

F. A. LOCKWOOD.

MACHINES FOR SCOURING, SETTING AND GLASSING LEATHER.
No. 179,928.

Patented July 18, 1876.

Fig. 10.
Enlarged.

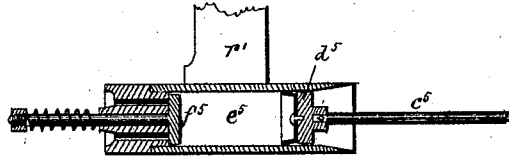
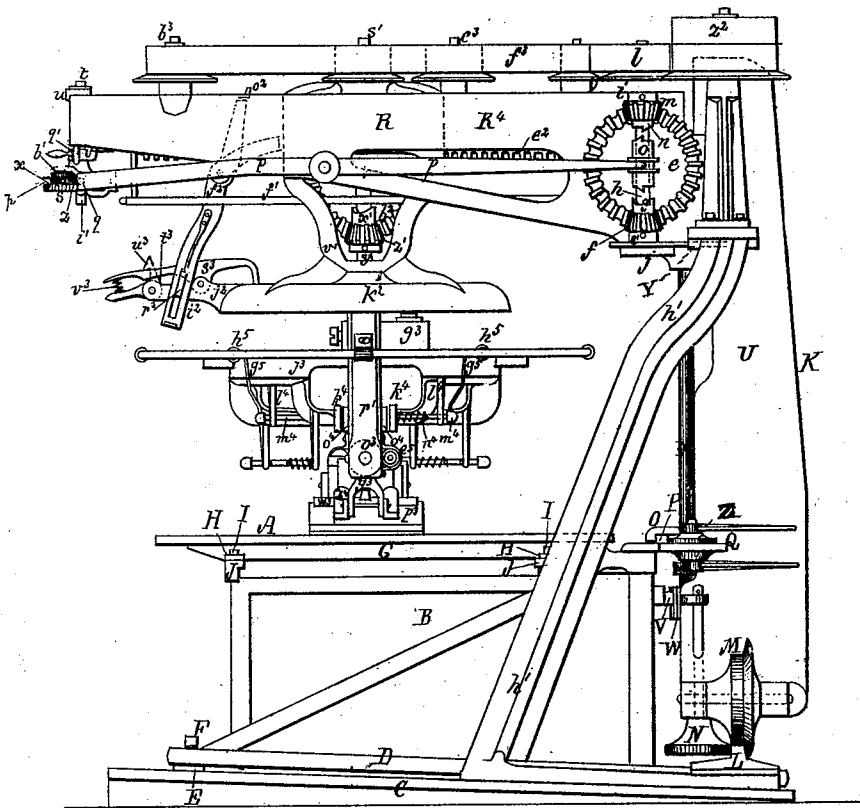


Fig. 1.



Witnesses.
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Fig. 7.
Enlarged.

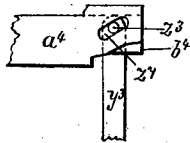


Fig. 8.
Enlarged.

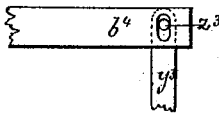


Fig. 9.
Enlarged.

