

July 28, 1942.

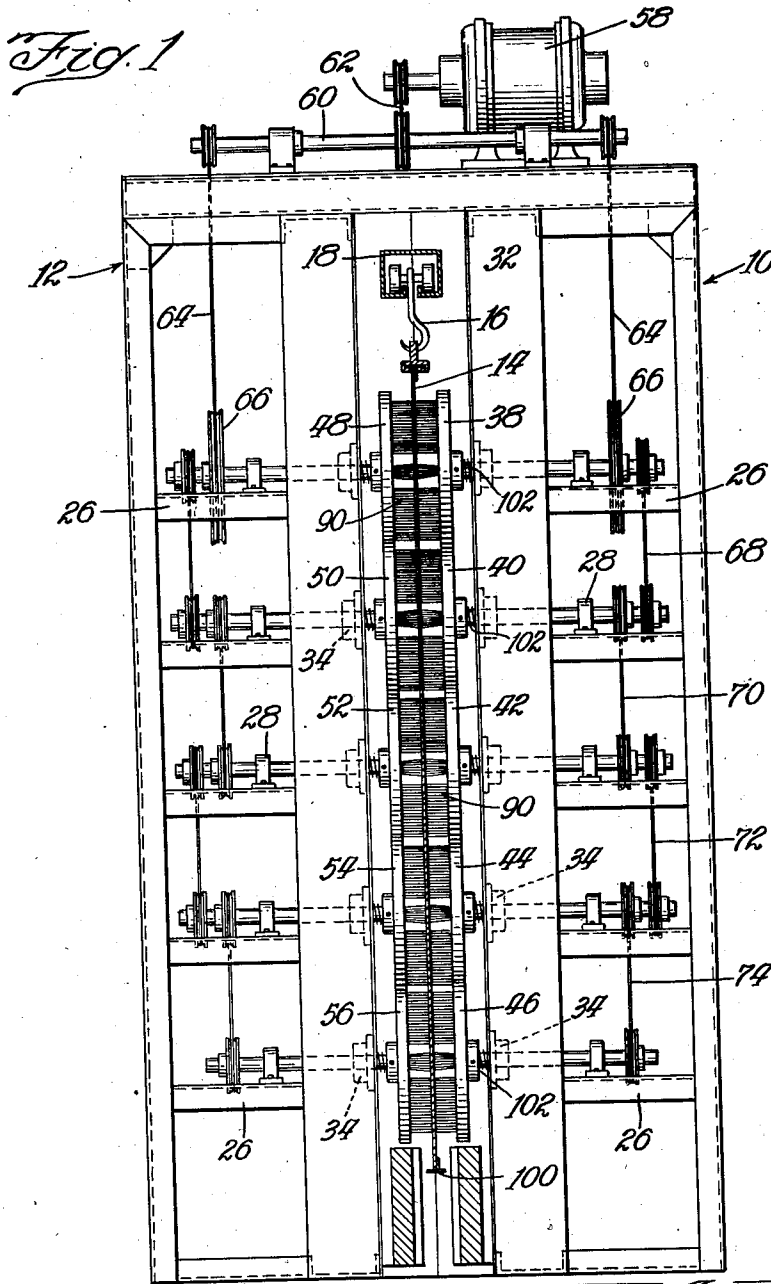
J. MATHY ET AL

2,291,553

PASTE REMOVAL

Filed March 14, 1938

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

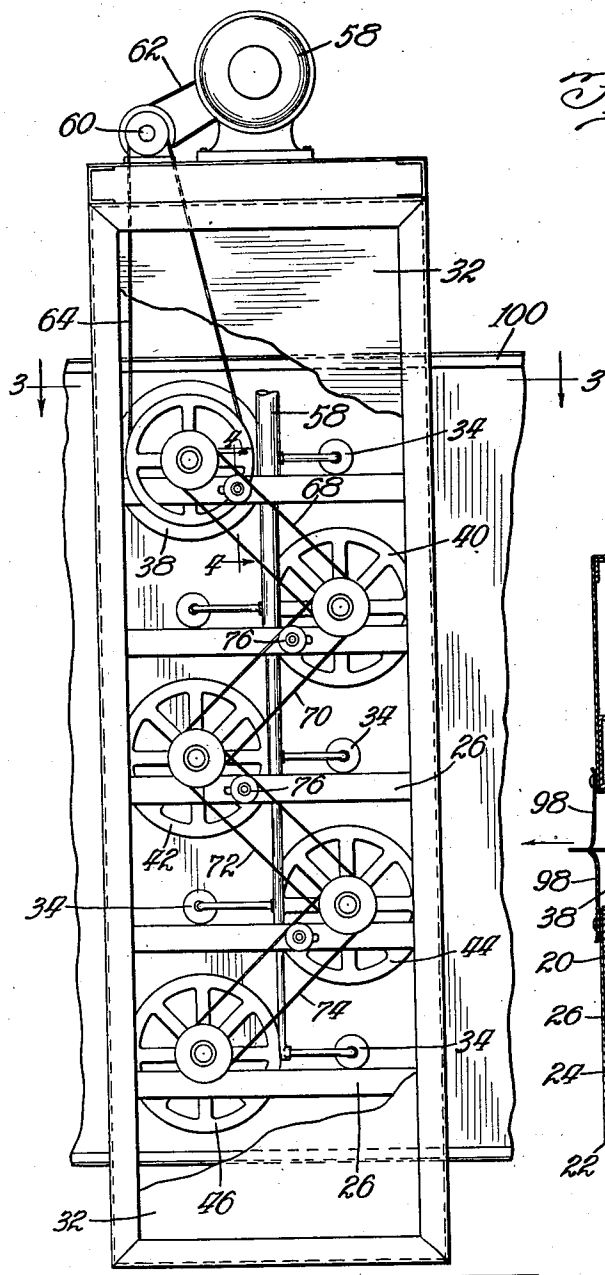


Fig. 2

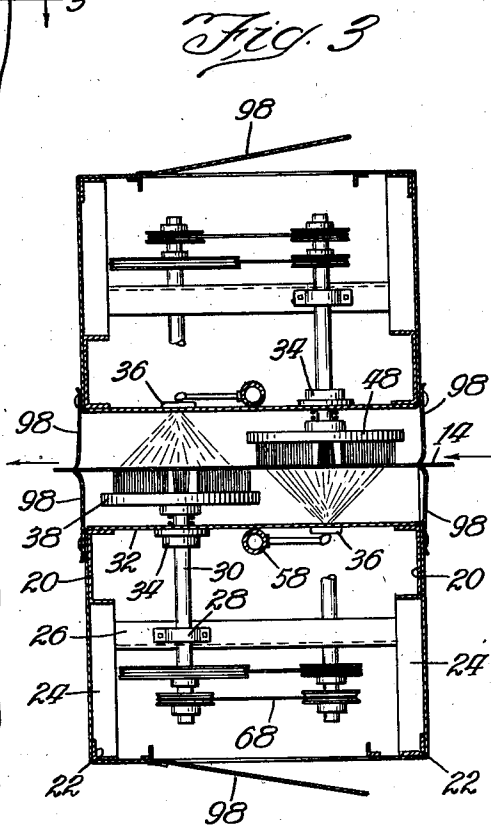


Fig. 3

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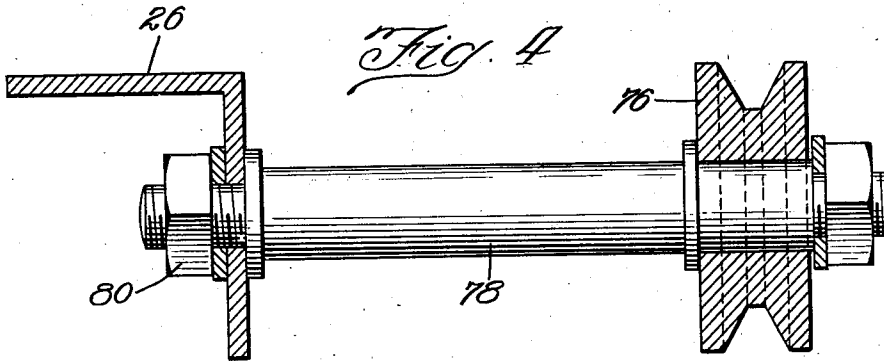
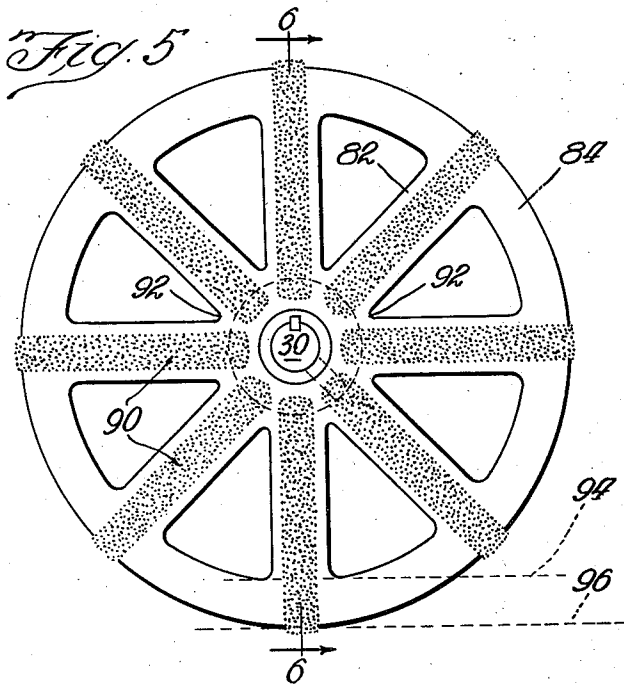
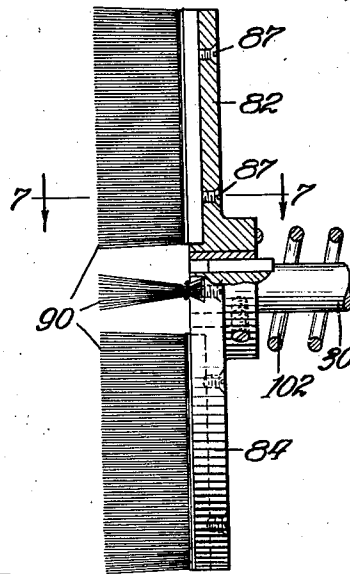
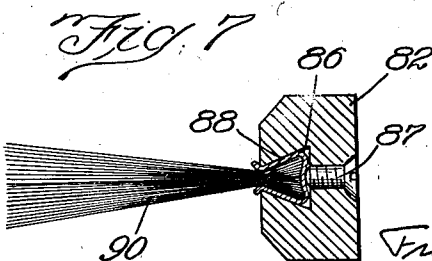


Fig. 6



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UNITED STATES PATENT OFFICE

2,291,553

PASTE REMOVAL

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Application March 14, 1938, Serial No. 195,704

3 Claims. (Cl. 15-77)

Our invention relates to the drying of leather in tanneries and includes among its objects and advantages an improvement in the removal of paste from the plates to which the kips or hides are pasted to be dried. The pasting process as a whole, in which the present invention is an improvement, is as described in Patent 2,102,667 issued on the invention of George M. Argabrite December 21, 1937. In this process the paste used is usually of the flour and water type, and after the dried hide is stripped from the plate a substantial fraction of the dried paste remains on the plate and must be removed before another hide can be satisfactorily affixed. The removal of such paste has in the past been done by hand, and even then with more or less difficulty, because the type of paste used, after the baking action of the drying process, is slow to soften under the action of water, and because any scratch or blemish on the surface of the plate would seriously injure leather later affixed to the plate so that a scraping process is impracticable. In the manual process, the workmen have bristle brushes of bristles so soft that there is no possibility of mechanical scratching of the plate, and the entire plate is flooded with a sheet of water, in which sheet the brushes are pushed around by hand until the paste has softened and comes off.

