Jan. 3, 1967 F. S. ADAMS 3,295,893

METHOD AND APPARATUS FOR PREPARING BRUSHES FOR TRIMMING

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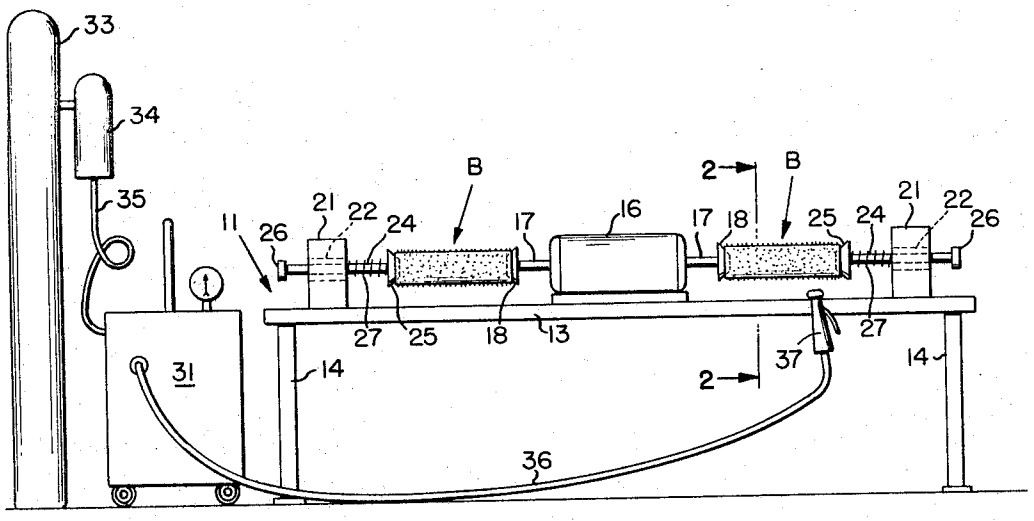


FIG. 1

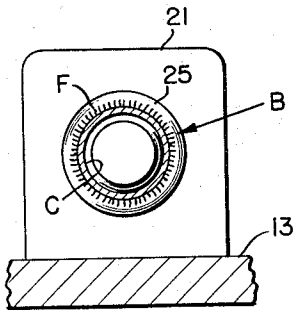


FIG. 2

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METHOD AND APPARATUS FOR PREPARING BRUSHES FOR TRIMMING

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5 Claims. (Cl. 300—21)

This invention relates to brushes, and more particularly to a novel method and apparatus for preparing fur brushes for a trimming or shearing process.

In my copending U.S. patent application Serial No. 354,560, I have disclosed a rabbit's fur brush particularly adapted for cleaning the peripheral surfaces of rotary metal drums of the type used in machines for making reproductions with marking powders. This brush is cylindrical, and for best results it is desirable that the individual strands or hairs that make up the fur be substantially equal in length, so that when the brush is rotated its brushing action will be uniform.

Since the lengths of the hairs which form the fur of an animal pelt vary for a given pelt, and from pelt to pelt, it is customary at some stage during the manufacture of a brush of the type described to trim or shear the fur to make the hairs of uniform length. Heretofore it has been extremely difficult to perform this operation because of the inherent tendency of rabbit and like furs to mat or otherwise lie down against the skin of the pelt.

If a rotary brush is held stationary while being trimmed its hair will not stand out and the trimmed surface will be uneven, an uneveness which manifests itself when the brush is rotated in use. Heretofore, rotary fur brushes have been hung from a wooden pole and rotated by hand while being sheared. However, it has not been possible to get up enough speed, when rotating a brush by hand, to insure that the trimmed hairs will be of uniform length. It is known that steam will fluff up fur, but a furrier has to be careful because if steam is used too long it will burn the fur. Hence the steam is usually applied to the lining of the fur, which is indirect, and not as beneficial as a direct application, and is not practical for a fur covered rotary brush having a hollow core.

An object of this invention is to provide an improved method of preparing a rotary fur brush for shearing.

A more specific object of this invention is to provide an improved method for causing the hair on rotary fur brushes to project radially outwardly so that they may be sheared or otherwise trimmed to uniform length.

A further object of this invention is to provide novel apparatus for raising the hairs on rotary fur brushes, so that they may be trimmed to uniform length to form a brushing surface that is truly cylindrical.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claims, particularly when read in conjunction with the accompanying drawing.

In the drawing:

FIG. 1 is a side elevational view of one embodiment of apparatus which may be employed for practicing the novel method of this invention, certain parts of the apparatus being illustrated diagrammatically; and

FIG. 2 is an enlarged fragmentary sectional view taken along the line 2—2 in FIG. 1 looking in the direction of the arrows.

Referring now to the drawing by numerals of reference, a steel table of conventional design is shown generally at **11** and comprises a top **13**, and supporting legs **14**. Secured on the table top **13** substantially centrally thereof is an electric motor **16**, which by way of example may be of approximately one horsepower. Projecting from opposite ends, respectively, of the motor **16** is a drive shaft **17**. Each end of the shaft **17** has secured thereto, and coaxially thereof, a truncated conical center **18**, the smaller end of which faces away from the motor **16**.

