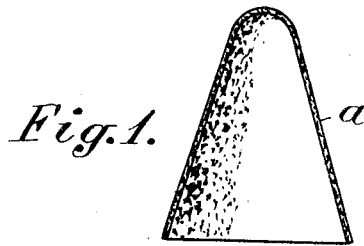
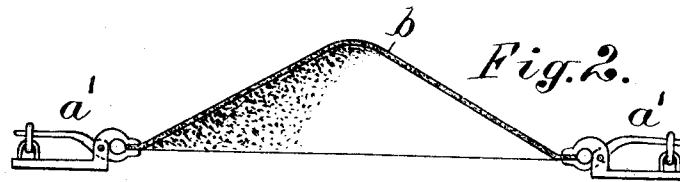
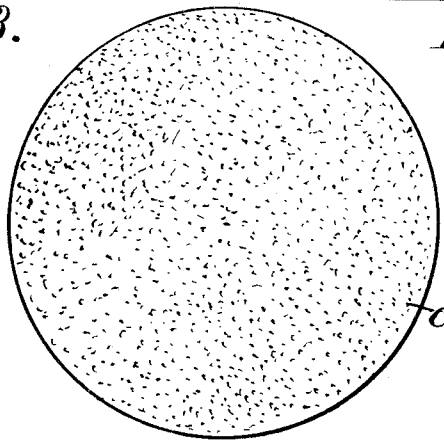
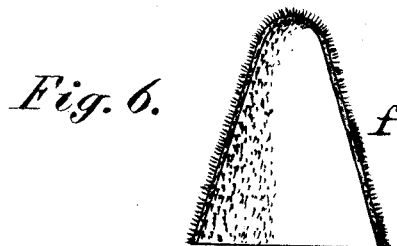


F. J. MUHLFELD.
 ART OF MAKING VELOUR HAT BODIES BY NAPPING.
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Witnesses
 L. Lee,
 J. Walter H. H. H. H.

Inventor
 Frank J. Muhlfield, per
 Thomas S. Crane, Atty.

UNITED STATES PATENT OFFICE.

FRANK J. MUHLFELD, OF NEW YORK, N. Y.

ART OF MAKING VELOUR HAT-BODIES BY NAPPING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK J. MUHLFELD, a citizen of the United States, residing at 805 Crotona Park North, in the city, county, and State of New York, have invented certain new and useful Improvements in Art of Making Velour Hat-Bodies by Napping, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

My invention relates to the manufacture of napped hat-bodies.

It consists in a process which has for its principal object the production of a hat of this character having a nap of relatively short fibers of substantially equal length, which give the hat when finished the smooth glossy appearance commonly seen in what is known as a "brush" or "velour" hat. However, as will hereafter appear, certain steps in the process are applicable to the manufacture of napped hats in general, and my invention is not therefore entirely limited in scope to a process which produces the particular kind of hat referred to.

Napped hats, as now manufactured, are usually provided with long fur-fibers which have heretofore been made of the full length of the fibers found on the fur pelt, and such fibers then inserted in the hat-body by the following steps. They are first formed into a soft layer called a "nap-bat" which is then applied to the previously felted hat-body and pressed and stuck thereon with a damp cloth, or by vibratory pressures. When the nap-bat is thus stuck to the previously felted hat-body the two are rolled in a felting cloth dipped in scalding water and repeatedly pressed and rolled to work the fibers of the nap-bat into the substance of the felt so as to root them therein.

Only one end of each fiber is capable, by reason of its scaly formation, of penetrating into the felt and adhering therein, and a previous felting of the hat-body gives it sufficient density to prevent the fur-fibers from penetrating all the way through, and thus leaves the greater portion of the napping fibers projecting from the surface of the felt and forming a flowing fur thereon. The felt is then beaten to dislodge any fibers which have not become rooted in the felt and to loosen up the free ends of the rooted fibers, and the nap is then finished and can,

when dried, be brushed and smoothed in any desired manner.

Although a velour or brush-hat possesses a nap, it has not heretofore been made by the use of a nap-bat, but the nap on such brush-hats is generally formed by stillly brushing the surface of the fur-body during the process of felting it, such nap thus being integral with the felt itself and subsequently brought to uniform length by a clipping operation.

I have heretofore made various experiments by clipping hats napped with long fibers so as to produce the appearance of a velour or brush-hat; but it has been found that the fibers of a long nap are always insufficient in number, when cut off close to the felt, to form a close velvety nap thereon; but permit the felt-body to be visible through and between the fibers to a greater or less extent, thus detracting from the appearance of the hat.

I have discovered that by cutting the fibers to substantially the desired length before sticking them to the hat-body, I am enabled by the usual sticking and napping operation to obtain a hat containing a much larger number of fibers to the unit of area.

By using fibers of, for instance, half the usual length, I have twice as many ends in the same amount of material ready to penetrate into the hat-body; and shorter fibers because of their relatively greater stiffness are more readily pushed into the felt, than long fibers, during the napping operation. Moreover, by using such short fibers the great loss of fibers during the scalding and beating operation is almost entirely avoided, because the ends of the short fibers will not become entangled as will the ends of the long fibers in the process as now practised, and therefore the loose fibers, which are removed by the beating operation, will not pull with them fibers which have already penetrated into the hat-body.

