Nov. 26, 1929. F. W. HORSTMANN 1,737,085

MEANS FOR PRODUCING DESIGNS IN FURS

Filed Sept. 22, 1925

FIG. 6.

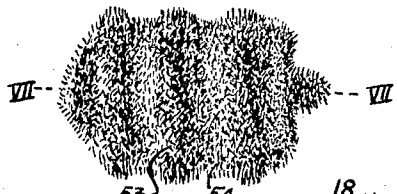

FIG. 3.

FIG. 4.

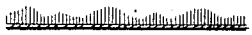

FIG. 7.

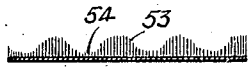

FIG. 5.

FIG 1

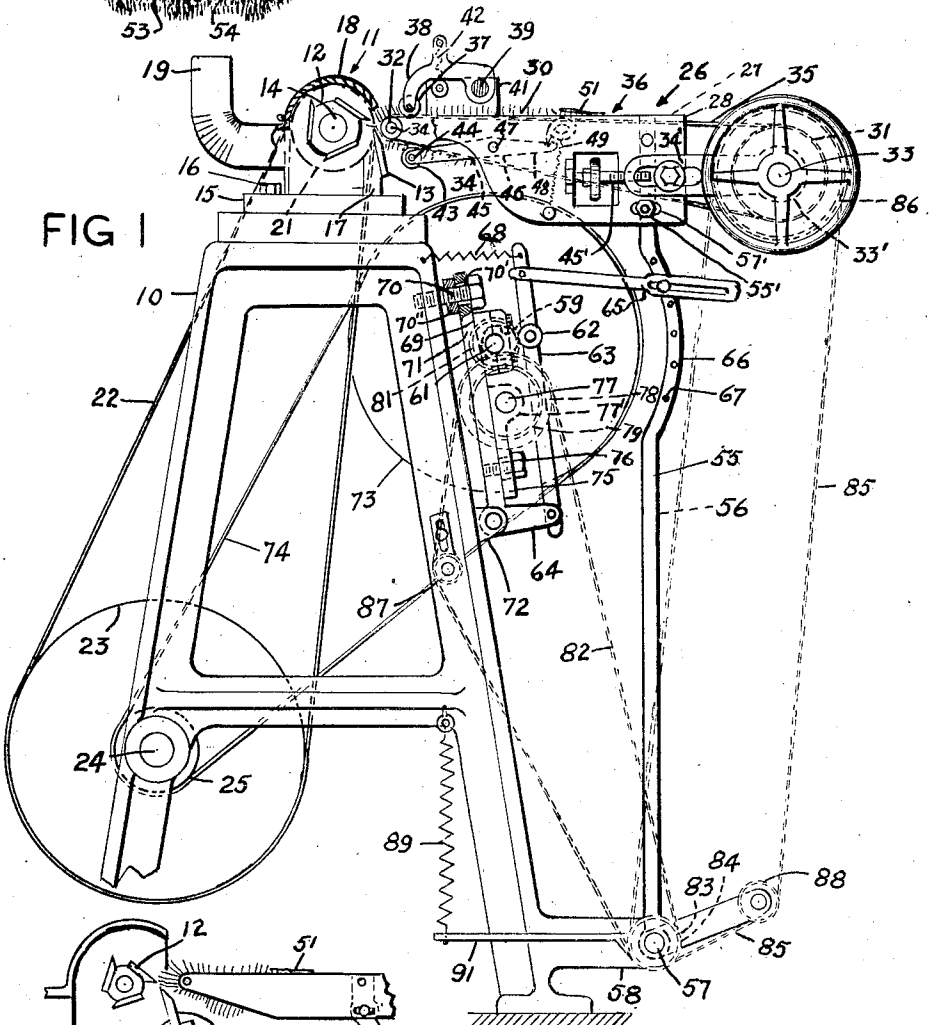

FIG. 2.

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UNITED STATES PATENT OFFICE

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MEANS FOR PRODUCING DESIGNS IN FURS

Application filed September 22, 1925. Serial No. 57,824.

This invention relates to a machine and method of producing novel and ornamental pattern or designs upon the fur surface of pelts or the like and to the article produced thereby.

In the manufacture of furs, that is, in the industry which conditions animal skins for fabrication into wearing apparel, it is desirable to produce attractive and ornamental effects. The appearance of fur for use as garments or other purposes has heretofore been confined to improving the fur to bring out the natural lustre and other desirable qualities by various treatments including dyeing, plucking and shearing, all of which have been performed in devious manners.

The present invention may include all of the various well known steps to bring out the pleasing qualities of the fur and in addition makes it possible to produce a surface of distinct pattern of permanent, definite and predetermined design, embodying, if desired, a color effect as well.

