June 8, 1926.

1,587,945

W. GEBRATH

FUR DYEING APPARATUS

Filed Dec. 27, 1923

2 Sheets-Sheet 1

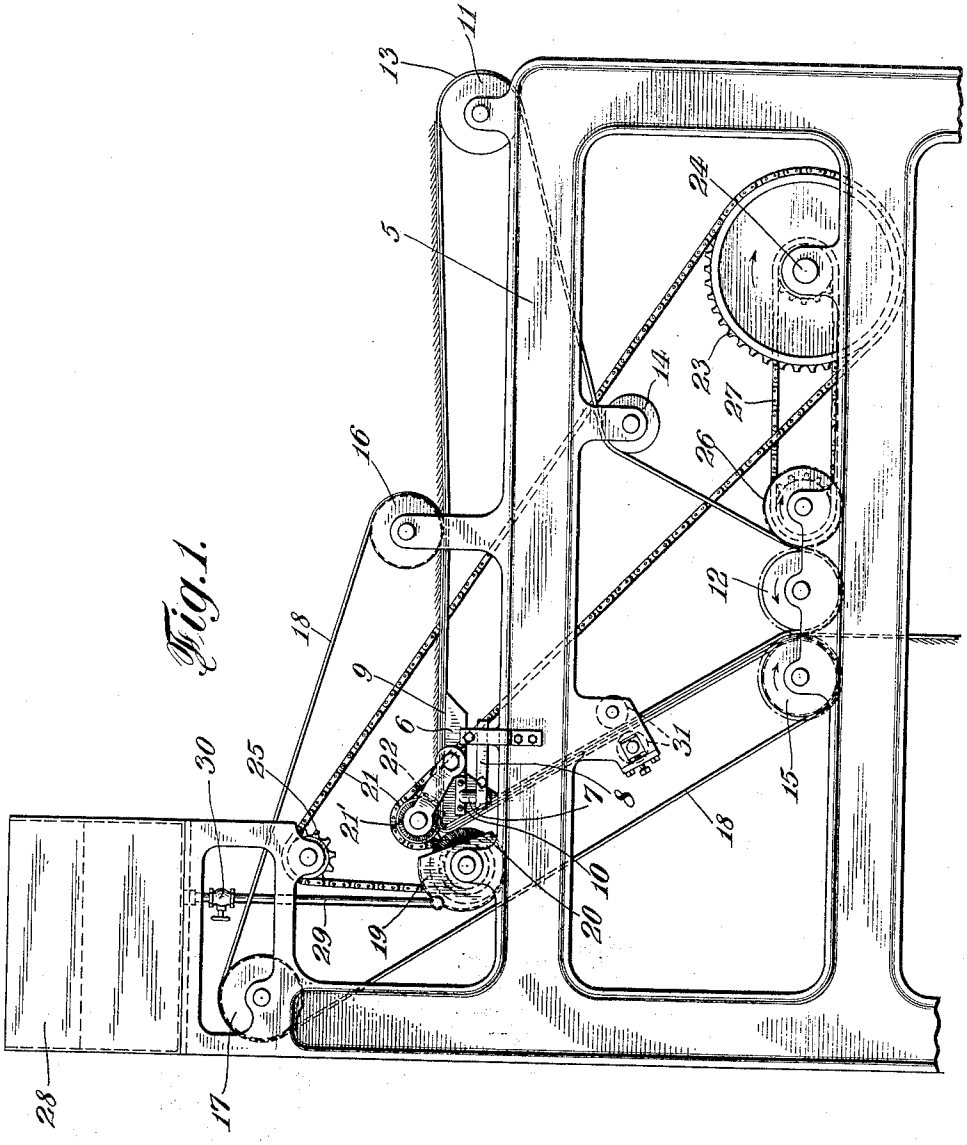


Fig. 1.

INVENTOR

William Gebrath

BY C. P. Goepel

his ATTORNEY

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Fig. 2.

