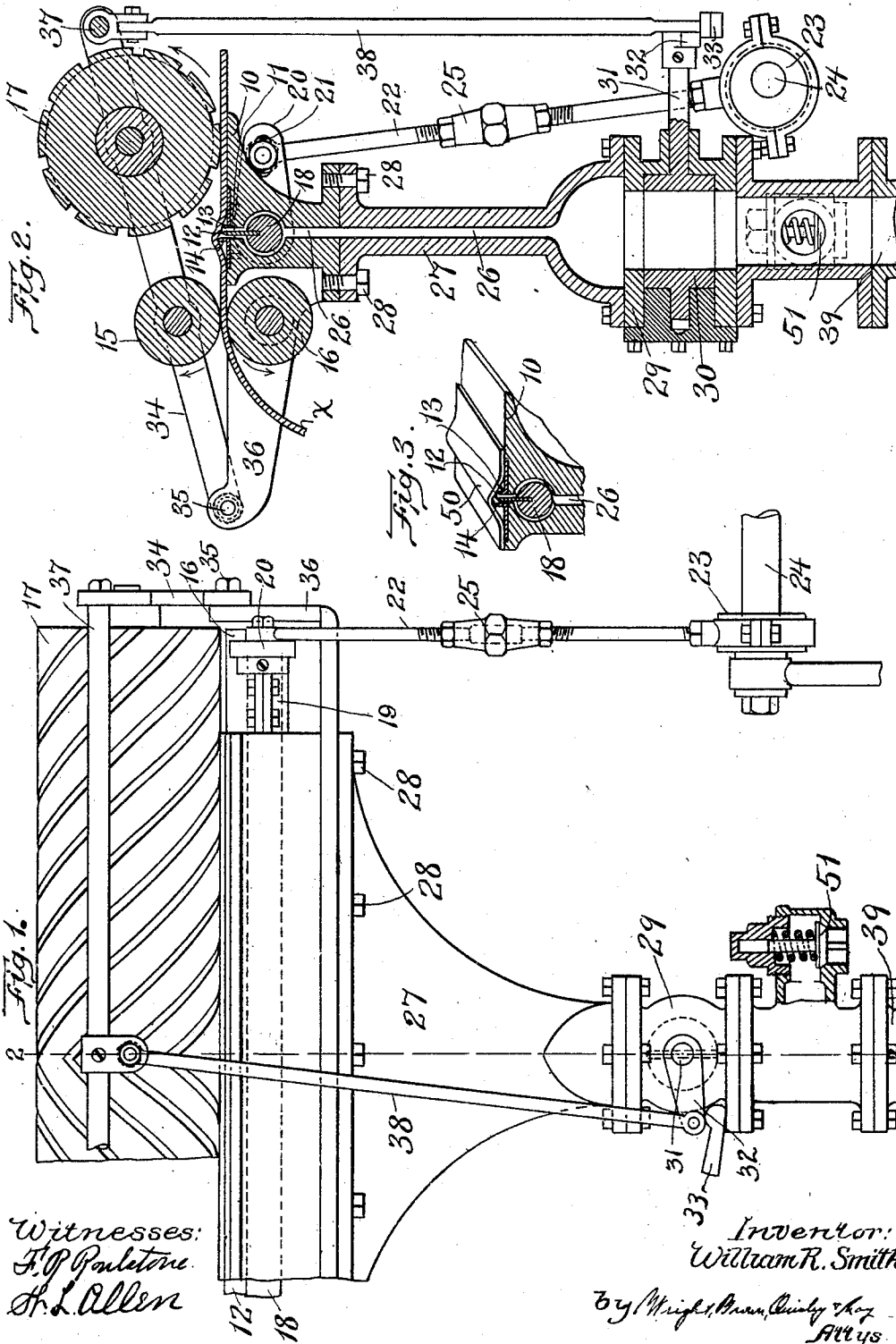


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 APPARATUS FOR UNHAIRING SKINS.
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR UNHAIRING SKINS.

967,989.

Specification of Letters Patent. Patented Aug. 23, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM R. SMITH, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Unhairing Skins, of which the following is a specification.

