(No Model.) 2 Sheets—Sheet 1.

M. M. SCOTT.

LEATHER GRAINING AND SOFTENING MACHINE.

No. 552,857. Patented Jan. 7, 1896.

Fig. 6.

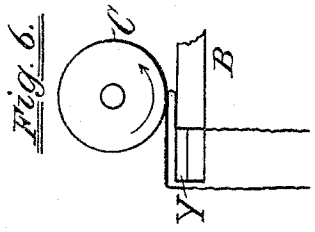


Fig. 1.

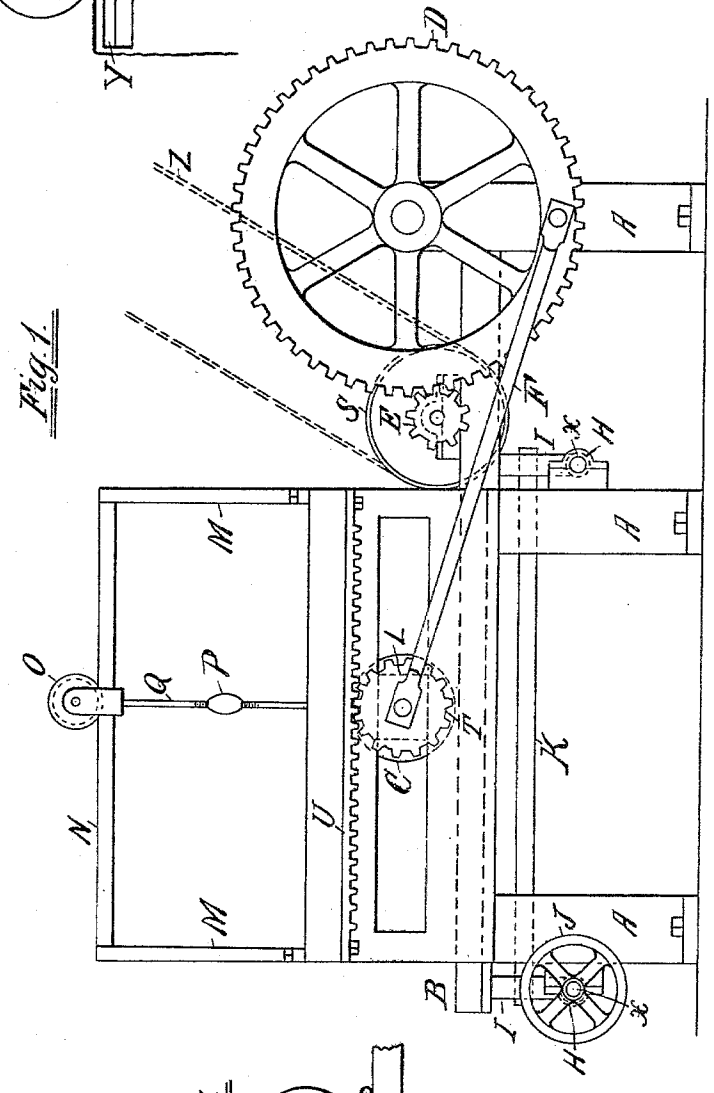
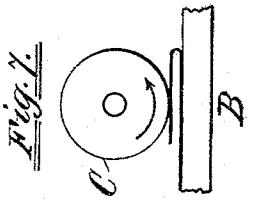


Fig. 7.



Witnesses:
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A. M. M. Fischer.

Inventor.
Mahlon M. Scott. per
Lanphear & Scott. Atty.

(No Model.) 2 Sheets—Sheet 2.

M. M. SCOTT.

LEATHER GRAINING AND SOFTENING MACHINE.

No. 552,857. Patented Jan. 7, 1896.

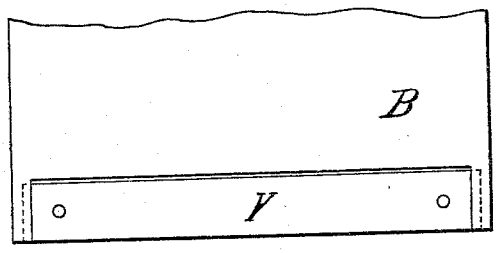


Fig. 3.

Fig. 4.

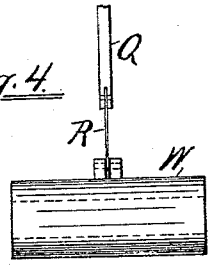


Fig. 5.