My invention does not embrace the mere trimming or leveling of fur-fibers, but requires that the raw fur should, before making it into a nap-bat, be reduced to a "velour-length," by which is meant a substantial shortening of the original fiber to such a length as would cause, when napped in a felted body, a substantial increase of fibers per unit of area, above the number nor-

mally rooted when unshortened fibers are used; so that the resulting napped felt more nearly resembles in appearance, an ordinary velour-hat.

6 The fur-fibers may be reduced to velour-length by any suitable means before forming them into a bat for napping, but it is preferable to clip them to substantially the desired length while they are on the fur
10 pelt. In such operation any of the well known fur-clipping machines may be used.

In preparing fur-fibers for use in my invention, the clipping machine is preferably first used to level or trim the uneven ends
15 of the fibers so as to make the fibers upon the skin of uniform length. The machine is then operated to cut the fiber to velour-length, suitable for making the short nap desired, the entire length of the fibers being
20 eventually removed from the skin to be if desired utilized in such short sections.

I preferably divide each fiber into two or three velour-length sections, and thus secure two or three times as many napping
25 fibers as when using the fibers of original length. I have also discovered that I may increase the proportion of fur-fibers to the square inch of the napped body by sticking the nap-bat upon a hat-body which has first
30 been substantially completely felted and stiffened, and then had its superficial area abnormally increased, and thereafter allowing the same to contract.

The felted hat-body may, if desired, be
35 stiffened with shellac or any other suitable material.

The increase of area which I produce to make the napping fur more dense in the finished product, is secured by a special
40 stretching treatment of the hat-body after it is flattened, and which may be termed super-stretching. Such stretching as is incidental to the flattening operation is very small in amount, but the increase of area
45 which I produce is deliberately effected by a stretching apparatus adapted to operate upon a hat-body and enlarge its area to the desired extent. Upon this enlarged area, I
50 apply as many napping fibers as it will hold, which necessarily increases the density of the fur when the felt is shrunk back to substantially its original size. It will thus be understood that none of the treatment
55 which the hat-body receives in the ordinary operation of felting and reduction to a flat form is capable of increasing the density of the fur as I desire, and which are secured by deliberately and abnormally increasing the area of the hat-body, thus enlarging it
60 beyond the area that would be produced in the ordinary processes of manufacture.

It will be apparent that an enlargement of area is not secured in the ordinary process of manufacture, as felting operations in-
65 volve a continual shrinking of the felt as

long as the body is subjected to felting, and it is therefore necessary to give the increase of area to the hat-body by suitable treatment after it has been felted and flattened. I have described this feature of
70 extra or abnormal stretching as applied to the manufacture of hats napped with fibers clipped to velour-length, but it is obvious that this feature may be employed in the manufacture of any kind of napped hat.
75 I have also discovered that I may reduce or obviate the defects due to the uneven stretching in the final blocking process, by first completely felting and stiffening the hat-body in a conical form, then stretching
80 the same by suitable mechanism into a flat form, then sticking the fur to the body while it is in the flat form, and then aiding and permitting the body to shrink back into its conical form, preferably during the nap-
85 ping operation. By this means, I attain the well known advantages of the flat form of hat-body, to wit, ease of sticking and napping, while at the same time obtaining the advantages of the conical form, namely,
90 a minimum amount of stretching during the blocking process, because the conical body is nearer in shape to a blocked hat.

In the drawing, Figure 1 shows a section of a completely felted hat-body in conical
95 form; Fig. 2 shows the same with tongs applied to its edge to act as a brim-stretcher, and the shape partially changed thereby; Fig. 3 is an edge view, and Fig. 4 a plan of the hat-body stretched into flat
100 form; Fig. 5 is a cross section of the hat-body with a nap-bat applied thereto; and Fig. 6 is a cross section of the hat-body restored to conical form with the short nap upon its outer side.
105

Any suitable stretching apparatus may be used for changing the conical hat-body into the flat form shown in Fig. 3. Merely for illustration, I have shown in Fig. 2 a
110 stretcher adapted to grasp the edge of the hat-body by tongs *a'* to pull the same outwardly; but any suitable mechanism for gently stretching the hat-body *a* into the flat shape *c* may be employed; for instance, the ordinary blocking machine without the
115 hat-block may be employed for the operation shown in Fig. 2. The stretching may even be done by hand if desired.

After the completion of the stretching operation, a bat *e* of raw fur is laid upon the
120 hat-body and stuck in the usual manner, as for instance, by means of a vibrating jigger, so that the hat-body and hat assume the relation shown in Fig. 5. As the hat is of uniform thickness the hat-body receives on
125 all parts of the surface substantially the same number of fur-fibers to the square inch.

To produce a hat which resembles a velour or brush-hat, the bat is composed of 13

fibers already clipped to "velour-length," as above described.