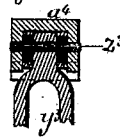
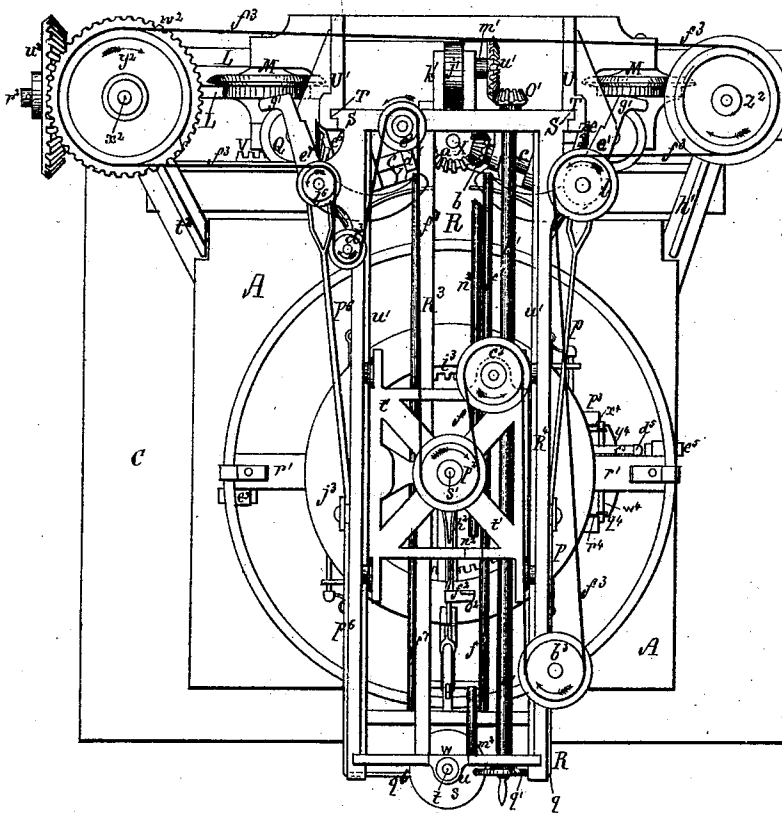


Fig. 2.



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Fig. 5.
Enlarged.

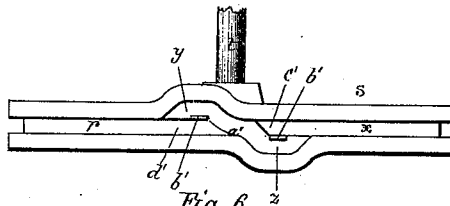


Fig. 6.
Enlarged.

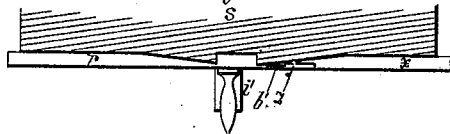
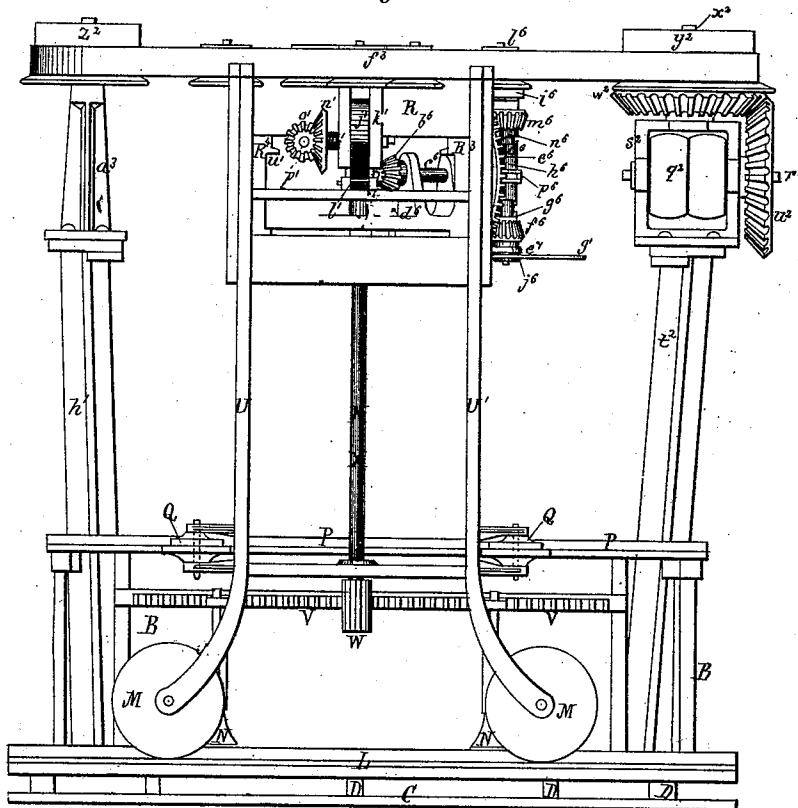


Fig. 3.