In the accompanying drawings:

Figure 1 is an end elevation of a device according to the invention with the adjacent end housing plates removed to show the construction more clearly;

Figure 2 is a side elevation with the side housing plates removed;

Figure 3 is a section as on line 3-3 of Figure 2 showing only the immediately adjacent brushes and spray heads for the sake of clearness;

Figure 4 is a detailed section on line 4-4 of Figure 2;

Figure 5 is a face view of one of the individual brushes;

Figure 6 is a side elevation partly in section as on line 6-6 of Figure 5 of the same brush; and

Figure 7 is a detail section on line 7-7 of Figure 6.

In the embodiment of the invention selected for illustration, twin housings 10 and 12 face each other on opposite sides of the path of movement of the plates 14. The plates move through the device on hangers 16 traveling on the usual tracks 18. Each housing is built up of a structural steel framework and cover plates. Briefly, each housing has opposed channels 20 at the corners next to the plate and angles 22 at the corners

remote from the plate suitably braced by horizontal cross pieces 24 at five different intermediate levels at top and bottom. At each of the five intermediate levels a beam 26 forms a cross brace in the center of the housing and a support for the remote bearing 28 of the drive shaft 30 for one of the brushes. The enclosure is completed by the front plate 32 which supports the inner bearing 34 for the shaft 30 and also the spray heads 36. The brushes 38, 40, 42, 44, and 46, on the right hand side of the plate 14 are staggered as clearly indicated in Figure 2. The upper brush 48 on the opposite side, as clearly indicated in Figure 3 is not opposite the brush 38 but offset to the other side of the housing. The uppermost sprayhead 36 on the right hand housing is co-axial with the brush 48. It will be apparent that when the plate 14 is not present between the brushes, the spray from the spray head 36, which is thrown in the form of a cone with its apex at the spray head, will drench the brush 48 continuously. Similarly the brush 38 is directly opposite the uppermost sprayhead 36 of the opposing housing and is similarly drenched. The other brushes on the left 50, 52, 54, and 56, are staggered with respect to each other and with respect to the brush 48 in the same way as indicated in Figure 2, but with the positions reversed so that on each level there are two paste brushes offset from each other and each brush has a co-axial spray head throwing water toward it when the plate 14 is not between the brushes. When the plate 14 is between the brushes, the water from the spray heads 36 strikes the naked plate and floods the plate with a layer of water. The water delivered is preferably at a temperature of about 160° F., some 20° or 30° hotter than the human hand can endure without physical injury. All the spray heads 36 are fed from a single supply pipe 58 which enters at the top and which is reduced in diameter where it passes each spray head, so that substantially equal pressure and volume flow will be maintained for all the spray heads.

We have illustrated suitable means for driving all the brushes. The motor 58 drives the countershaft 60 through a suitable belt and pulley transmission at 62, and from the countershaft 60 the belts 64 run down to pulleys 66 of large diameter on the shafts for the brushes 38 and 48. The brush 40 is driven from the brush 38 by a belt 68 and the brush 42 is driven from the brush 40 by the belt 70. Similarly the belt 72 drives the brush 44, and the belt 74 drives the brush 46. Each of the belts 68 and 70, 72 and 74 is provided

with adjustable tightening means. We have illustrated idler pulleys 76 each supported on a stud bolt 78 and clamped to the vertical leg of the beam 26 by means of the fastening nut 80.