During the scalding operation the hat-body tends to re-assume its normal conical form, and in my invention this tendency is aided during the scalding operation by folding the hat-body with radial folds, in the same manner that a conical hat-body is often folded during any felting operation. Such folding greatly facilitates the shrinking of the hat-body back to substantially its original conical form *f* which such bodies always tend to resume when worked in hot water and the shellac stiffening softened, as in the scalding operation.

The napped hat-body *f* restored to its original shape with a nap thereon is shown in Fig. 6. The hat-body is then ready for blocking to any desired shape in any usual manner.

In the preferred form of the invention, the fibers are cut into two or more sections successively while upon the skin. They may also be leveled by clipping after insertion in the felt body, as a final cutting of the nap upon such body is desirable to produce an even surface.

It will be understood that the treatment of a hat-body by first felting and stiffening in a conical form, and then stretching to a flat form, and permitting the body to shrink back into conical form during a napping operation, is applicable to the manufacture of ordinary napped hats with a long flowing fur. The increasing of its area before the napping of a hat-body is also applicable to such hats, but both these features of the invention are especially useful in the manufacture of velour hats, in which it is of great importance to have the napped fibers close together.

I claim—

1. The art of making hats resembling velour or brush-hats, which comprises first materially shortening raw fur-fibers to "velour-length" and then napping a hat-body therewith, substantially as and for the purpose described.

2. The art of making hats resembling velour or brush-hats, which comprises first materially shortening raw fur-fibers to "velour-length," forming the same into nap-bats, and then sticking the nap-bats to hat-bodies, substantially as and for the purpose described.

3. The art of making hats resembling velour or brush-hats, which comprises first cutting raw fur-fibers into a plurality of "velour-length" sections, and then napping a hat-body with such sections, substantially as and for the purpose described.

4. The art of making hats resembling velour or brush-hats, which comprises first cutting raw fur-fibers into a plurality of "velour-length" sections while on the skin,

removing from the skin the sections which remain thereon, forming such sections into nap-bats, and then sticking and scalding the bats on hat-bodies, substantially as and for the purpose described.

5. The process of making a napped hat-body, which consists in felting and stiffening a hat-body, dividing raw fur-fibers into several napping sections, as two or three, making nap-bats of such sectional fibers, and napping hat-bodies with such nap-bats in the usual manner, substantially as and for the purpose described.

6. The improvement in the art of napping hat-bodies, which consists in materially shortening raw fur-fibers to "velour-length," forming the same into a nap-bat and then napping a previously stretched hat-body therewith, substantially as and for the purpose described.

7. The improvement in the art of napping hat-bodies, which consists in materially shortening raw fur-fibers to "velour-length," forming the same into nap-bats, sticking the bats to previously stretched hat-bodies, and then shrinking the hat-body to normal size, substantially as and for the purpose described.

8. The improvement in the art of napping hat-bodies, which consists in materially shortening fur-fibers to "velour-length," forming the same into a nap-bat, making a felted and stiffened hat-body into conical form, stretching the same into substantially flat form, sticking the bat to the flattened hat-body, and then scalding the hat-body back into conical form, substantially as and for the purpose described.

9. The improvement in the art of napping hat-bodies, which consists in materially shortening fur-fibers to "velour-length," forming the same into a nap-bat, making a completely felted and stiffened hat-body into conical form of a shape as near as possible to the desired shape of the finished hat, stretching the same into substantially flat form, sticking the nap-bat to the flattened hat-body, and then shrinking the hat-body back into conical form, thus avoiding as far as possible a stretching of the hat-body during the shaping operation, and a consequent disturbance of the relative distribution of the napping fibers.

10. The improvement in the art of napping hat-bodies, which consists in sticking the nap-bat to an abnormally stretched hat-body and then scalding the same and simultaneously shrinking the hat-body to normal size, substantially as and for the purpose described.

11. The improvement in the art of napping hat bodies, which consists in fashioning and felting a hat-body into conical form, stretching the same into substantially flat form, sticking the nap-bat to the flattened

hat-body and then scalding and shrinking the hat-body back into conical form, substantially as and for the purpose described.

12. The process of napping hat-bodies, which consists in felting the hat-body, cutting sections of raw fur-fiber successively from the skin bearing the fur, forming such sections into nap-bats, napping the hat bodies with such bats, and finally clipping or leveling the nap after it is attached to the felted hat-bodies.

13. The improvement in the art of napping hat-bodies, which consists in materially shortening raw fur-fibers to "velour-length," forming the same into a nap-bat, making a completely felted hat-body in conical form, stretching the same into substantially flat form, then stretching the same so as abnormally to increase the size of the flattened hat-body, sticking the bat to such stretched hat-body, and then scalding the

hat-body back into conical form, substantially as and for the purpose described.

14. The improvement in the art of napping hat-bodies, which consists in forming raw fur-fibers into a nap-bat, making a completely felted hat-body in conical form, stretching the same into substantially flat form, then stretching the same so as abnormally to increase the size of the flattened hat-body, sticking the bat to such stretched hat-body, and then scalding the hat-body back into conical form, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK J. MUHLFELD

Witnesses:

L. LEE,
THOMAS S. CRANE.