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 VARIABLE SPEED ROLLS LEATHER FINISHING MACHINE.  
 APPLICATION FILED JULY 22, 1908.

953,980.

Patented Apr. 5, 1910.

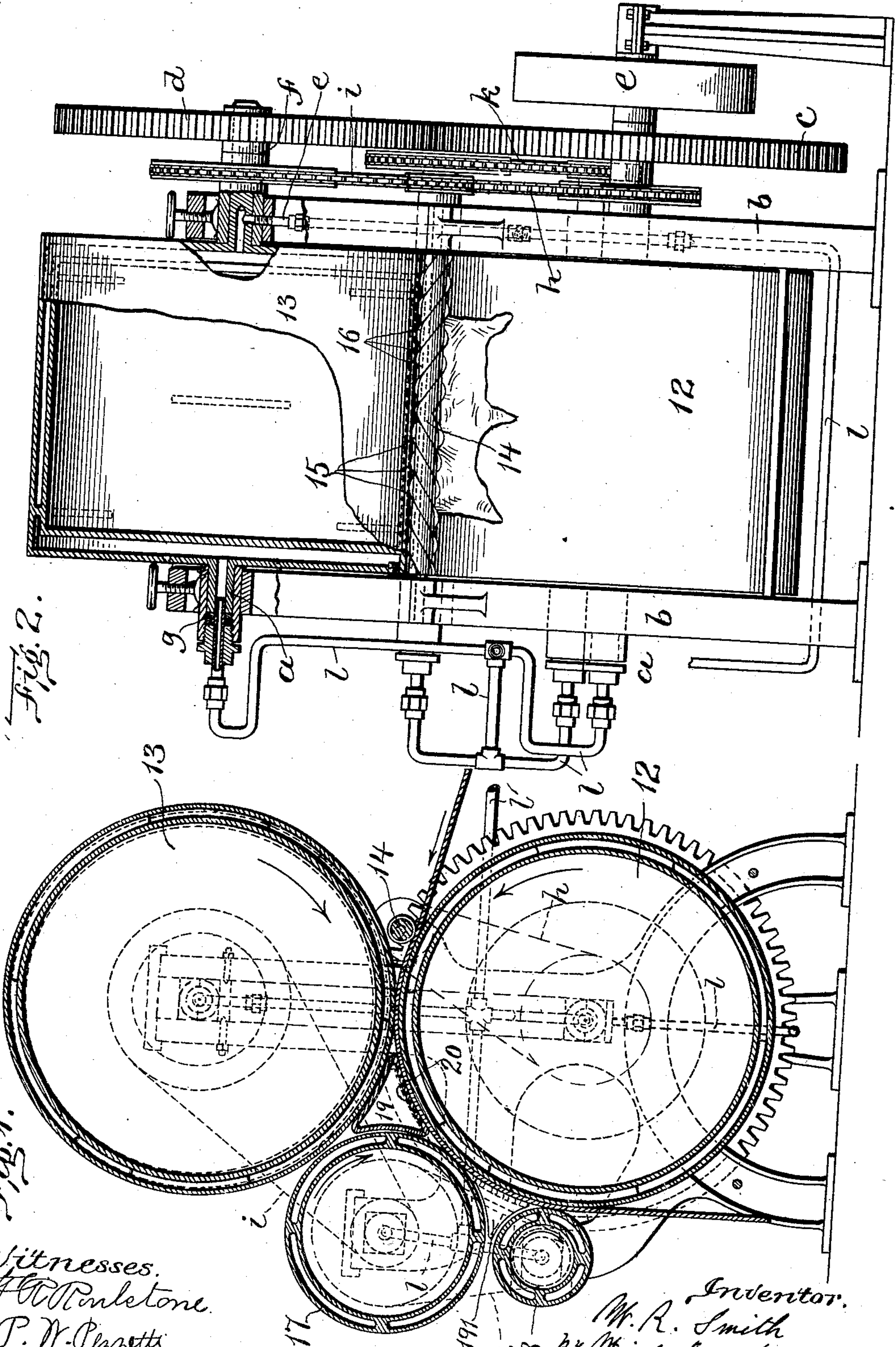


Fig. 1.

Witnesses.  
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# UNITED STATES PATENT OFFICE.

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VARIABLE-SPEED-ROLLS LEATHER-FINISHING MACHINE.

953,980.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed July 22, 1908. Serial No. 444,786.

*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 Variable-Speed-Rolls Leather-Finishing Machines, of which the following is a specification.

This invention relates to means for jacking or finishing tanned hides and skins, or, in other words, stretching, smoothing and eradicating wrinkles therefrom.

Heretofore, hides have been jacked by a machine comprising a bed upon which the hides are laid, and a reciprocating rubbing tool which moves over the bed and bears upon the hides during a movement in one direction, and is raised to clear the hide during its return movement. This operation consumes a considerable amount of time, and is therefore relatively expensive.

My invention has for its object to provide means for jacking hides more rapidly and economically than heretofore, by the employment of pressure rolls as a substitute for the bed and reciprocating rubbing tool heretofore used.

The invention consists in the improvements hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a vertical section through a jacking machine embodying my invention. Fig. 2 represents a front elevation, partly in section.

The same reference characters indicate the same parts in both figures.

