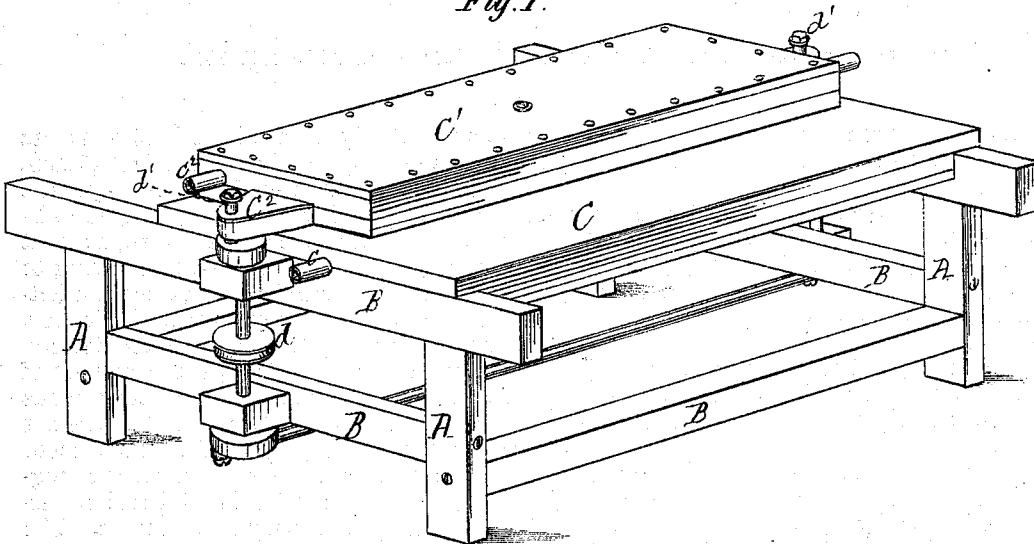
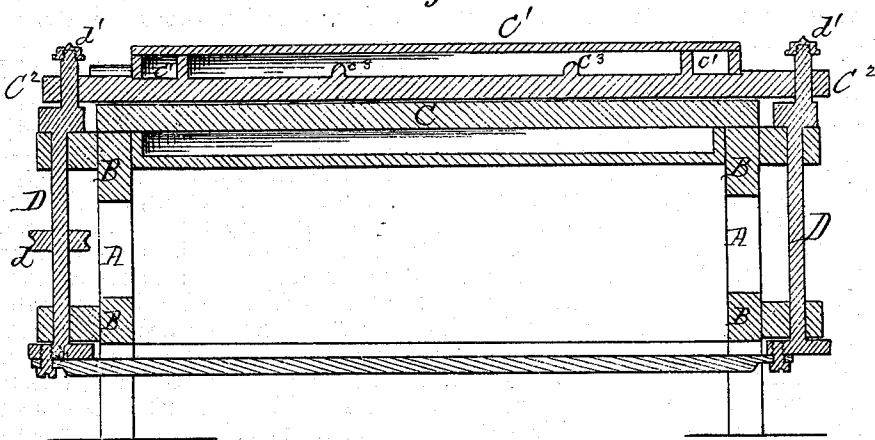


Fig. 2.



Witnesses.

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att'y

UNITED STATES PATENT OFFICE.

CALVIN P. LADD, OF BLOOMFIELD, NEW JERSEY, ASSIGNOR OF ONE-HALF
HIS RIGHT TO JAMES T. SANFORD, OF NEW YORK CITY.

IMPROVEMENT IN FELTING-MACHINES.

Specification forming part of Letters Patent No. 124,828, dated March 19, 1872.

To all whom it may concern:

Be it known that I, CALVIN P. LADD, of Bloomfield, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Felting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of my improved felter; and Fig. 2 is a vertical section, taken longitudinally of the platen and rubber-bed.

Similar letters of reference denote corresponding parts in both figures.