Witnesses,
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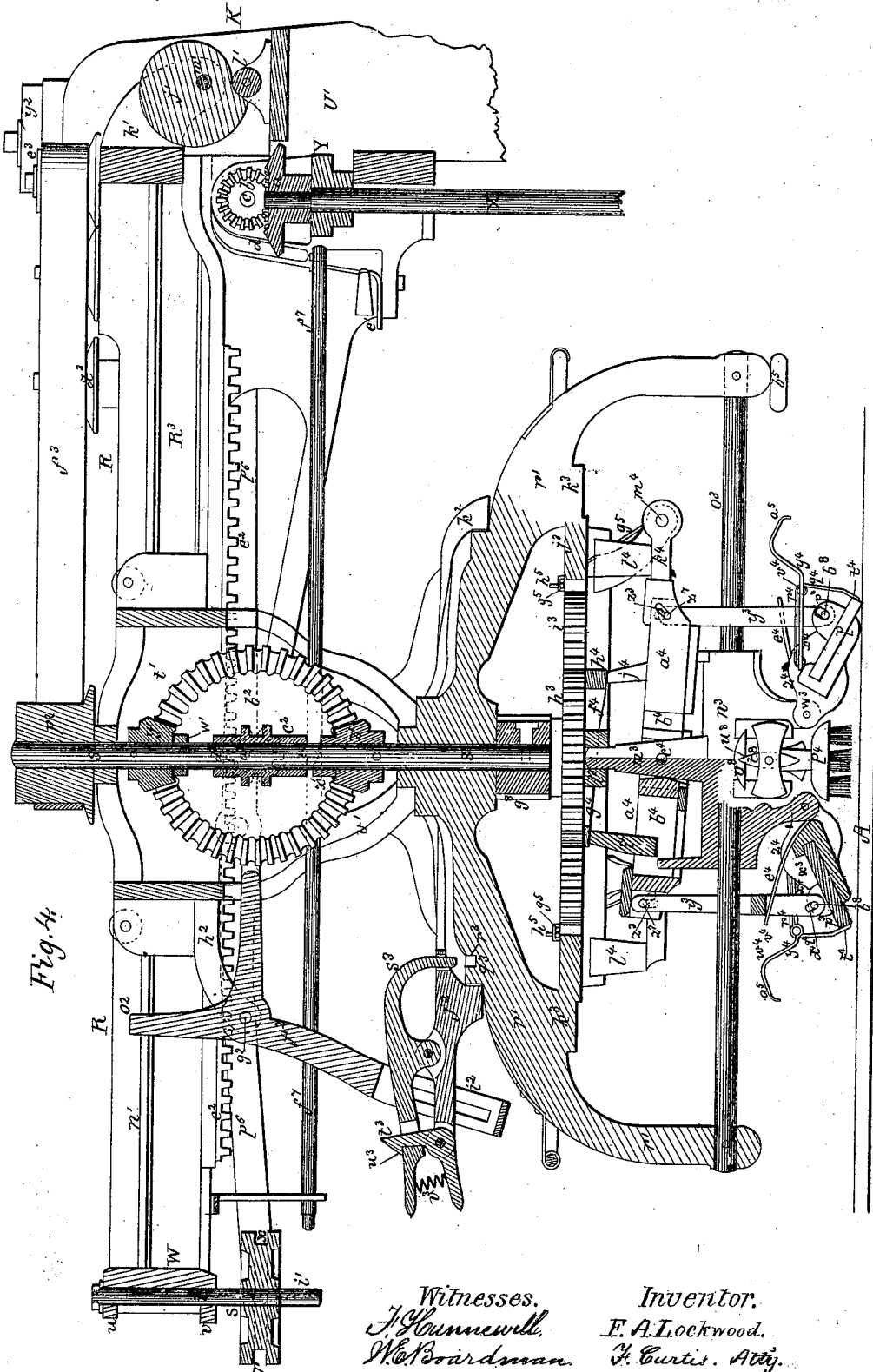


Fig. 4.

Witnesses.
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Inventor.
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UNITED STATES PATENT OFFICE.

FREDERIC A. LOCKWOOD, OF FALL RIVER, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SCOURING, SETTING, AND GLASSING LEATHER.