One method of producing a patterned pelt is to manipulate a shearing or other cutting machine so as to sever the fur in alternate strips or patches of predetermined configuration. That is to say, a shearing machine may be operated in such manner that the fur may be shorn and left long and short alternately. This operation not only results in a novel and pleasing design in so far as a short and long nap is concerned, but may produce a two color surface, since in a great many skins the fur close to the hide is distinctly different in color from that near the ends. Or, if desired, the fur may be dyed to produce different color effects. For example, the fur may be dyed a light color with the ends thereof of a different and distinct color so that when the fur is sheared in accordance with my invention a differential color scheme or design may be produced. Also the fur, after being cut in accordance with the herein described invention, may have the tips of the longer hairs or fur dyed a distinctive color from the remainder of the fur.

This general idea may be carried out to give many variations, such for example as producing a gradual dark to light surface where the fur next to the hide is lighter than the surface. In other cases the shearing machine may be controlled to cut the fur so that portions of the surface of a skin will have fur of gradually increasing length from the center of said portions to the border edges of the long fur. On the other hand, the shorter fur may be of uniform height producing a distinct and clearly marked contrast to the long fur.

An object of the present invention is, therefore, to produce fur products having the surface of a pleasing and predetermined pattern.

Another object of the invention is to provide a pelt having portions of the fur removed to produce a design.

Another object of the invention is to utilize the variation in color between the surface and base of the fur on a pelt and to expose the lower portions of the fur in a pleasing and ornamental manner.

Another object of the invention is to provide a method of producing a pattern upon a pelt.

Another object of the invention is to provide a method whereby a pelt may be shorn to give a patterned surface.

Another object of the present invention is to provide a machine for removing predetermined portions of fur from a skin to produce a patterned surface.

Another object of the invention is to provide a machine for automatically shearing a pelt to produce a pattern thereon.

Other objects and advantages of the invention will become apparent as the following description is read.

As an example of a practical embodiment of my invention I may employ a fur shearing machine such as that disclosed in my copending application Serial Number 7,671, filed February 7, 1925. For the purpose of carrying out the present invention I provide the said fur shearing machine with a reciprocable or floating conveyor for feeding the pelt to the cutters.

The movable conveyor may be advanced to permit a shearing operation or retreated to permit a portion of a pelt to pass unshorn, or

if desired the machine may be so adjusted as to cut the fur into gradually increasing and decreasing lengths so as to produce thereon in effect permanent Marcel waves. This operation may be automatic, thus a pelt when conveyed past the cutters will have the fur formed into a pleasing design. The spacing of the waves, their depth and height and arrangement with respect to each other may be varied within wide limits and therefore a great variety of designs may be obtained. Such for instance, as a wide strip and a narrow strip, equal strips, adjacent wide strips of short and long fur with intermediate strips of either long or short fur, intersecting waves, waves of sinuous formation, and the like. These effects are readily produced by suitable cam or other machine elements which control the movement of the conveyor.

A machine by means of which a skin may have the fur removed in accordance with my invention is more clearly shown in the accompanying drawing in which

Fig. 1 is a side view in elevation of a machine embodying my invention and is partly shown in section where cross-hatched.

Fig. 2 is a fragmentary detail view showing an eccentric or cam action to reciprocate the conveyor to and from the knives.

Figs. 3, 4 and 5 are diagrammatic representative views, in transverse cross-section, of skins having the fur severed to produce different patterns.

Fig. 6 illustrates a fur having transverse cut out portions, and

Fig. 7 is a section taken on line VII—VII in Fig. 6 and shows an undulatory formation of the fur.

The machine illustrated for practising my invention may comprise a suitable frame 10 to support the several operative parts of the machine.

Fur-shearing mechanism 11 may be positioned at the top or table portion of the frame 10 and may include a rotary cutter 12 and a bed-knife 13. The rotary cutter may be mounted on a shaft 14 journalled in suitable bearings at opposite sides thereof, the bearings being integral with a bedplate 15 secured by tap bolts 16 to the top of the frame 10 and the bed knife may be adjustably secured in any suitable manner to a post 17 integral with the bed plate 15. A housing 18 may enclose the cutters and an outlet 19 may be connected to a blower or other vacuum creating device (not shown) to remove severed fur in the usual manner and to assist in bringing the fur between the cutting knives.