In the removal of the hair from skins prior to tanning, it is customary to subject the skins to certain chemical treatments to facilitate the later removal of the hairs. But it has been difficult, if not impossible, to remove the fine hairs. This may be due to the fine hairs being too small to possess the requisite tensile strength to enable them to be pulled out roots and all after the chemical treatment. It has also been difficult to entirely remove the waste material and the remains of the chemicals, as well as the fine hairs or "pulp", prior to the tanning.

The object of my present invention is to remove all objectionable material that might interfere with the tanning operation. In attaining this object, I subject the grain or hair side of the skin to a strong suction to cause a strong current or currents of air to pass close to the surface, and simultaneously open the pores by curving the surface of the skin, and at the same time subject the surface to a rapid beating or working action.

My present application is a division of my application Serial No. 527,554, filed November 11, 1909, and consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings,—Figure 1 is a front elevation, partly broken out, of so much of a machine as will be necessary to understand the invention. Fig. 2 represents a section on line 2, 2 of Fig. 1 looking toward the right of said figure, but showing both connecting rods in elevation. Fig. 3 is a detail perspective view of a cover plate which may be employed, and a portion of the slotted table.

Similar reference characters indicate the same or similar parts in all the figures.

The supporting surface or table on which the skin is treated, is indicated at 10. For convenience of illustration and description, this surface is shown as horizontal. But I do not limit the invention to such arrange-

ment. The said table is formed with a slot 11 in which plays a rapidly vibrating blade 12, two other blades 13 and 14 being shown as projecting from the surface of the table at the sides of the slot 11. One of these blades 14, is preferably higher than the blade 13 for the reason which will herein-after be described.

Upper and lower feed rolls 15 and 16 respectively are employed to draw the skin over the slot, said rolls being rotated in the directions of the arrows by any suitable means, not shown. A spreading roll 17, of a wellknown type, provided with helical blades or grooves, serves to stretch the skin as it approaches the slot, the direction of rotation of the spreading roll being at a slow speed in the direction of the arrow.

The working or beating blade 12 is removably mounted in a suitable carrier 18 which I have indicated as a shaft mounted in suitable bearings 19. The blade is removably and preferably adjustably secured, so that it can be taken out for sharpening and so that its height can be adjusted to compensate for wear. Any suitable means for rapidly oscillating the carrier 18 may be employed. I have illustrated the following structure:—An arm 20 is rigidly connected with one end of the carrier 18, the outer end of said arm being formed with a slot 21 by means of which the upper end of a rod 22 can be secured to said arm at a greater or lesser distance from the axis of the carrier as may be found desirable to impart the necessary amount of beating or working stroke to the blade 12. The other end of the rod 22 is provided with suitable straps embracing an eccentric 23 secured to a shaft 24 which is to be rapidly rotated by any suitable means or connections, not shown. Preferably the connecting rod 22 is formed in two parts having a length-adjusting coupling 25. By means of this coupling 25, and the adjustment provided for by means of the slot 21 in the arm 20, the blade 12 can be accurately positioned so that when it vibrates it will not contact with either side of the slot. Sometimes, however, it may be desirable to so adjust the parts that the blade 12 will just touch one side of the slot and so shut off the current of air

on that side and consequently cause the surface of the skin over that side of the slot to work rapidly up and down.

There is sufficient space around the carrier 18 for the passage of air, and said space communicates with a port 26 in the casing 27, which casing may comprise two castings having flanges connected by bolts 28, this structure facilitating the manufacture of this part of the machine. The lower end of the lower section of the casing or casting connects with a valve casing 29 in which is mounted a suitable valve 30 having a stem 31, the end of which is provided with an arm 32, the under side of which is engaged by the end 33 of any suitable controlling lever. In practice the controlling lever device 33 would preferably be operated by a suitable foot-treadle. The rolls 15 and 17 are mounted in a frame 34 pivoted at 35 to a bracket 36, the front of said frame being formed as a rod 37 which may be grasped by hand to raise the frame and consequently lift the rolls 15 and 17 when a skin is to be placed in position or removed. Preferably, however, I employ connections such as a rod 38, the lower end of which is connected to the end of valve stem arm 32.