Each individual brush comprises a supporting frame in the shape of a wheel having eight spokes 82 and a rim 84 to brace and reinforce the spokes. Each spoke has a dovetail groove 86 to receive the butt frame 88 of a bristle brush built up of bristles 90 and clamped in the frame 88. The frame 88 is slipped into the groove 86 and clamped in place by set screws 87. As clearly indicated in Figures 5 and 6, the inner end of each brush terminates quite a little short of the center of the brush at a point where there is still a little clearance as indicated in Figure 5 at 92 between the inner ends of the adjacent brush elements. Thus each brush element sweeps over the face of the plate by itself, with a substantial space separating it from each other brush element so that the hot water thrown by the spray heads, which splashes around so much as to fill the entire space between the face plates 32 with a heavy mist or rain, can drench and warm the surface of the paste adhering to the plate during the intervals between the passage of the successive brush elements over the surface of the plate. In Figure 5 the dotted line 94 indicates the level of the upper edge of the next brush, and the dotted line 96 level with the lower edge of the brush illustrated is drawn in to clearly indicate the extent to which the active areas engaged by the brushes on the plates overlap. It will be apparent that there is no point on the surface of the plate that is not wiped very many times by individual brush elements 90 and wetted down many times during the intervals between successive wipings. Because of this freedom for the access of the hot water to the plate, it is possible to get rid of the paste layer with much better mechanical efficiency and in a much shorter time. To assist in conserving the application of heat to the plate we have provided flexible rubber lips 98 at both ends of the space between the plates 32. These lips yield to let the advancing edge of the plate enter but maintain the space inside completely housed at all times so far as drafts of cold air or unrestrained splashing out of water is concerned.

We have provided doors at 98 at the rear of each enclosure for access to the working parts of the mechanism.

With certain types of bristles and certain sizes of plate, it is possible to operate effectively without permitting the shafts 30 to have any longitudinal movement, but under certain conditions with respect to the width of the flanges 100 around the edges of the plate and the stiffness of the individual bristles 90 carried by the brushes, more effective control of the pressure of the brushes against the plate can be obtained by mounting simple coil springs 102 encircling the shafts 30 and acting in compression between the brushes and the front plate 32. The axial displacements of the shafts 30 when springs 102 are used are so slight that there is no interference with the effective action of the drive belts.

Without further elaboration the foregoing will so fully explain our invention that others may, by applying knowledge current at the time of application, readily adapt the same for use under various conditions of service.

We claim:

1. Paste removing means comprising a conveyor for conveying plates from which paste is to be removed; a set of brushes positioned to engage the side of the moving plate, and including a plurality of brushes arranged in staggered relationship and so spaced as to wipe overlapping horizontal strips on the moving plate; spray jets, one level with each brush and laterally offset with respect thereto, said jets being staggered reversely with respect to said brushes, a duplicate set of brushes and jets positioned to engage the opposite side of the plate; said duplicate set being positioned with a brush opposed to each jet of the first set and a jet opposed to each brush of the first set; imperforate walls parallel to the path of the plates defining a space enclosing all said brushes and jets; flexible barriers at the ends of said space to complete the enclosure; said barriers being yieldable to permit the plate to move through; and a single motor and mechanical transmission for rotating all the brushes of both sets from said motor.

2. Paste removing means comprising a conveyor for conveying plates from which paste is to be removed; a set of brushes positioned to engage the side of the moving plate, and including a plurality of brushes arranged in staggered relationship and so spaced as to wipe overlapping horizontal strips on the moving plate; spray jets offset with respect to said brushes; a second set of brushes and jets positioned to engage the opposite side of the plate; imperforate walls parallel to the path of the plates defining a space enclosing all said brushes and jets; and flexible barriers at the ends of said space to complete the enclosure; said barriers being yieldable to permit the plate to move through.

3. Paste removing means comprising a conveyor for conveying plates from which paste is to be removed; a set of brushes positioned to engage the side of the moving plate, and including a plurality of brushes arranged in staggered relationship and so spaced as to wipe overlapping horizontal strips on the moving plate; spray jets, one level with each brush and laterally offset with respect thereto, said jets being staggered reversely with respect to said brushes; a duplicate set of brushes and jets positioned to engage the opposite side of the plate; said duplicate set being positioned with a brush opposed to each jet of the first set and a jet opposed to each brush of the first set; imperforate walls parallel to the path of the plates defining a space enclosing all said brushes and jets; and flexible barriers at the ends of said space to complete the enclosure; said barriers being yieldable to permit the plate to move through.

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