It is well known by all who are acquainted with the manufacture of felt that much difficulty is experienced in making an article of uniform density and of equal strength and tenacity, both longitudinally and transversely of the piece. In order to produce the desired uniformity of strength in all directions, it is necessary that the fibers should not only be so arranged that about equal portions should be both lengthwise and crosswise, but that they should be carefully and equally knitted or felted; and it has also been found that the machinery in common use, consisting of two separate platens reciprocating at right angles to each other, is very defective, as follows: The bat, usually placed between two sheets, is first subjected for some time to the action of a platen having a direct reciprocation on a right line, the effect of which is, of course, to knit such fibers as occupy the proper relation to each other; but a portion of such fibers will unavoidably lie parallel to each other, with the serrations pointing in the same direction, so that they cannot be felted, and others will approximate to the same position. The effect, therefore, of a long-continued vibration of the platen on a right line is to rearrange quite a large proportion of the fiber in lines parallel with the line of reciprocation. When, therefore, the bat is subjected to the action of the platen, which vibrates in a transverse direction, these straightened fibers refuse to knit, and perhaps some others which lie in the direction of the new motion, or which approximate to that direction, are left without being felted. Thus the bat will be made weak in

spots, and notably so, in a direction transverse to the line of reciprocation of the first platen. The platens and rubber-beds are usually made hollow and heated with steam, and, as ordinarily constructed, are apt to warp, so that their engaging surfaces are not true, owing to the fact that the central portions become hotter than the outer and more exposed portions.

In order to remedy the above-recited defects, I have made this invention, the first part of which consists in operating the platen by means of cranks or eccentrics, in order that as the bat is fed forward every portion of it is subjected to a peculiar rotary motion in constant changing circles, by which a felt is produced of perfect uniformity of density and texture. The second part of the invention consists in constructing the platen or bed, or both, with an annular chamber extending around the outside, into which steam or hot air may be introduced for heating said platen or bed, or both; the object of this part of the invention being to heat the outer side first and hottest, so that it shall be expanded more than the central portions are.

In the drawing, A are the posts, and B the girts, which form the frame-work supporting my felter and the mechanism for operating it. C is the rubber bed, made preferably of cast-iron, and dressed to a perfect plane upon its upper surface. It is hollow, and is provided with suitable steam-pipes, as at *c*, for heating by steam or hot air. C¹ is the platen, having its lower surface dressed to correspond with the upper surface of the bed C. It is provided with an annular steam-chamber or channel, *c*¹, Fig. 2, around the outside, to which steam is admitted at *c*². When preferred, this platen may be stiffened by casting ribs or webs on its upper surface, as at *c*³, Fig. 2; and the rubber bed may be made in the same manner, and may also be provided with an annular steam-chamber like that represented at *c*¹. C² are ears or arms projecting from the ends of platen C¹. D are vertical crank-shafts mounted in bearings on the frame-work of the felter. They are connected with each other by means of link D', and are driven by band-wheel *d*, from any suitable power. The wrist-pins *d'* of the crank-wheel engage with perforations in the ears C². Thus as the crank-shafts revolve the

platen is caused to move over the bed in a circular path.

From the above description it will be seen that the bat is never subjected to a direct reciprocating action, and that as it (the bat) is fed forward the motion of the platen relative to the position of the fiber in the bat is constantly changing. Hence every portion is subjected to a thorough knitting, and all tendency to an improper disturbance or rearranging of the fibers is avoided. By heating the platen or rubber bed, or both, from the outer edges, the tendency to over heating and to undue expansion at the center is remedied, consequently they are not so liable to warp.

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

1. In combination with the platen C¹, the cranks D D, for imparting to the platen a circular motion, substantially as described.

2. In a felting-machine, a platen or rubber bed provided with a heating-chamber arranged at the outer sides or edges of said platen or bed, substantially as and for the purpose set forth.

CALVIN P. LADD.

Witnesses:

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