The shaft 14 may be provided with a pulley 21 connected by a belt 22 to a pulley 23 rotatable with a shaft 24 journalled in suitable bearings provided in the frame 10. The shaft 24 may be provided with a driving pulley (not shown) for association with any suitable source of energy as for example a motor, also not shown. Thus it will be evident that means may be provided to effect a rotation of the rotary cutter 12, the speed of this cutter being in accordance with the ratios of the various pulleys and the speed of the motor employed. The shaft 24 constitutes the main driving member of the machine and is also provided with a pulley 25 to drive other mechanism as will presently be described.

The mechanism for conveying a skin 30 to the knives may be of the same general construction as that shown in the above-mentioned copending application, and may include a bearing bracket 26 comprising a pair of side plates 27 and 28 disposed at opposite sides of the machine and suitably held in fixed relation to serve as supports for rollers 31 and 32 mounted on shafts 33 and 34, respectively, the latter being journalled in the side plates 27 and 28. The rollers 31 and 32 in conjunction with a canvas belt or apron 35 constitute a conveyor which as a whole is designated by the numeral 36. The shaft 33 is journalled in adjustable bearings 33′, having slot and bolt connections 34′ to the plates 27 and 28, set screws 45′ being provided to cause an adjustment of the roller 31 to tighten or slacken the belt 35 when the bolts of said connections 34′ are loosened. Any other suitable means for applying or removing tension from the belt may, however, be employed.

As a skin is fed to the cutters by the conveyor it is held in firm contact with the conveyor by pressure members comprising a plurality of short rollers 37 rotatable at the end of arms 38 pivoted on a crossrod 39 mounted in extended portions 41 of the plates 27 and 28. Springs 42 serve to maintain the rollers 37 against the fur to hold the same firmly against the belt 35. The rollers may be disposed end to end transversely of the path of movement of the fur and provide a continuous flexible presser element to allow for local variations in the thickness of a skin and if a portion thereof is thicker than the adjacent portion, the contacting section of the rollers may rise without disturbing the effective contact of the remaining sections with the more uniform portions of the skins. This novel construction is more clearly shown in the above-mentioned copending application.

An additional roller 43 is provided to hold the skin against the belt 35 after the skin has passed beneath the conveyor. This roller may be rotatable on a shaft 44 carried at the ends of arms 45 of levers 46 pivoted on a shaft 47 which may be secured in the side plates 27 and 28. The opposite arm 48 of each of the levers 46 may be engaged by a helical spring 49, the opposite end of which may be secured to the bearing bracket 27. The roller 43 is mounted on said lever arms

so that when desired the spring 49 may be disengaged with the levers and the roller released from contact with the skin. The apron or belt 35 of the conveyor may be provided with any suitable means for holding skins for delivery to the knives. The present construction of a conveyor belt is shown with pockets 51 into which an end of a skin may be inserted by an operator feeding the machine, so that the skin may be positively passed beneath the rollers 37 and in operative relation to the knives.

The above description is generally the same as that set forth in the hereinbefore mentioned copending application, said machine operating to merely uniformly shear the fur of a skin.

The present invention, however, provides means for moving the conveyor 36 to and from the shearing mechanism 11 to produce a skin with the fur sheared at spaced intervals, as shown in Figs. 7 and 8. As will be noted by the example shown, the strips 53 represent fur left long or unshorn while the strips 54 represent shorn portions of the fur.

When employing a machine, as shown, to practice the present invention, I mount the conveyor 36 on rocker arms 55 and 56, mounted at opposite sides of the bracket 26 and the frame 10. The upper ends of the arms may be secured by bolts 55′ to the plates 27 and 28 of the bearing bracket 26, thus providing a floating or reciprocable conveyor. The bolts 55′ may pass through slots 57′ to permit a tilting adjustment of the end of the conveyor adjacent the cutters. The lower ends of the arms may be pivoted upon a shaft 57 mounted in bearings 58 integral with the frame 10. An oscillatory movement is imparted to the rocker arms by means of cam members 59, on a shaft 61, by engagement with rollers 62 mounted on levers or secondary rocker arms 63 pivoted in extensions 64. The levers 63 may be connected by links 65 fastened to curved portions 66, having the axis of the shaft 61 as a center, of the rocker arms 55 and 56. The extent of the in and out motion of the conveyor 36 may be adjusted by disposing the ends of the links in the openings 67 in the curved portions of the rocker arms, a slot 67′ being provided in the end of each link 65 to facilitate this adjustment. A spring 68 may be provided for each of the rocker arms 63 to hold the rollers 62 in contact with the cams 59.