Specification forming part of Letters Patent No. **179,928**, dated July 18, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, FREDERIC A. LOCKWOOD, of Fall River, Bristol county, Massachusetts, have invented certain Improvements in Machinery for Scouring, Setting, or Glassing Leather or Beaming Hides, of which the following is a specification:

My present improvements relate to a class of machines in which the skin or leather is placed upon a stationary table, while the superposed operative mechanisms or dressing-tools are suspended from a beam surmounting the table, the tool stock or carrier being susceptible of a universal freedom of motion in any direction, by which means access is readily had to all parts of the skin; my machine, as herein shown, being distinguished from other classes which perform the same labor, in that the tool-supporting carriers of the latter move in arbitrary paths of motion, while the various movements and changes in position which are requisite to manipulate all parts of the skin are imparted to the table which supports such skin.

Heretofore, in the employment of machinery for performing the operations before named, great labor devolves upon the attendants, and the process is comparatively slow.

My object in devising this machine has been, mainly, to relieve the attendant of the constant labor and watchfulness which has heretofore been imperative, as well as to render the machine, to a great extent, self-operative, and more rapid in executing its various functions.

A marked instance of the class of machines to which my present improvements bear intimate relation is shown in Letters Patent of the United States numbered 143,829 and 157,691, and issued to me, respectively, on the 21st day of October, 1873, and the 15th day of December, 1874; but while in these patented machines the tool-carriage is suspended from a beam or crane which describes a horizontal circular arc over the skin-supporting table, in my present machine such tool-carriage is suspended from and slides upon a rigid beam, which departs horizontally from and slides vertically within or upon an upright truck disposed at one side of the said table, and traveling to and fro of the latter

upon suitable rails secured to the frame of the machine, and forming part of same, the tool-carriage being swiveled to the cross-head by which it is suspended from the beam, and the arrangement of the whole being such that said carriage is susceptible of vertical, lateral, or rotary adjustment with respect to the table, or a skin placed upon the latter.

The various mechanical details by which I effect the adjustment of the tool-carriage and dressing-tools, and render the machine to an eminent degree automatic in its functions, will be hereinafter duly explained.

The drawings accompanying this specification represent, in Figure 1, a side elevation, in Fig. 2 a plan, and in Fig. 3 a rear elevation, of a machine embodying my improved construction. Fig. 4 is a section of the machine above the operating-table. Fig. 5 is a diagram, and Fig. 6 a section, of the irregular channel of the governor-wheel as developed upon a plane surface. Figs. 7 and 8 are side views, and Fig. 9 a section, of the end of the oscillating beam and the adjustable sleeve thereon, to be hereinafter explained. Fig. 10 is a section of the air-cylinder and plunger, to be explained.

Reference being had to the above-mentioned drawings, it will be seen that A represents a horizontal table, of a size to receive one or more skins, as occasion may demand, as, owing to the great range and freedom of movement of my tool-carriage, I am not confined within arbitrary bounds, but am enabled to treat two or more skins upon one table, and shift the position of the carriage from one to another, and thus, while one skin is being manipulated, permit the finished one to be removed and a fresh one substituted, by which means I avoid the loss of time heretofore incident to the cessation of the functions of the machine while a skin is being removed and another supplied.

The table A is supported upon a stage, B, which is erected upon the floor C of the apartment or the foundation of the machine, whatever the latter may be; and as I have made provision for leveling the table A or adjusting it to sloping or irregular floors or foundations, I have, in the accompanying drawings, represented the said floor as sloping and de-

pressed at rear, which is desirable in order that refuse water and liquids may pass off.

To compensate for the inclination of the floor C, I dispose the front ends of the lower beams D of the stage B upon metallic blocks E, and I screw through the said ends of the beam screws F, to bear upon said blocks, by which means the irregularities or inclinations of the floor are overcome. To further aid in the perfect adjustment of the table A, its braces or rails G may be combined with the staging in a similar manner, and to accomplish this I form upon one or both ends of such rails feet H, through which screws I pass and bear upon the upper bars J of the stage.

In rear of the table A I dispose an upright standard or truck, K, whose movements are guided by a horizontal rail or way, L, secured to the rear ends of the beams D, and parallel to the edge of the said table. Flanged wheels or trundles M are interposed between the truck K and rail L to reduce friction, while a second series of rollers, N, are pivoted to the feet of the truck, and roll upon or against the front edge of the said rail, and serve as rolling bearings to retain the wheels M in place upon the rail L, and overcome the great friction incident to the leverage of the truck over the upper rail as a fulcrum.