Secured to the table top **13** in spaced relation to the ends of the motor **16** are two bearing housings **21**. Secured in each housing **21** in axial alignment with shaft **17** is a sleeve bearing **22**. Journaled in each bearing **22**, and projecting at opposite ends thereof out of the associated bearing, is a shaft **24**. Each shaft **24** is axially slidable in its associated bearing **22**, and has secured to its inner end, or the end thereof facing the motor **16**, a truncated conical center **25**, which is identical to, and which is disposed in axially spaced confronting relation to one of the centers **18**. On its outer end each shaft **24** has secured thereon a knob **26**, which also constitutes a stop lug to limit axial inward movement of the associated shaft **24** in the direction of the motor **16**. A coiled compression spring **27** surrounds each shaft **24** between its center **25** and the housing **21**. Each spring **27** urges its shaft **24** axially toward the confronting center **18** on the motor shaft.

Positioned adjacent the table **11** is a steam generating unit **31**, which is here shown as portable. From a nearby water supply **33**, water is fed to a water softening unit **34**, which in turn feeds soft water through a flexible hose **35** to the input side of the steam generating unit **31**. The soft water entering the unit **31** is heated to provide superheated steam under a pressure of approximately 80 pounds per square inch. A flexible hose **36** connects the steam chamber to a manually operable nozzle **37**.

Two brushes, which are to be trimmed and whose operating surfaces may be made of rabbit's fur, for instance, are shown in FIG. 1 at B. Each such brush B includes a rigid, hollow, cylindrical core C and a fur covering F adhered around the core C. In operation, each brush B is mounted between opposed centers **18** and **25**. When the motor **16** is energized, then, the two brushes B will be rotated in unison at the motor speed, which by way of example, may be 3500 revolutions per minute. As the brushes revolve the operator opens the nozzle **37** and directs steam onto each brush in turn. As a result of centrifugal force and the high temperature and pressure of the steam, the hairs of the fur are lifted and extend radially outwardly in ideal shearing positions. The steam softens these hairs including the guard hairs, and forces the fibres or hairs to stay in this position. If desired a flecking bar may also be used at this time to help separate the hairs. After the rotating brushes, rotating at high speed, have been subjected to the high pressure steam for sufficient time, the brushes can be removed from the machine; and the fur can be sheared to uniform length. The shearing may also be done on the machine.

In practice it has been found that the application of high pressure steam to fur brushes in the manner above described, particularly when the steam has been manufactured from previously softened water, eliminates the matting in even the toughest of furs; and after steaming and shearing there is substantially no unevenness in the fur surface. Further than this the rabbit's fur treated in this manner will have the texture of and look like Alaskan seal fur. The water softening unit eliminates undesirable minerals from the water before the latter is heated, so that when the steam is applied to the brushes it produces a softer cleaner brush, and enables one to get a far more perfect and uniform shearing of the brush surface.

While the invention has been described in connection with a specific embodiment thereof, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the

present disclosures as come within known or customary practice in the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth, and as fall within the scope of the invention or the limits of the appended claims.

Having thus described my invention, what I claim is:

1. A method of treating a rotary fur covered brush prior to trimming its hairs to a desired length, which comprises

(a) rotating the brush about its axis at a relatively high speed, and

(b) while the brush is rotating, subjecting its hairs to an atmosphere of high temperature and high humidity sufficient to cause the hairs to become moist and soft, and to separate and project radially outwardly relative to the brush axis in response to the centrifugal force created by the rotation of the brush.

2. A method of treating a rotary fur covered brush, prior to trimming its hairs to a desired length, which comprises

(a) treating a supply of water to remove minerals therefrom, and to soften the water,

(b) heating the softened water to generate steam, and

(c) while rotating the brush about its axis at a relatively high speed,

(d) directing the steam in a jet against the surface of the rotating brush.

3. A method of treating a rotary fur covered brush prior to trimming its hairs to a desired length, which comprises

(a) treating a supply of water to remove minerals therefrom, and soften the water,

(b) heating the softened water to provide therefrom steam under a pressure of approximately 80 pounds per square inch, and

(c) while rotating the brush at approximately 3500 r.p.m.,

(d) directing the steam in a jet against the surface of the rotating brush.

4. Apparatus for treating a rotary fur brush prior to trimming its hairs to a desired length, comprising

(a) means for mounting the brush for rotation about its axis,

(b) a motor for driving said mounting means at a relatively high speed about said axis,

(c) a steam generating unit,

(d) a water softening unit connected to said steam unit to supply soft water thereto, and

(e) manually operable means for directing a jet of steam from said steam unit against the fur surface of the rotating brush.

5. Apparatus for treating a rotary fur brush prior to trimming its hairs to a desired length, comprising

(a) two pairs of axially spaced centers,

(b) means mounting said two pairs of centers for rotation about a common axis,

(c) said mounting means including means mounting at least one center of each pair for limited axial movement between an operative position in which the axial distance between the centers of a pair is less than the axial length of a fur brush to support a brush between the pair of centers, and an inoperative position in which said distance is greater than said length, to permit removal of a brush from between the pair of centers and mounting of a new brush therebetween,

(d) resilient means urging said one center of each pair toward its operative position,

(e) drive means for rotating said centers in unison,

(f) a steam generating unit,

(g) a water softening unit connected to said steam generating unit to supply soft water thereto, and

(h) manually operable means for directing a jet of steam from said steam unit onto the fur surfaces of the brushes, when the latter are mounted between said centers.

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GRANVILLE Y. CUSTER, JR., *Primary Examiner.*