No. 797,734. PATENTED AUG. 22, 1905.

S. HOPKINSON.

COATING MACHINE.

APPLICATION FILED MAY 6, 1904.

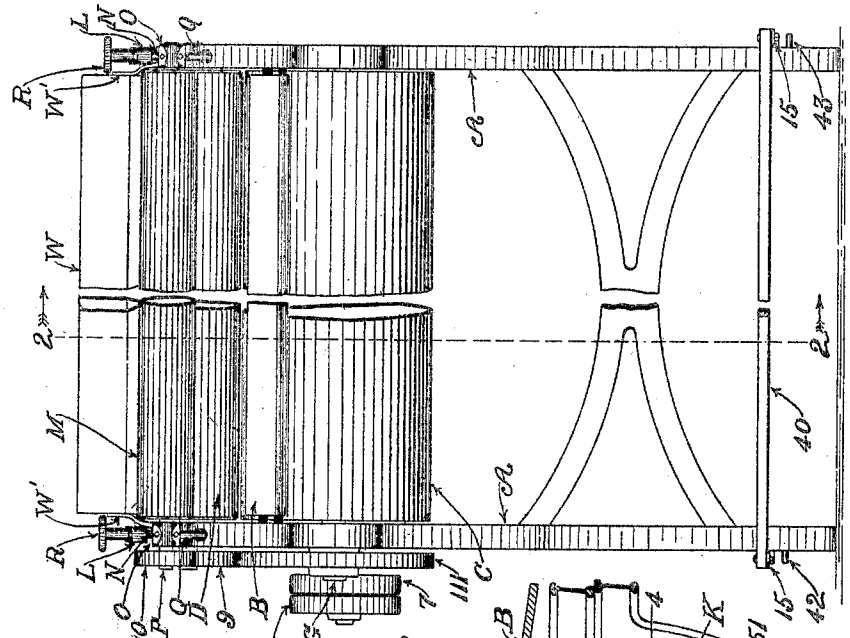


Fig. 1.

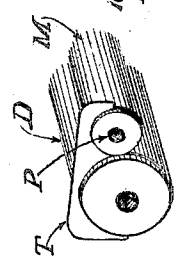


Fig. 4.

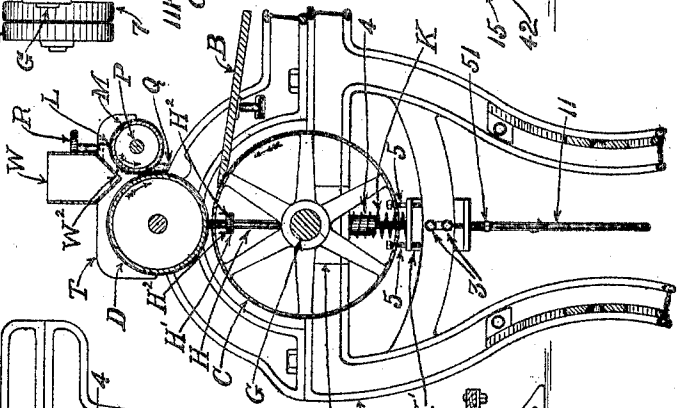


Fig. 2.

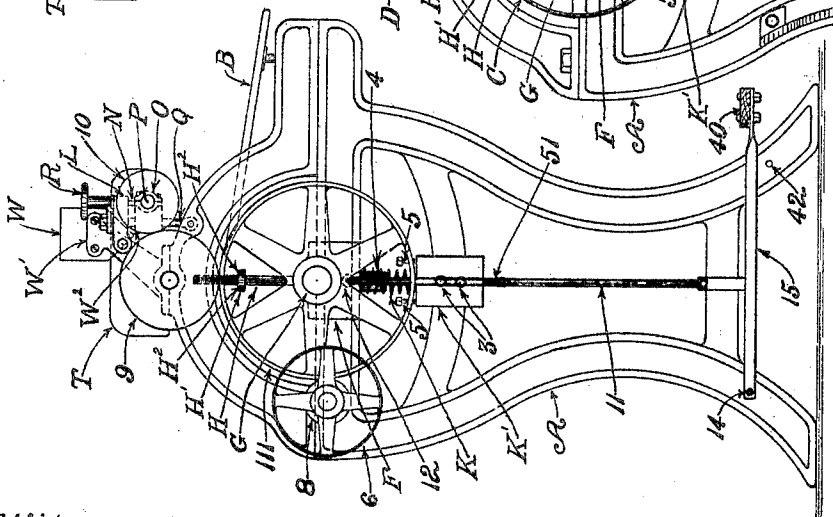


Fig. 3.

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UNITED STATES PATENT OFFICE.

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COATING-MACHINE.

No. 797,734. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed May 6, 1904. Serial No. 206,625.

To all whom it may concern:

Be it known that I, SUMNER HOPKINSON, a citizen of the United States, residing at North Woburn, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Coating-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object a device by means of which the coating material may be applied to skins or hides which are to be made into patent-leather.