In the drawings, 12 and 13 represent a pair of opposed rolls which are positively rotated in the directions indicated by the arrows in Fig. 1. One of the rolls, preferably the upper roll 13, has a surface speed which is slightly in excess of the surface speed of the opposite roll. The rolls are adjusted so that at their nip they will engage and exert any desired degree of pressure upon a hide introduced between the rolls, the rolls being adjustable to enable the degree of pressure on the hide to be varied. The increased surface speed of the upper roll enables the periphery of said roll to exert a stroking or laying-down action on the fibers of the grain side of the hide passed between the rolls and supported by the lower roll, said fibers being stretched and

laid in a uniform direction upon the surface of the hide. The hide being in a moist condition, the fibers thus laid parallel with each other in the direction of movement of the hide, are caused to retain the position in which they are laid, the fibers being embedded or pressed into the body of the hide so that they increase the tensile strength of the hide against strain or pressure tending to tear the same cross-wise of the direction in which the fibers are laid.

14 represents a fluted smoothing roll located above the supporting roll 12 at a point slightly in advance of the nip of the rolls, said roll having oppositely-pitched helical blades 15 16 adapted to stretch or spread the skin from its median portion toward its edges, and thus eradicate wrinkles therefrom before the skin reaches the nip of the rolls 12 and 13. The smoothing roll 14 is rotated preferably so that its surface which bears on the skin moves in a direction opposite the direction of rotation of the lower roll 12.

17 represents a following pressure roll arranged to exert pressure on the hide supported by the lower roll 12 after the hide has passed the nip of the rolls 12 and 13. The following roll 17 has a surface speed which is greater than that of the supporting roll 12, and is preferably greater than that of the pressure roll 13. The object of the following roll 17 is to additionally compact the hide and complete the desired arrangement of the surface fibers. A second following pressure roll 18 may be employed to cooperate in like manner with the lower supporting roll 12, the second roll being driven at a surface speed greater than that of the lower roll. This roll will preferably be driven at a relatively high speed, considerably in excess of the speed of the other upper rolls, for the purpose of glazing or burnishing the outer side of the hide.

19 represents a shoe which is interposed between the nip of the rolls 12 and 13 and the nip of the rolls 12 and 17, said shoe having a concave under surface arranged to press upon the outer surface of the hide supported by the lower roll 12. If desired, a similar shoe 191 may be arranged between the rolls 17 and 18. Either or both of the shoes 19, 191 may be hollow to act as a reservoir for a finishing or coloring composi-



tion, the bottom wall of the shoe having perforations 20 to permit said composition to flow to the outer surface of the hide.

The several rolls described may be hollow and provided with means for introducing hot water, steam or other temperature-regulating medium. In most cases it is desirable to use hot water, particularly in the rolls 12 and 13, to maintain the rolls at a suitable temperature less than that of steam. In some cases it may be desirable to introduce a cooling medium, such as cold water, into the rolls.

It will readily be understood that since the hide has greater frictional contact with the lower, and more slowly operating roll 12 so that the hide travels at the speed of said roll 12, the hide is not only drawn through the machine but is also subjected to a jacking or finishing operation by a plurality of rolls acting on the upper surface of the hide.

The rolls may be driven by any suitable means, and the temperature-regulating medium may be supplied by any suitable connections. As indicated in the drawings, said means and connections may be as follows:—  
The shaft *a* of lower roll 12 is mounted in fixed bearings in frame standards *b*, and has a gear *c* and belt pulley *e* secured to it. The shaft *f* of the upper roll 13 is mounted in vertically adjustable bearings *g* in the frame standards, and has a gear *d* secured to it. The gears *c* and *d* intermesh. The gear *c* being larger than roll 12 and the gear *d* being smaller than the roll 13, the surface speed of roll 13 is greater than that of roll 12. A chain *h* connects a sprocket on shaft *a* with a sprocket on the shaft of smoothing roll 14. A chain *i* connects the sprockets on the shafts of rolls 13 and 17. And a chain *z* connects sprockets on the shafts of rolls 17 and 18. The relative sizes of the sprockets are such as to provide for the differences in surface speeds described. The rolls 12, 13, 17, and 18 are hollow, but to avoid the great weight that would result from filling them with water if the entire inner space had to be so filled, they are shown as having inner shells so as to form annular spaces which are connected by means of ports in the bearings

of the shafts with a system of piping *l* having suitable branches and connections to enable either a hot or a cold fluid to be passed through the bearings and the spaces inside the rolls.

I claim:—

1. A hide-jacking machine comprising a supporting roll and a plurality of pressure rolls, means for rotating the supporting roll in one direction and the pressure rolls in the opposite direction at a different surface speed, whereby the fibers of the grain side of a hide passed between the rolls may be stretched and given a uniform direction, the said rolls being hollow, and means for supplying a temperature-regulating medium to said rolls.

2. A hide-jacking machine comprising a supporting roll and a plurality of pressure rolls, means for rotating the supporting roll in one direction and the pressure rolls in the opposite direction at a different surface speed, and a fluted smoothing roll located in close proximity to the nip of the pressure rolls.

3. A hide-jacking machine comprising upper and lower rolls, the upper roll having a greater surface speed than the lower roll, a following upper roll cooperating with the lower roll and having a greater surface speed than the first-mentioned upper roll, and a guiding shoe interposed between the nip of the said rolls.

4. A hide-jacking machine comprising upper and lower rolls, the upper roll having a greater surface speed than the lower roll, a following upper roll cooperating with the lower roll and having a greater surface speed than the first-mentioned upper roll, and a guiding shoe interposed between the nip of the said rolls, said shoe being hollow and having a perforated face adapted to apply a finishing composition to the upper surface of a hide supported by the lower roll.

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

WILLIAM R. SMITH.

Witnesses:

JOHN D. LARKIN,  
CHARLES H. LARKIN.