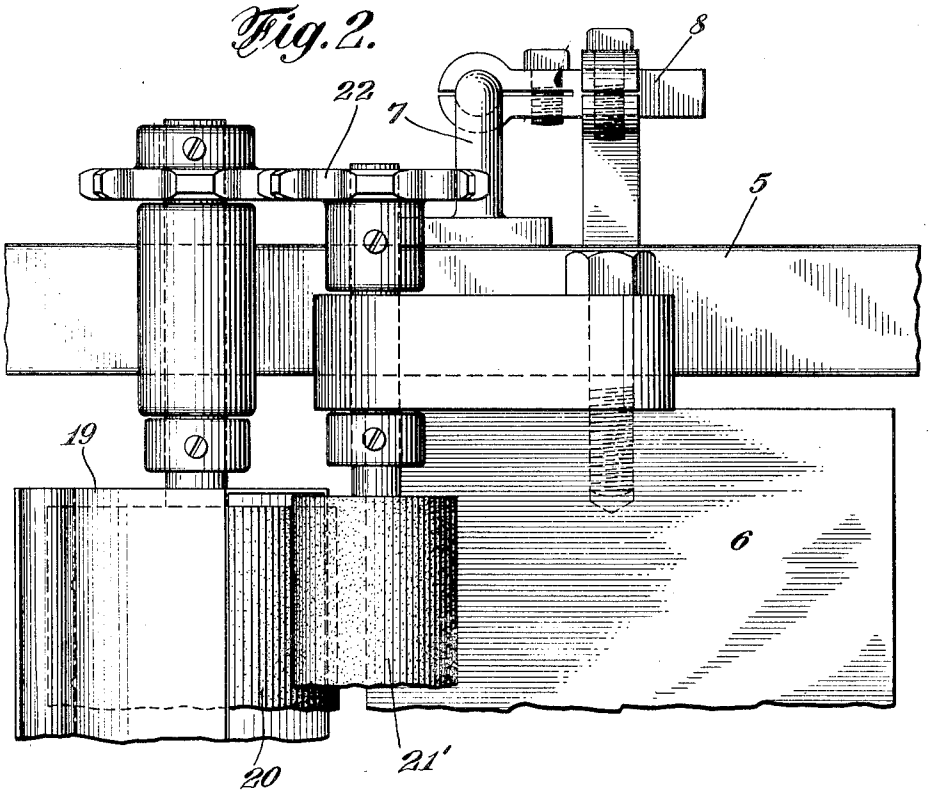
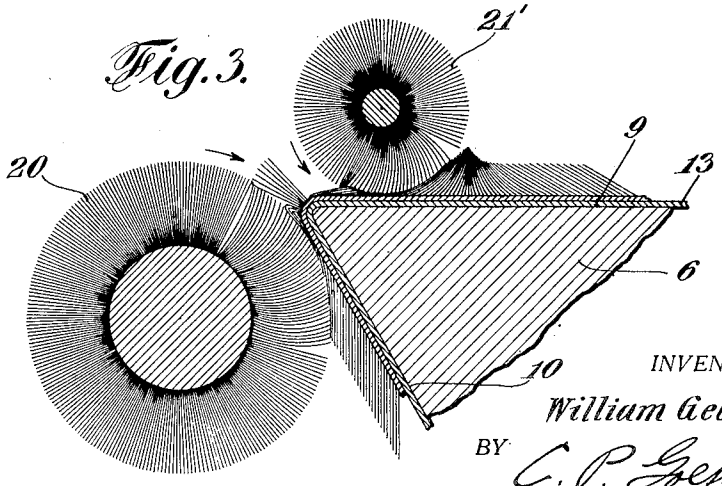


Fig. 3.



INVENTOR
William Gebrath
BY C. P. Goepel
his ATTORNEY

Patented June 8, 1926. 1,587,945

UNITED STATES PATENT OFFICE.

WILLIAM GEBRATH, OF EAST ORANGE, NEW JERSEY.

FUR-DYEING APPARATUS.

Application filed December 27, 1923. Serial No. 682,866.

This invention relates to fur dyeing apparatus and has for its primary object to provide a simply constructed and efficient machine for automatically applying the dye to the fur hair, and thoroughly coating the hair without allowing any appreciable quantity of the dye to collect upon the skin.

In a practical embodiment of my invention, I provide a support and an apron movable thereover, together with endless cords, bands or analogous elements moving with the apron for holding the fur thereon. As the fur is thus drawn over the surfaces of the support, the hair is first brushed up by a brush rotating in the opposite direction to the movement of the fur, thereby separating individual hairs on the skin, and the dye is then applied by a second brush rotating in the same direction as the movement of the fur, the bristles of the latter brush catching the individual hairs, and as the dye is applied thereto, brushing the hairs down upon the skin. In this manner, only the hairs of the fur become coated with the dye and the dye is not rubbed into the skin itself, thus obviating rapid deterioration of the skin due to the chemical action of the dye constituents.

It is a further general object of the invention to provide a machine as above characterized, whereby the dyeing of various kinds of furs may be greatly expedited, the machine as a whole being of relatively simple construction, so that the cost of production will be comparatively small.

With the above and other objects in view, the invention consists in the improved fur dyeing apparatus and the form, construction and relative arrangement of its several parts as will be more fully hereinafter described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings, wherein I have illustrated one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views:—

Fig. 1 is a side elevation of a fur dyeing apparatus, constructed in accordance with the preferred embodiment of the invention;

Fig. 2 is a fragmentary top plan view, and

Fig. 3 is a detail diagrammatic view illustrating the action of the rotating brushes upon the fur.

