Aug. 8, 1944. R. F. KNIGHT 2,355,221

METHOD OF CLEANING HIDES AND SKINS

Original Filed Nov. 21, 1941

Fig. 1.

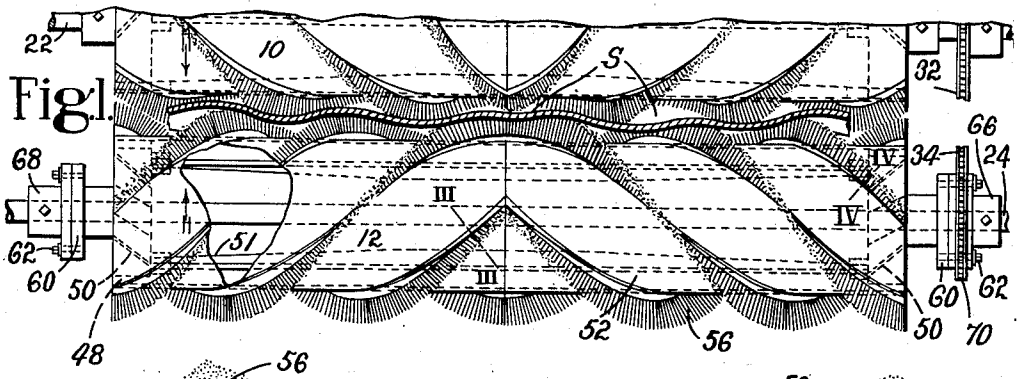


Fig. 3.

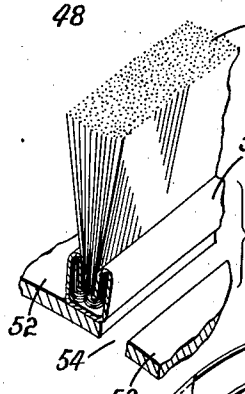


Fig. 4.

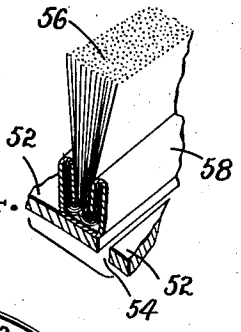
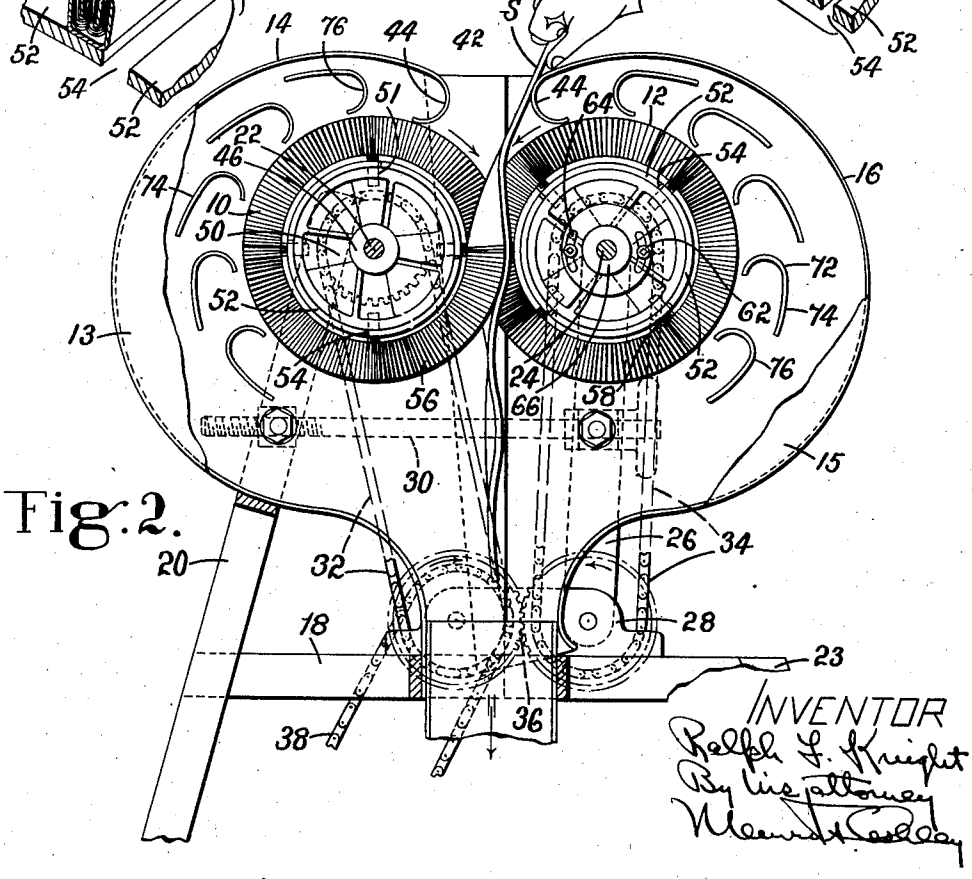