It has heretofore been the practice in coating hides to be made into patent-leather for the workman to place the hide before him upon a table or bench or upon a pair of horses, to pour upon the hide a considerable quantity of the coating mixture, which consists of boiled oil, naphtha, coloring-matter, &c., and is of a viscous or jelly-like nature, to rub the mixture into the hide by his hand or some suitable instrument, then to scrape off from the hide the superfluous coating and put the same back into the can from which it was originally taken. When the hide is coated by this method, it is found very difficult to get workmen who will coat the hide evenly over its entire surface, since the coating mixture dries very rapidly. The workmen also fail to coat the hide clear to its edges, and thus a small percentage of area is lost when the hide is measured. The operation is also very slow and wasteful of the coating mixture. A very large floor-space as compared with the amount of the leather produced is also required. My invention does away with all these difficulties, the machine embodying it applying to the hide a uniform coat over its entire area in much less time than is required by the workmen and without waste of material, very small floor-space being taken up by the machine.

The invention will be fully understood from the following description, reference being had to the accompanying drawings, and the novel features thereof will be particularly pointed out in the claims at the close of this specification.

In the drawings, Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is a vertical section on the line 2 2 in Fig. 1 looking in the direction of the arrows. Fig. 3 is an end elevation showing the driving mechanism. Fig. 4 is an end view of the daub and distributing rolls.

Referring to the drawings, A is the frame of my machine and is of any suitable and convenient form for supporting the various rolls and other members composing the operative mechanism of the machine.

B is a table upon which the skin or hide to be treated is first laid. Adjoining the table B and having their bite slightly above the level of the upper surface of the table B is a pair of rolls C and D, supported by the frame A. The roll C, which I will denominate the "feed-roll," I make of brass or steel or any other convenient material. The other roll, D, I will call for convenience the "daub-roll."

I support the feed-roll C adjustably in order that it may by its downward movement accommodate itself to different thicknesses in the skins or hides which are run through the machine and also, as will later be described, in order that it may be drawn down suddenly in case any wrinkling or plaiting of the skin takes place. The box F, in which rotates the axle G of the feed-roll C, is free to move vertically with relation to the frame A of the machine. Beneath the box F, I place a strong spiral spring K, having its lower end resting upon the supporting-piece K′, which is attached to the frame A by the bolts 3. As shown in Figs. 2 and 3, the spring is guided by a projection 4, attached to the box F. The tension upon the spring is determined by moving the spring-supporting piece K′ upwardly or downwardly, as may be required. This is accomplished by loosening the two bolts 3 and the lower adjusting-screw 51 when it is desired to increase the tension of the spring and afterward driving the two other adjusting-screws 5 downwardly until they again come in contact with the frame A, thereby raising the spring-supporting piece K′. Above the box F is an adjustable screw or stop H, by means of which the height to which the feed-roll C is permitted to rise is controlled. The upper end of this adjustable stop screws into a hole drilled and tapped in the upper arch of the frame A, and its lower end rests against the top of the box F. This adjustable stop H is provided with a collar H′, having holes therein H^2, by means of which the stop H may be rotated, thus moving the stop upwardly or downwardly, as may be required. By the means just described the feed-roll C is permitted to be pressed downwardly against the pressure of the spring G any convenient amount, but may not rise

above the point determined by the position of the lower end of the adjustable stop H. I find this arrangement necessary in order that the feed-roll C may not come in contact with the upper or daub roll D, thus smearing the feed-roll with the coating mixture and transferring the same to the outer side of the skin, which it is desirable shall be kept clean.

As before stated, it sometimes happens that the skin or hide becomes creased or plaited as it goes from the table B between the feed-roll C and the daub-roll D, which makes it desirable that the further advance of the hide between the two rolls be stopped as quickly as possible. To this end I provide means for depressing quickly the feed-roll C, thereby permitting the operator to pull the hide backward from between the rolls and start the same again in the proper way. At each end of the machine is a rod 11, (see Fig. 3,) attached at 12 to the box F. Pivoted at 14 to the frame A and connected with the rod 11 is a treadle 15, by the depression of which the operator is enabled to pull the feed-roll downwardly against the tension of the spring G at any desired time. As will be seen from Fig. 2, I place a bar 40 across the two treadles 15 15, by means of which the operator may depress both treadles at once by stepping upon the bar 40 anywhere throughout its length. As it is injurious to the operation of the machine to have the feed-roll C depressed so that the teeth of the driving-gears 111 and 9 no longer mesh, stops 42 and 43 on the frame A are provided, which prevent the depression of the treadle beyond the desired amount.