The shaft 61 may be mounted in bearings 69 carried on adjustable bearing plates 71 pivoted in bearings 72 at opposite sides of the frame 10 and which will be more fully described hereinafter. The bearing plate may be adjusted by bolts 70 passing through slots 70′ of the plates and threaded into the frame 10, locking nuts 70″ being provided to lock the plates in adjusted position. The shaft 61 upon which the cams 59 are mounted may be provided with a pulley 73 connected by a belt 74 to pulley 25, which latter is driven as hereinbefore described, motion thus being imparted to the cams to actuate the conveyor to and from the cutting mechanism.

Continuous movement to the conveyor belt 35 may be provided in the following manner. The bearing plate 71 may be provided with an adjustable bearing 75 held by a bolt 76 which passes through a slot in a foot piece of said adjustable bearing. A shaft 77 mounted in bearing 75 is provided with a sprocket wheel 78 and a spur gear 79. The spur gear is disposed in mesh with another gear wheel 81 secured to shaft 61. Motion is translated from the shaft 61 through gears 81 and 79, the gear 79 causing a rotation of the shaft 77 upon which the sprocket wheel is mounted. A chain 82 may connect the sprocket 78 with another sprocket 83 secured to the shaft 57 which is thus revolved. Adjacent the sprocket 83 may be secured another sprocket 84 over which a chain 85 leads to a sprocket 86 secured to the shaft 33 to which roller 31 of the conveyor 35 is fastened, motion being thus transmitted from the shaft 61 to the conveyor.

An idler 87 may be provided to take up slack in the chain 82 and adjustable or tension idler 88 may be provided to hold the chain 85 taut, tension being applied by means of spring 89 and lever 91.

As illustrated in Fig. 2 an in and out motion may be imparted to the conveyor 36 by eccentrics 92 mounted on the shaft 61, the eccentrics engaging circular apertures 93 provided in special links 65′.

By reason of the various adjustments provided, accurate control may be had to produce a variety of designs. For example, the adjustment of the link 65 in the various openings 67, provides for regulating the extent of the in and out motion of the conveyor with respect to the cutter mechanism, whereby the depth of the cut may be carefully regulated. The position of the end of the conveyor passing around the roller 32 may be adjusted through the members 55′ and 57′, thus enabling the fur on the skins to be properly positioned with respect to the knives so that a more uniform and regular cut design may be obtained. By reason of the adjustment 70, 70′, and 70″, the extent of the in and out movement of the conveyor may be regulated and in addition this adjustment permits a change in position of the bearings supporting the shaft 61 in case it is desired to substitute a different gear 81 or cams 59, it being understood that a wide range in the speed of the conveyor may be obtained by substituting differently sized gears 81, while various movements of the conveyor with respect to the cutting mechanism may be obtained by substituting differently designed cams 59. Compensation for changes in the size of the gear 81 may be provided through

the adrustment of the bearings 77′ through the slot and bolt 76.

It is to be appreciated that the cams 59, as heretofore explained, may have a great many contours to produce different movements of the conveyor with respect to the knives and thus obtain a great variety of patterns or designs in the fur and also that instead of operating the conveyor continuously an intermittent movement thereof may be provided.

The relative motion of the conveyor and the knives is very slight since the fur is not very long. Furthermore, the travel of the conveyor about the rollers 31 and 32 during its in and out bodily movement together with the rise of the cams 59 are so adjusted with respect to each other as to obtain a shearing of the fur to produce the design shown in Fig. 7. Obviously, however, by varying these two factors as well as the speed of the conveyor and the extent of the bodily movement thereof distinctive designs differing from that shown in Fig. 7, and like those shown in Figs. 3, 4, 5, and other designs may be obtained.

From the foregoing it will be readily understood that many designs in the shearing of fur may be attained by slight adjustments to the machine and that the machine is so constructed as to quickly and conveniently be arranged to cut the fur of a skin in any predetermined design and when so adjusted adapted to operate to produce such designs automatically.

The machines illustrated and described are, of course, merely illustrative of a practical embodiment of my invention, it being understood that in its broadest aspect the invention resides in the alteration of a skin to remove fur to produce a pleasing and novel appearance and that other modified machines may be employed without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A fur shearing machine for producing ornamental effects in the fur surface of pelts, which comprises a shearing mechanism, a conveyor belt for presenting a pelt to said shearing mechanism, suction means for stiffening the fur on a pelt when fed past said shearing mechanism, means for causing said belt to travel past said shearing mechanism, and means for relatively moving said belt and said shearing mechanism for causing a pelt to be sheared at spaced intervals.

2. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of fur shearing means, means for actuating said shearing means, conveying means for moving a pelt past said shearing means, and means for producing a relative movement between said conveying means and said shearing means while the pelt is being fed past said shearing means, whereby the fur is sheared at uniformly spaced intervals.

3. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of fur shearing means, means for actuating said shearing means, conveying means for moving a pelt past said shearing means, means for producing a relative in and out movement of said fur shearing means and said conveying means, and means for causing a simultaneous feeding of a pelt by said conveying means past said shearing means while said shearing and conveying means are moving relatively in and out, whereby the fur on a pelt carried by said conveying means past said shearing means is sheared at spaced intervals.

4. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of fur shearing means, means for actuating said shearing means, conveying means for supporting pelts to be treated and for moving the same past said shearing means, and means for causing a pelt carried by said conveying means to be moved toward and from said shearing means while it is being fed past the same, whereby the fur on the pelt is sheared at spaced intervals.

5. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of fur shearing means, conveying means for presenting a pelt to be sheared, means for moving at least one portion of said conveying means toward and from said shearing means while a pelt on said conveying means is being fed past said shearing means, and means for causing a simultaneous feeding or a pelt by said conveying means past said shearing means while said conveying means is moving toward and from said shearing means, whereby the fur on a pelt is cut in a definite design.

6. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of fur shearing means, a conveyor for feeding a pelt past said shearing means, means for causing said conveyor to be moved toward and from said shearing means while a skin or pelt is being fed past the same, and means for causing a simultaneous feeding of a pelt by said conveyor past said shearing means while said conveyor is moving toward and from said shearing means, whereby the fur on a pelt is cut in a definite design.

7. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of shearing means, conveying means adapted to support a plurality of pelts, means for reciprocating said conveying means with respect to said shearing means while a pelt is being fed past the same, and means for causing a simultaneous feeding of

a pelt by said conveying means past said shearing means while said conveying means is reciprocating with respect to said shearing means, whereby the fur of a pelt is sheared at uniformly spaced intervals.

8. In a machine for producing ornamental effects in the fur surface of pelts or skins, the combination of shearing means, means for conveying pelts, means for bodily moving said conveying means with respect to said shearing means while a pelt is being fed past said shearing means, means for adjusting the extent of of said movement and means for causing a simultaneous feeding of a pelt by said conveying means past said shearing means while said conveying means is being bodily moved with respect to said shearing means.

9. A fur cutting machine comprising shearing mechanism, means for actuating said shearing means, a conveyor for feeding skins past said shearing mechanism, means for causing a relative movement between said shearing mechanism and conveyor to cause said shearing mechanism to cut the fur on skins in a predetermined manner, means for altering the extent of said movement to alter the design cut in the fur and means for causing a simultaneous feeding of a pelt by said conveyor past said shearing mechanism while said conveyor and shearing mechanism are moving relatively to each other.

10. A fur cutting machine comprising means for shearing the fur of a pelt, means for conveying a pelt past said shearing means, means for causing the fur on a pelt supported by said conveying means to be sheared in a series of waves, and suction means for stiffening the fur during the shearing operation.

11. A machine for producing ornamental effects in the fur surface of skins, which comprises a shearing mechanism, a conveyor belt, means for moving said belt past said shearing mechanism, and means for causing a pelt carried by said belt to move toward and from said shearing mechanism while it is being fed past the same.

12. A machine for producing ornamental effects in the fur surface of skins, which comprises shearing mechanism, means for conveying pelts past said shearing mechanism, and means for reciprocating said conveying means to bring the pelt into and out of cutting position while the same is being fed past said shearing mechanism, said reciprocating movement being so controlled as to gradually increase the depth of cut and then to gradually decrease the same, whereby a series of undulations are produced in the fur surface.

13. A machine for producing ornamental effects in the fur surface of skins, which comprises shearing mechanism, a pair of spaced-apart rollers, a frame supporting said rollers, a conveyor belt threaded over said rollers, means for reciprocating said frame, and means for causing a simultaneous feeding of a pelt by said conveyor belt past said shearing mechanism while said conveyor is being reciprocated with respect to said shearing mechanism whereby a pelt carried by said conveyor will be moved toward and from said shearing mechanism while it is being fed past the same, whereby a cut design comprising a series of transverse waves is produced in the fur of a pelt.

14. A machine for producing ornamental effects in the fur surface of skins, which comprises shearing mechanism, a pair of rollers supported by a frame, said frame, a belt threaded over said rollers, means for moving said conveyor past said shearing mechanism, means adjacent one end of said belt and adjacent one of said rollers for holding a skin against the conveyor while the same is being fed past said shearing mechanism, and a cam for moving said belt toward and from said shearing mechanism, said cam being so designed as to reciprocate said belt in timed relation to the travel of said conveyor so as to produce in the fur surface of a pelt carried by the belt a series of waves having rounded crests and hollows.

In testimony whereof I affix my signature.

FREDERICK W. HORSTMANN.