Fig. 2.



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METHOD OF CLEANING HIDES AND SKINS

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Original application November 21, 1941, Serial No. 419,819. Divided and this application August 22, 1942, Serial No. 455,762

1 Claim. (Cl. 69—21)

This invention relates to methods of cleaning hides and skins and more particularly to methods for removing dust from the opposed surfaces of such skins. This application is a division of an application in my name on a brushing machine, which has matured as Letters Patent of the United States No. 2,334,714, granted November 23, 1943.

In the use of ordinary brushing machines for the removal of dust from hides and skins, there is a decided tendency for the dust particles to stick to the brushes and to be redeposited upon the skins. This action is substantially independent of the presence or absence of suction to take away the dust. With this in view, an object of the invention is to devise an improved method of treatment of skins in accordance with which the dust may be more thoroughly and quickly removed therefrom at a minimum of expense.

In one aspect, invention will be seen to reside in a method of treating skins or the like in accordance with which the surface of the skin is brushed and blows are simultaneously applied alternately to the opposite faces of a portion of the skin under treatment, thereby to cause a fluttering of the skin which will tend to shake loose the dust. Substantially simultaneously with this treatment, a current of air is directed outwardly through the brush bristles against the surface of the skin which is being treated.

The invention in accordance with these and other aspects will become clear from a consideration of the following description of a machine which may be utilized for carrying out the method. This machine is shown in the accompanying drawing, in which

Fig. 1 is a plan view of a portion of two brushes in which the brush elements are arranged in double-helical or herringbone rows;

Fig. 2 is an elevation of the machine with an end portion of the end of the casing broken away;

Fig. 3 is a fragmentary view of a portion of a brush strip and an adjacent slot, taken along the section line III—III in Fig. 1; and

Fig. 4 is a similar view taken along the line IV—IV in Fig. 1.

Rotary, substantially cylindrical brushes 10 and 12 are mounted within a casing having curved parts 14 and 16 which are supported upon a frame 18 having rigid legs 20 on the upper end of which and in the casing the shaft 22 of the brush 10 is mounted. In Fig. 2, most of the near end walls 13, 15 of the casings are broken away. On its other side the frame is supported upon another pair of legs 23. The shaft 24 of the brush 12 is journaled in swinging arms 26 pivoted on a bearing block 28 on the frame 18. The casing part 16 which is attached to these arms is arranged for adjustment toward and away from the casing part 14 by means of one or more screws 30 so that the distance between the two brush axes may be adjustably determined for a purpose which will later appear. The brushes are rotated in opposite directions by chain-and-sprocket drives 32 and 34 which are maintained in fixed relation by a pair of gears 36 to which power is delivered from any suitable source (not shown) by means of a chain 38. A suction outlet 40 at the bottom of the casing parts and supported by the frame 18 may be connected to a suction fan if it is desired to accelerate the removal of the dust.

In presenting work such as a skin S to the machine, one edge is held in the operator's hand 43 and the other edge is introduced in the entrance opening provided between two rounded edges 44 of the opposite casings and is drawn in to the machine between the downwardly moving surfaces of the oppositely rotating brushes. The operator then pulls the skin against the action of the brushes and draws it out of the machine. After this the skin is reversed and the untreated portion of the skin is introduced and withdrawn in a similar manner.