As herein illustrated, I have shown the essential parts of the apparatus suitably mounted and arranged upon a supporting frame 5. Upon this frame there is arranged a support 6, having bracket members 7 secured to the ends thereof which are mounted in suitable clamps 8 arranged upon the frame. However, any other desired means may be employed for detachably mounting this support in position upon the frame structure. The support 6 has an upper horizontal plane surface 9 and an obliquely inclined end surface 10, the purpose of which will presently appear.

Upon the frame structure 5, rollers 11 and 12 are suitably supported. The endless apron 13 passes around these rollers and over a suitably mounted tension roller 14 arranged between the rollers 11 and 12. The upper stretch of the apron 13 is horizontally disposed and moves along the horizontal surface 9 of the support 6, said apron then extending downwardly over the oblique face 10 of the support to the roller 12.

Additional rollers 15, 16 and 17 are also mounted in the frame structure, the roller 16 being located intermediate the ends of the upper horizontal stretch of the apron 13 and closely adjacent thereto. Two or more endless cords 18 pass around these latter rollers, said cords extending in closely adjacent parallel relation to the horizontal stretch of the apron and to the obliquely disposed stretch thereof extending between the face 10 of the support and the roller 12.

Adjacent to the end face 10 of the support a dye receiving container and rotatable dye applying brush 20 is arranged, the brush shaft exteriorly of the container being provided with a sprocket wheel with which the drive chain 21 is engaged. This chain also drives a second brush 21′ upon the shaft of which the sprocket 22 is fixed, the latter brush being mounted above the upper surface 9 of the support and adjacent to the juncture of the upper surface with the end surface 10 thereof. The peripheral line of the dye applying brush 20 is located contiguous to the latter surface.

The chain 21 is driven by the large sprocket wheel 23 fixed upon the main shaft 24 which may be operatively connected to a motor or other source of power, said sprocket chain being trained over a guide sprocket 25.

The roller 15 is located at one side of the

apron roller 12 and at the opposite side thereof the roller 26 is mounted and has bearing contact against the apron, said roller being driven by the sprocket chain connection 27, with the main shaft 24. The rollers, 12, 15 and 26 are also geared to each other in the conventional manner so that they are respectively rotated in the directions indicated by the arrows in Fig. 1 of the drawings. Thus, the endless apron and the fur holding cords 18 are moved in the direction indicated by the arrows in said figure and at the same speeds. The rollers 12 and 26 are surfaced with pliable rubber and by their close contact, squeeze off whatever dye may be adhering to the apron.

If desired, a tank or hopper 28 of large capacity may be supported upon the frame and connected by feed pipe 29 to the dye container 19. A suitable control valve 30 may be interposed in this feed pipe.

In operation, the fur is laid smoothly upon the upper stretch of the apron 13 with the hair side uppermost and is carried by the apron under the roller 16, at which point the fur is engaged by the cords 18. Thus it will be understood that the fur is closely held by these cords on the apron surface as the latter moves over the surface 9 of the support. The fur hair is first engaged by the bristles of the brush 21′, rotating in the direction indicated by the arrow in Fig. 3, so that the bristles strike the ends of the individual hairs and thus raise or lift the same from their natural reclining position upon the surface of the skin. The skin is held in position on the apron 13 by strings or cords as is well known in the art, and therefore not shown in the drawings. The brush 21′ also tends to bring the individual hairs above these strings or cords. After the fur has passed beneath this brush, the hairs will partially return toward their former positions but will stand out almost at right angles with respect to the surface of the skin. As the fur with the individual hairs thus disposed, is drawn around the end of the support upon the inclined surface 10, the hairs are engaged by the bristles of the brush 20, rotating in a reverse direction with respect to the brush 21′. The lower side portion of this brush is immersed in the dye liquid contained in the container 19, so that each individual hair will receive a complete coating of the dye liquid from the bristles of the brush. The tip only of the brush takes up the dye, and this gives a good control of the amount of the dye taken up by the brush. As the hairs are engaged by the bristles of said brush which is rotated at a surface speed, somewhat greater than the speed of movement of the fur, the hairs are drawn downwardly and directed toward the skin surface and in this positive movement of each hair, the thorough covering or coating of all surfaces thereof with the dye liquid is assured. In this manner it will be seen all of the fur hair will be uniformly dyed. The dye applying brush does not come into direct contact with the surface of the skin and consequently it will be apparent that very little, if any, of the dye liquid will collect upon the skin surface, so that the latter will not be affected by the chemical action of the dye constituents, thus prolonging the life of the fur. A machine of this kind may be obviously operated at very high speed, thereby greatly expediting the dying of the furs over the old method of brushing or working the dye into the fur.