Located above the center of the daub-roll D and at one side of it is another smaller roll M, which for convenience I will call the "distributing-roll." Above the daub-roll D and the distributing-roll M is located a container W for the coating mixture which is to be applied to the skin. This container is supported by the piece W′, which is attached to the frame A and is of any convenient shape. The container W has one or more small openings W^2 in its bottom, through which the coating mixture is allowed to flow. These openings W^2 may be of any convenient size and number. The container is so located that the coating mixture falls into the space between the daub and the distributing rolls and is then evenly spread over the surface of the daub-roll D by the action of the distributing-roll M. To prevent the coating mixture working off the ends of the daub and distributing rolls D and M, I provide a guard T (see Fig. 4) at each end of these rolls. This guard is of a shape to fit closely against the end of the rubber coating composing the surface of the rolls. The guard T also extends beyond the sides of the rolls, thus preventing the coating mixture from getting on the ends of the rolls.

The distance which the surface of the distributing-roll M is from the surface of the daub-roll D determines the thickness of the coat which the daub-roll D applies to the upper surface of the leather as it passes between the feed-roll C and the daub-roll D. As it is convenient to be able to apply coats of different thicknesses to the hides, I make the distributing-roll M adjustable with relation to the daub-roll. To provide this adjustment, I mount the axle P of the distributing-roll in boxes O. (See Fig. 3.) The box O is provided with a hole through which passes the guide-rod Q, which is pivoted at its lower end to the frame A and at its upper end to horizontal arm L, which is fast to the frame of the machine. Attached to the box O is a screw-threaded rod N, passing through a hole in a horizontal arm L and engaging a thumb-nut R. By turning this thumb-nut the box O and the distributing-roll M, supported therein, may be raised or lowered, the said box O sliding upon the guiding-rod Q. By this means the distributing-roll M is moved slightly away from the daub-roll D and the space between the two rolls accurately determined. It will be noted that each end of the distributing-roll is provided with means for this adjustment.

The three rolls which comprise the operative parts of my machine are driven in the following manner. (See Figs. 1 and 3.) Upon the frame A of the machine is supported a pair of pulleys 6 and 7, one of which is fast to the axle. Upon this axle is a gear 8. This gear meshes with another gear 111, which is fast to the axle of the feed-roll C. Meshing with the gear 111 of the feed-roll C is a gear 9, which is fast to the axle of the daub-roll D. The distributing-roll M is likewise driven by a gear 10, fast to its axle. I have indicated the various gears by their pitch-circles only; but in practice I make the teeth of the various gears long in order that the teeth may accommodate themselves to the different distances between the centers of the various gears due to the adjustment which I have previously described. As such gear-teeth are well known, I have not shown them in the drawings. Of course other means of driving the various rolls may be employed, it being necessary only that the feed and daub rolls have the same circumferential speeds.

In practice I find it convenient to make the daub-roll D of some elastic material in order that the roll may apply the coating mixture evenly to the entire surface of the hide without regard to uneven thicknesses in the hide. I also find it convenient to make the distributing-roll of the same material as the daub-roll in order that by having the same surface attraction for the coating mixture an even coat may be deposited upon the daub-roll.

The operation of my machine is as follows: A skin or hide F is placed upon the table B

and is fed between the feed-roll C and the daub-roll D. The daub-coat or coating mixture contained in the can W is allowed to drip through the passage in the bottom between the daub-roll D and distributing-roll M, both of which are rotating. The distributing-roll M spreads over the surface of the daub-roll D an even coating of the mixture, which is then deposited by the further rotation of the daub-roll upon the upper surface of the skin or hide. The whole hide passing through the rolls is thus covered with an even coating of the mixture. By making the daub-roll D of rubber or composition and by arranging the feed-roll C so that it is movable vertically the pair of rolls accommodates itself to any unevenness of the hide, and so deposits upon the hide a uniform coat over its entire surface.

I have described and shown my invention as embodied in the particular form in which I have put the invention into actual practice; but it is evident that various modifications may be made all within the spirit of the invention.

What I claim is—

1. In a machine of the character described, the combination with a feed-roll, adjustable vertically, a stop therefor, a daub-roll always out of contact with the said feed-roll, a distributing-roll operatively connected with the said daub-roll and in adjustable contact therewith and means supplying a coating mixture between the said daub-roll and distributing-roll.

2. In a machine of the character described, the combination of a daub-roll, a feed-roll, a treadle operatively connected with the said feed-roll whereby the said feed-roll is depressed by the action of the treadle, means as a spring returning the said feed-roll to its normal position and a stop limiting the upward movement of the feed-roll.

3. In a machine of the character described, the combination of a feed-roll, a daub-roll, a distributing-roll, means supplying the coating mixture between the daub-roll and the distributing-roll, and a guard pressing against the end of the covering of the roll and against the periphery of the core of the roll.

4. In a machine of the character described, the combination of a feed-roll, a daub-roll, a distributing-roll, means supplying the coating mixture between the daub-roll and the distributing-roll, and a guard pressing against the end of the covering of the roll and the periphery of the core of the roll, the ends of said guard extending beyond the sides of the rolls.

In testimony whereof I affix my signature in presence of two witnesses.

SUMNER HOPKINSON.

Witnesses:

GEORGE P. DIKE,

WILLIAM A. COPELAND.