Only four rows of bristles have been shown on each of the cylindrical brushes but this is simply for the sake of simplifying the patent drawing, and it should be uderstood that any desired number of rows of brush strips may be utilized so long as sufficient space is left between adjacent rows so that the strips upon the opposing brushes may intermesh. Furthermore, in the illustrated construction the brush strips are disposed in the form of a double-helical or herringbone pattern around the periphery of the brush so as to gain the added advantage of spreading out the skin from its middle portion toward its edges as it is being treated. It will be found, however, that many of the advantages of the invention may be secured without using this helical arrangement.

The brush 10 is constructed upon the periphery of a spider made up of end hubs 46 each having a peripheral ring 48 supported upon radial arms 50 which are set at an angle so as thereby to obtain a fan action as the brush rotates. The end rings of the spider are joined by parallel transverse bars 51 to which may be secured, as by welding thereon, thin plates 52 spaced to provide

intermediate openings such as the slots 54. Each plate carries, along one edge, a brush strip 56. Each brush strip is made up of a row of bristles or equivalent parts held in a backing strip 58. The particular brush strip herein shown is disclosed in Letters Patent of the United States No. 2,302,761, granted November 24, 1942, upon an application filed in the name of William Goodhue, and which is assigned to the assignee of this application. However, any similar brush strip might be utilized to make up a cylindrical brush of the type shown. As a matter of convenience, in the double-helical, herringbone brush illustrated in the drawings, the plates 52 extend only to the center of the brush. The design of these plates is such that the slots 54 or any other suitable perforations are much larger near the center of the brush than they are at the ends, as is shown in Figs. 3 and 4 where the sections are taken near the center and near an end respectively. As a result, the currents of air sucked in through the ends and thrown out through the bristles by centrifugal force will be equalized along the length of the brush.

In order to adjust the angular relation of the rows of bristles on the two brushes, when setting up the machine or when replacing one of the brushes, provision is made in the brush 12 for angular adjustment of the brush with respect to its shaft. This is accomplished by providing flanges 60 (Fig. 1) at each end of the brush in which are threaded bolts 62 extending through slots 64 (Fig. 2) in the face of a pair of flanged collars 66 and 68 which are held on the shaft 24 by means of set screws. This makes it possible to adjust the brush 12 around its shaft 24 without disturbing the drive chains, one of which is placed around a sprocket 70 secured to the collar 66. This is a matter which becomes of greater importance as the number of rows of brush elements is increased.

During the rotation of the brushes at substantial speeds, currents of air will be carried along with the peripheries of the brushes and will in a measure interfere with the action of the air drawn through the entrance 42 and the suction outlet 40. Accordingly, curved vanes or baffles 72 have been positioned between the end plates of the casing members 14 and 16 and have been disposed in such a way close to the periphery of the brush that the air drawn around frictionally by the rotating brush will be reversed and caused to pass out through a series of similar openings such as that between the tail portion 74 of one baffle and the curved portion 76 of the next baffle into the space between the baffles and the casing and thence into the suction outlet 40.

As one-half of a skin S is dropped into the entrance opening 42 it will be caught by the brushes and drawn into the casings until stopped by the operator and pulled backward. During this time the half portion of the skin which is being treated will be not only brushed in the customary fashion but will also be subjected to the repeated blows of rows of bristles upon opposite faces of the portion between the brushes, pushing the skin first one way and then the other into the spaces between rows on the opposite bristles. This will cause the skin to vibrate or flutter and therefore it is subjected to somewhat the same sort of an action as when an operator shakes it in the open air as he would a rug. The extent of the beating or fluttering action, which is somewhat exaggerated in Fig. 2, will be controlled by adjusting the screw 30 without thereby varying the relation between the brush 12 and the adjacent baffles 72. At the same time the skin will be subjected to a blast of air, forced out through the slots 54 by centrifugal action, which will pass through the bristles radially and impinge upon the surface of the skin substantially normally thereto. Furthermore, the currents of air carried around by the brushes will be reversed by the baffle plates and caused to travel more readily toward the exhaust outlet 40 so that the size of fan which is required for the suction may be cut down.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

That improvement in methods of cleaning the surfaces of tanned hides and skins which consists in brushing successive areas of the surfaces of a skin and applying blows alternately to opposite faces of the skin in substantially those same areas, causing it to flutter, and at the same time setting up a current of air directed outwardly through the brush bristles against the surface of the skin being brushed and substantially normal thereto.

RALPH F. KNIGHT.