In order to assure a uniform disposition of the dyed hairs with respect to the skin surface and also the removal of any excess dye liquid, I may provide squeegee rollers, indicated at 31, arranged upon either side of the obliquely extending portion of the apron 13 between the support 6 and the roller 12. However, these rollers are not essential and may be eliminated if desired.

From the foregoing description, the manner of operation and several advantages of my invention will be clearly understood. It will be seen that I have provided an apparatus for this purpose which is relatively simple in its construction and efficient in operation. The machine may of course be constructed in various sizes and may operate upon any number of furs at the same time. I have herein described and illustrated an embodiment of the invention which I believe to be entirely practical. However, since it is manifest that the essential features of my present disclosure might be exemplified in many other alternative structures, I reserve the privilege of resorting to all such legitimate changes in the form, construction and relative arrangement of the several parts as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:—

1. In a fur-dyeing apparatus, a support having adjacent angularly related surfaces, an endless fur carrying apron movable over said surfaces of the support, a rotating brush disposed contiguous to one of said surfaces for lifting the fur hairs from the skin surface, and a dye applying brush arranged contiguous to the other surface and engaging the individual fur hairs to apply the dye liquid thereto.

2. In a fur-dyeing apparatus, a support having adjacent angularly related surfaces, an endless fur carrying apron movable over said surfaces of the support, a rotating brush disposed contiguous to one of said surfaces for lifting the fur hairs from the skin surface, and a dye applying brush arranged adjacent to the other surface and

rotating in a direction opposite to the direction of rotation of said first-named brush, whereby the dye is applied to the individual fur hairs and said hairs individually moved by the brush bristles and returned to their normal positions relative to the skin surface.

3. In a fur-dyeing apparatus, a support, an endless apron movable over said support, endless cords having portions thereof closely disposed in parallel relation with said apron to hold the fur upon the latter, a dye container arranged adjacent to said support, and a dye applying brush mounted in said container and rotating in the direction of movement of said apron to apply the dye liquid to the individual fur hairs.

4. In a fur-dyeing apparatus, a support having adjacent angularly disposed surfaces, an endless apron movable over said surfaces of the support, endless cords movable at the same speed as said apron and having portions thereof closely positioned in parallel relation with the apron to hold the fur upon the latter as it moves over said support, a brush rotatably mounted adjacent to one of said surfaces to lift the hairs on the fur skin, and a dye applying brush mounted adjacent to the other surface to apply the dye liquid to the individual fur hairs.

5. In a fur-dyeing apparatus, a support having adjacent angularly disposed surfaces, an endless apron movable over said surfaces of the support, endless cords movable at the same speed as said apron and having portions thereof closely positioned in parallel relation with the apron to hold the fur upon the latter as it moves over said support, a brush rotatably mounted adjacent to one of said surfaces to lift the hairs on the fur skin, a dye applying brush mounted adjacent to the other surface to apply the dye liquid to the individual fur hairs, and means for rotating the latter brush in the direction of movement of the fur and at a relatively higher speed and for rotating the first named brush in the opposite direction.

6. In a fur dyeing machine, means for moving a fur bearing skin along a prescribed path having portions extending in intersecting planes, means arranged at one side of the point of intersection of such planes to lift the fur from the surface of the skin, and a dye applying member arranged at the opposite side of the point of intersection of said planes to engage the individual hairs while said hairs are disposed substantially at right angles to the skin surface.

7. In a fur dyeing machine, a fur lifting member, means for moving the fur bearing skin along a prescribed path beneath said member and for engagement thereby whereby the fur is lifted from the skin surface, and a rotary dye applying member having its axis disposed below said path of movement of the skin and adapted to engage the individual fur hairs while said hairs are disposed substantially at right angles to the skin surface.

8. In a fur dyeing machine, means for moving a fur bearing skin along a prescribed path having portions extending in intersecting planes, a rotary brush mounted at one side of the point of intersection of said planes to engage and lift the fur from the surface of the skin, and a rotary dye applying brush mounted at the other side of the point of intersection of said planes and adapted to engage the individual fur hairs while said hairs are disposed substantially at right angles to the surface of the skin.

9. In a fur dyeing machine, a support having surfaces extending in intersecting planes providing a prescribed path over which a fur bearing skin may be moved, and a rotary dye applying brush mounted at one side of the point of intersection of said surface planes and adapted to engage and dye-coat the fur hair during movement of the skin from one of said surfaces upon the other of said surfaces.

In testimony that I claim the foregoing as my invention I have signed my name hereto.

WILLIAM GEBRATH.