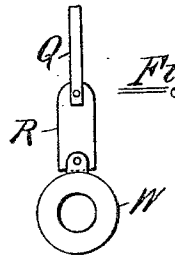
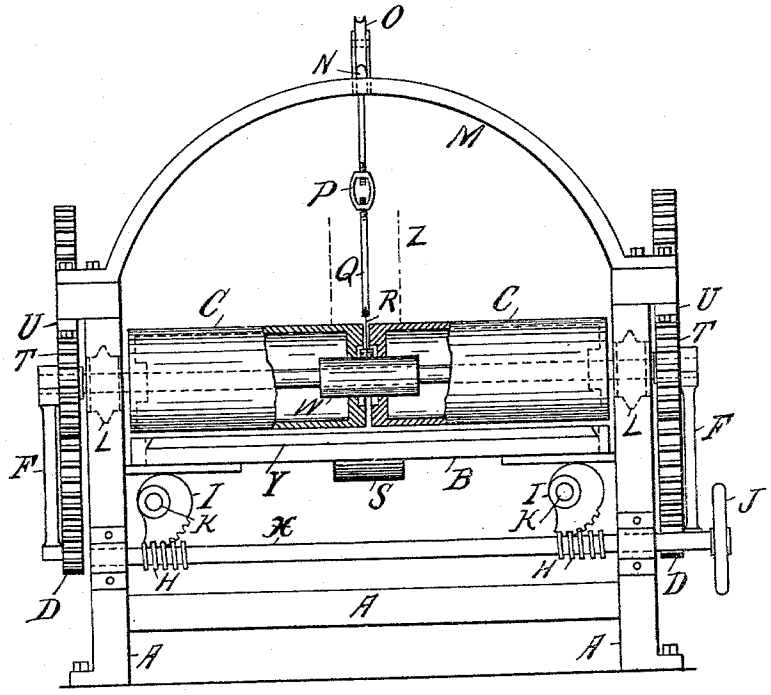


Fig. 2.



Witnesses:
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A. H. M. Fischer.

Inventor.
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Lanphear & Scott. Atty.

UNITED STATES PATENT OFFICE.

MAHLON M. SCOTT, OF NEWARK, NEW JERSEY, ASSIGNOR OF NINE-TWENTIETHS TO WILLIAM J. VAN VORST, OF SAME PLACE.

LEATHER GRAINING AND SOFTENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 552,857, dated January 7, 1896.

Application filed July 27, 1895. Serial No. 557,299. (No model.)

To all whom it may concern:

Be it known that I, MAHLON M. SCOTT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Machine for Graining and Softening Leather, of which the following is a specification.

My invention relates to improvements in machines for graining and softening leather, and the objects of my improvements are to provide an accurately adjustable table for holding the work, means for supporting and maintaining accuracy in adjustment between the roller and said table and keeping the distance between the two exactly uniform over the entire plane of its travel, and a further improvement consists in the general efficiency in the machine as a whole.

In the drawings accompanying this specification and forming a part thereof, Figure 1 is a view in side elevation of the complete machine. Fig. 2 is a view showing the end elevation of the same, having a portion of the roller broken away in order to more fully illustrate the surrounding mechanism of the interior of the roller. Fig. 3 is a detached view of a portion of the table, showing the slide Y adapted to clamp and hold the leather in place during the process of operation. Fig. 4 is an enlarged detached view of the roller-supporting sleeve and adjacent mechanism. Fig. 5 is a side view of the same. Fig. 6 is a detached view showing the form and position of the leather at its starting-point; and Fig. 7 is a view of the same, showing the leather in position at almost the finishing-point.

A is the general supporting framework, constructed of heavy wood or iron or a combination of both, if desired.

B is the adjustable table upon which the leather to be operated upon is placed. This may be made of wood, iron or marble having an accurate plane surface upon its upper or working side.

C is the roller, divided transversely and centrally into two sections which are rigidly secured to its shaft.

D D are the spur-geared crank-wheels.

E E are the spur-geared wheels meshing with the wheels D D.

F F are the connecting-rods.

H H are worm-gearings in engagement with segmental eccentrics I I. J is the hand-wheel for adjusting the height of the table by means of said eccentrics. K K are the rods to which said eccentrics are secured.

U U are the racks, situated one on each side of the machine and the pinions T T engaged therewith.

X X are the shafts to which the worm-gearings are secured.

L L are sliding blocks which support the shaft and roller C.

M M are semielliptical supports secured to the framework and support the track or rail N, upon which the small roller O travels. This small roller O is connected to the sleeve W on the roller-shaft by means of metal plate R, rod Q and turnbuckle P.

S is the pulley whereby motion is transmitted by the power-belt Z.

Y is the sliding end piece which operates to clamp the leather in position when in process of operation.

It will be observed that the mechanism is an exact duplication of parts on each longitudinal vertical half of the machine with the exception of the driving-pulley S, its belt Z, the hand-wheel J and roller-adjusting mechanism N, O, P, Q, R and W—that is to say, the mechanism on each side is a counterpart of that on the opposite side with the exception of the parts just specified.

S is the power-pulley to which motion is transmitted by an ordianary belt Z. (Shown by dotted lines in Figs. 1 and 2.) The said pulley is rigidly secured to its shaft, the latter being mounted in boxes upon the frame of the machine. On each end of said shaft is a pinion E. These engage with the crank-wheels D D. Said crank-wheels D D carry the crank-arms or connecting-rods F F. The shaft of the roller C is carried and supported by sliding blocks L L, which have V-shaped ribs tracked in corresponding guides extending lengthwise with the frame, somewhat similar to an ordinary steam-engine connect-

ing-rod and guide. Upon each end of the shaft of the main roller C is secured a spur-geared pinion engaging with the toothed rack U. This is most clearly seen in Fig. 1. Power being applied to the pulley S, the result is a traveling motion forward and backward of the roller C, which at the same time has a slow revolving motion by means of the rack-and-pinion mechanism just mentioned. This is sufficiently clear without further note.