It is to be understood that any suitable vacuum apparatus is connected to the pipe 39 to exert a strong suction through the port 26 and the slot 11, when the valve 30 is open. Since it would be difficult to properly arrange a skin in position for treatment, during the time that exhaust is occurring through the slot 11, the connections described, including the rod 38, provide for automatically closing the exhaust or suction whenever the frame carrying the rolls 15 and 17 is elevated. By actuating the elevator 33, by means of any foot-treadle or otherwise, the closing of the valve 30 simultaneously lifts the frame carrying the rolls 15 and 17.

The machine illustrated is supposed to be of a size which will present a slot having a less length than the width of the skin to be treated, the skin perhaps being passed through the machine two or more times to effect complete unhairing. If the skin being treated is of a width considerably less than the length of the slot, one or more cover plates may be employed at one or both ends of the slot. Such a cover plate is indicated at 50 in Fig. 3, and is preferably of a form to fit over the tops of the blades 13, 14. It is not essential, however, that the skin or plate or plates 50 shall entirely cover the slot, because the vacuum apparatus which I prefer to employ has sufficient power to perform its functions upon the skin, even when air is gaining access to the slot past the edges of the skin. That is, the vacuum apparatus has a power far in excess of that which would be re-

quired to unhair the skins if there were no passage for air past the edge or edges of the skin. But since the employment of such a high power vacuum apparatus would tend to disrupt the skin if a wide portion happens to entirely cover the slot, I preferably employ an inwardly opening relief valve such as indicated at 51 in Fig. 1. Such relief valve may be of any wellknown type having a spring which may be adjusted to enable the valve to be unseated by a predetermined amount of atmospheric pressure. That is, when it is determined just the proper amount of exhaust to operate upon the skin in the manner described, the relief valve will be set or adjusted so as to open inwardly when the power of the exhaust exceeds such predetermined amount.

The result of exhausting the air below the skin, causes the skin to curve downward between the blades 13 and 14, as shown in Fig. 2. This curving or convexing of the grain side of the skin, serves to open the pores thereof. At the same time the blade 12 is rapidly beating on the convex surface of the hide and so working it as to further open the pores and allow the fine hairs to be pulled out by the strong currents of air flowing under the skin and over the blades 13, 14. By having the blade 14 higher than the blade 13, the blade 12 engages the convex surface at an angle or tangent, and serves its purpose better than if simply worked back and forth against a surface parallel with the plane of movement of the edge of the working blade. Owing to small irregularities in the surface of the skins, and the presence of hair which must pass over the blade 13 as the hide moves in the direction described, there will be such a rush of air under the lower surface of the skin as to act on the hairs with sufficient force to pull them out. This is due to the air rushing in because of the exhaustion of air below the skin. Those hairs which are not pulled out by the air passing over the blade 13 are mechanically worked by the blade 12 and so loosened that they will be then pulled out by the rush of air inward over the plate 14.

I claim:

1. A machine for unhairing skins comprising a slotted stationary support for the skin, and means for exhausting air through the slot.

2. A machine for unhairing skins comprising a slotted stationary support for the skin, means for exhausting air through the slot, and means for positively moving a skin over said slot.

3. A machine for unhairing skins comprising a slotted support for the skin, means for exhausting air through the slot, and means for mechanically working the under surface of the skin as it passes over said slot.

4. A machine for unhairing skins compris-

ing a slotted support, a blade mounted to
vibrate in said slot, means for vibrating said
blade, means for exhausting air through the
slot, and means for passing a skin over the
slot.

5 5. A machine for unhairing skins compris-
ing a slotted support for the skin, fixed
blades at the sides of the slot, a vibrating
blade between the fixed blade, means for

vibrating said movable blades and means for 10
exhausting air through the slot.

In testimony whereof I have affixed my
signature, in presence of three witnesses.

WILLIAM R. SMITH.

Witnesses:

JOHN D. LARKIN,
MAXWELL S. WHEELER,
CHARLES H. LARKIN.