L. Lyon.
Felting Machine.

No. 4951. Patented Feb. 5, 1849.

Fig 4

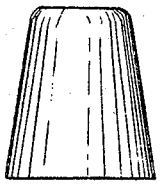


Fig 3

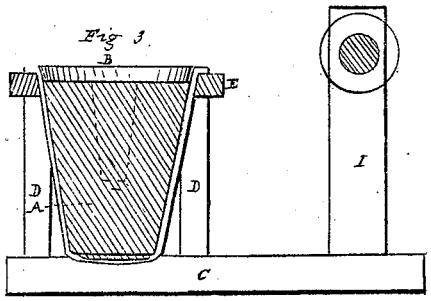


Fig. 1.

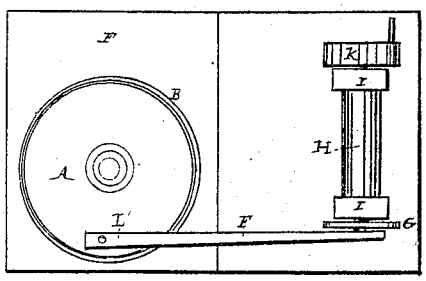
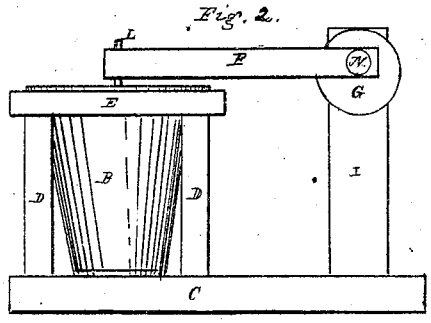


Fig. 2.



UNITED STATES PATENT OFFICE.

LEMUEL LYON, OF ROXBURY, MASSACHUSETTS.

MANUFACTURE OF HAT-BODIES.

Specification of Letters Patent No. 4,951, dated February 5, 1847.

To all whom it may concern:

Be it known that I, LEMUEL LYON, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Hardening Hat-Bodies Composed of Fur and Cotton or other Proper Fibrous Matters; and I do hereby declare that the nature of my invention and the manner in which it operates are fully set forth and represented in the following specification, accompanying drawings, letters, figures, and references thereof.

My invention or improvement is particularly applicable to the hardening of hat bodies when made or formed in any of the modes usually practised, or by any other proper method. The process of hardening the same as heretofore adopted has been very expensive and laborious in comparison with that employed by me, and hereinafter described, inasmuch as steam and hot air have generally been used in connection with the mechanism for producing the desired effect and the hat body has been removed from the block upon which it was formed, thereby causing it to stretch and become more or less injured.

Figure 1 of the aforementioned drawings represents a top view of the mechanism by which I effect the hardening of hat bodies. Fig. 2 is a side elevation of the same. Fig. 3, is a vertical and central section of it, and Fig. 4 is a side view of the block or frustum upon which the hat body is formed and kept during the operation of hardening it as will be hereafter described.

In Figs. 1, 2 and 3, A denotes a solid block in the shape of a frustum of a cone. B is a hollow vessel made to correspond in shape with, and to receive within it, the conic frustum or block A, as seen in Figs. 1, 2. The vessel B should be made of such size with respect to the block A that when the latter is introduced within it, and their adjacent surfaces are made parallel to each other, there shall be a small space existing between them of about one fourth of an inch in width. The vessel B is supported upon a bed or plank C by a table E resting upon any suitable number of legs D, D. The block A is to have slight reciprocating or vibrating motions imparted to it in horizontal directions which may be effected by means of a connecting rod F which works at one end upon a pin L inserted in the top of the block A and at the other end upon an eccentric pin N inserted in the side of a circular plate G applied and affixed to one end of a horizontal shaft H supported and revolving in suitable bearings at the tops of posts I, I, and put in revolution by a crank K, or in any other proper manner. Instead of the block A being made to move to and fro within the vessel B as described, it may be suspended within the said vessel and the latter be made to vibrate or move about it with a short reciprocating motion. In either case a very trifling degree of motion will suffice to produce the effect of hardening. The outer conic surface of the block A need not move more than about one half an inch forward and back with respect to the contiguous surface of the vessel surrounding it.

The process of hardening the hat body is as follows: After it is formed in any known manner, the fibers of fur or material or materiels to be hardened of which it is composed lay together or upon one another in a very loose or flockey state. In such a state it is to be covered by a damp or wet cloth made to fit over its exterior surface (or that which is to be placed in opposition with the interior surface of the vessel) and to bind it closely down upon the external surface of the block A. In this state the whole is introduced into the vessel A, so that the external surface of the cloth shall rest in contact with the internal surface of the vessel which being done the block together with the hat body, and confining cloth upon it should be put in motion within the case or vessel B in the manner as before described. The short vibratory or reciprocating motion so imparted to the block soon causes the fibers of fur, or fur and other material of which the hat body is composed to become densely compacted together or hardened in the desired manner and to the extent required.

What I claim as my invention and seek to secure by Letters Patent is—

The aforesaid improvement by which I effect the hardening of a hat body—viz.—by means of a conic frustum or block upon which the body is placed or formed and a

damp cloth applied to the fibrous matter upon the block, in combination with a hollow vessel D surrounding the whole the block A having a short reciprocating motion upon its axis imparted to it when placed within the vessel B, and the whole being made to operate together as above specified.

In testimony whereof I have hereto set my signature this twentieth day of January A. D. 1846.

LEMUEL LYON.

Witnesses:
R. H. EDDY,
GEO. H. BAILEY.