B is the work-holding table upon which the leather is laid and is carried from one end of said table to the other in loop or folded form by the roller C. The said table is provided at its forward end with a sliding clamping-board Y, which holds the leather in place while under the operation of graining or softening. (Seen in detail in Fig. 3.) The said table B is capable of an up and down or vertical adjustment by means of four eccentrics, one placed underneath and near each corner of the table. Turning the hand-wheel J will raise or lower the table to a limited degree, as will be apparent without further explanation. The roller C, in addition to its shaft-support in the sliding blocks L L, has a supplemental and additional support at its central or middle division. This is attained as follows: A curved frame M on each end of the general framework supports a track or rail N. A small roller O is connected by means of a rod Q, turnbuckle P and sheet-metal piece R to a sleeve W. This sleeve W fits snugly but freely on the shaft of the roller C. Limited adjustment is obtained vertically by turning the buckle P, as will be understood. The roller C, in two divisions, must necessarily have but a very slight opening at its divided part. In other words the roller as a matter of practice must be, in effect, substantially equivalent to an integral continuous roller. In order that this may be obtained the thin sheet-metal piece R is employed as giving the desired strength and permitting the said divided roller C to have its contiguous ends almost in contact. The reciprocating motion of the roller carries with it the pulley O, through the intermediate connecting-rod along the elevated track N.

It is important that an accurate and uniform distance shall be maintained between the face of the roller and the underlying table upon which the work is placed. This construction permits of such adjustment and maintenance of uniformity at such set distance. The said distance is usually one-eighth to a quarter of an inch, depending upon the double thickness of the leather to be operated upon.

The operation is as follows: The slide Y is withdrawn, the leather is placed upon the table at about its middle part, one end hanging down over the forward end of the table. The slide Y is then replaced and the leather drawn over said slide, both ends hanging down, as seen in Fig. 6. The initial point of work begins immediately over the leather at and above its fold over the slide Y. The fold or loop in the leather is then drawn over the table B by means of the roller C, which, it will be understood, is revolving in the direction of its travel. The loop or fold of the leather is carried slightly in advance of the center of the said roller until the extreme end of the leather is reached. (See Figs. 6 and 7.) An important feature in this machine is the relative circumference of the roller C to the distance of travel or reciprocation of the said roller. The circumference should be slightly greater than the distance of reciprocation which causes one full revolution of the roller. For instance, if the roller C is a foot in diameter, and the circumference therefore 3.1416+ feet, then the distance of reciprocation or travel of the roller should be slightly less than three feet. The object of this is to take up any slack or lost motion of the leather while in the process of operation. The said roller should also make approximately 2.43 revolutions to one revolution of the crank-wheel. As a matter of practice I employ a roller about ten inches in diameter. As the roller starts upon the leather the loop or fold is almost directly under the axis of the roller. Toward the finishing-points the loop has gained somewhat and is in advance of the roller, as seen in Figs. 6 and 7. This takes place by reason of the diameter of the roller being somewhat larger than the diameter of the pinion T, which engages with the rack U. In speaking of the diameter of the pinion T, the pitch diameter is meant. It may also be noted that as a matter of practice there should be about two full revolutions of the roller in order to grain or soften an ordinary cowhide. The operation being complete on one-half of the hide, the remaining half heretofore untouched is subjected to the same process in like manner as heretofore described.

I claim—

1. A leather graining and softening machine comprising the frame work A, gear wheels E and D, rack and pinion C and U, sliding blocks L L, table B, adjustable by means of segmental eccentrics I I, and connecting rods F F; roller adjusting mechanism comprising the supported track N, the traveling roller O, rod Q, turn buckle P, sheet metal connecting piece R and sleeve W, all arranged substantially as described and for the purpose set forth.

2. In a leather graining and softening machine a supplemental roller support comprising a sleeve W upon the shaft of the roller, a sheet metal piece R, a rod Q, a turnbuckle P, a roller O, an elevated track or rail N and supporting curved beams M M, substantially as described.

3. A leather graining and softening machine comprising a general supporting frame

work in combination with spur wheels E E and D D, connecting rods F F, sliding blocks L L, divided roller C, sleeve W on shaft of said roller, sheet metal piece R, rod Q, turnbuckle P, elevated track N, roller O, table B, sliding piece Y, segmental eccentrics I I, worm mechanism H H, and hand wheel J all arranged substantially as shown and described.

In testimony that I claim the invention as above set forth I herewith affix my signature in presence of two witnesses.

MAHLON M. SCOTT.

Witnesses:
VINCENT S. DENNISSON,
LANPHEAR H. SCOTT.