To insure the perpendicularity of the truck K, I employ a hooked clasp, O, which extends forward from the truck, and engages a ledge, P, erected upon the rear upper edge of the stage B, and, in connection with such clasps, I pivot to the adjacent parts of the truck anti-friction rollers Q, which travel against the rear edge of the ledge P.

The open horizontal beam or crane which supports the tool-carriage is shown at R as composed of side beams R³ R⁴ and suitable outer cross-bars, formed upon its front and rear end with flanges or splines S, to enter vertical grooves T in the inner faces of the upper ends of the side posts U U of the truck K, by which means the said beam, while assuming a horizontal position, is permitted to slide vertically upon the truck with respect to the table A.

To effect the requisite traverses with a comparatively slow movement, in either direction, of the truck upon the rail L, in order that the dressing-tools may, while in active operation, be presented to any and all parts of the skin or skins which may be upon the table A, I secure to the rear side of the stage B, and below the level of said table, a horizontal toothed rack, V, and engaging this rack I employ a barrel-pinion, W, which is secured to the lower end of a vertical rod, X, which, in turn, is mounted in bearings Y Z at top and bottom of the truck K, the upper bearing Y being a horizontal cross-bar or shelf, which unites the upper portions of the side posts of the truck. To the upper extremity of the rod X I affix a beveled gear, a, which engages a beveled pinion, b, in turn affixed to the inner

end of a short horizontal shaft, c, such shaft being supported in a furcated standard, d, erected upon the cross-bar Y, before named, and in the present instance to the right of the rod X, looking from the front of the table A.

To the opposite or outer end of the shaft c, which protrudes through the adjacent beam R⁴, I affix a beveled gear, e, which at bottom engages a beveled pinion, f, affixed to or making part of a sleeve or tube, g, which is mounted loosely upon the lower part of an upright clutch-shaft, h, such shaft being supported in bearings i j, projecting laterally from the outer side of the said beam R⁴, and provided at its upper extremity with a pulley, l. A second beveled pinion, m, making part of a sleeve, n, engages the upper part of the gear e, and, like its counterpart, (the pinion f,) is mounted loosely upon the shaft h, the adjacent ends of the two sleeves g and n being toothed, or otherwise fashioned to intercept and lock to an intermediate similarly-formed sleeve or tubular slider, o, which encompasses and slides loosely, but does not rotate, upon the shaft h, and serves to transmit the rotations of the shaft to one or the other of the pinions g and n, according to the direction the beam R is to travel over the skin, or to remain neutral between them when the skin is to be operated upon continuously in one spot, or not at all.

To effect the adjustment or shipping of the intermediate slider o, I employ a long shipper-rod, p, which is pivoted, approximately near its center, to the outer side of the beam R⁴, and straddles, at its rear end, the said slider, while its front end is bent into an arm or spur, q, which enters a continuous groove or channel, r, created in the periphery of a horizontal disk or hub, s, such disk or hub being affixed to the lower end of a spindle, t, which is mounted in bearings u v, secured to the front end of the beam R, or the cross-bar w, which unites the front ends of the beams R³ R⁴, which constitute the main part of such beam, the said disk being situated, preferably, at the center of the said beam R, and in a line with the axis of rotation of the tool-carriage.

The form of the groove or channel r is very peculiar, and is shown in the developments which constitute Figs. 5 and 6 of the drawings. As shown in such figures, the channel is composed of a general neutral passage or portion, x, which is concentric with the periphery of the disk, and occupies its greater part, the disposition of this neutral passage, with respect to the shipper-rod p, slider o, and gear e, being such that when the spur q of such rod is in such passage, the slider is intermediate between the sleeves g and m, and consequently the rotations of the shaft h have no effect upon the gear, and the truck and tool-carriage remain stationary with respect to the table. The channel r further embraces two portions or turn-outs, y and z, each of which departs from the neutral passage x to such an extent as to elevate or depress the

front end of the shipper-rod p sufficiently to force the slider o into engagement with and clutch one or the other of the sleeves g or n .

It will be seen, on careful examination of the construction of this channel r , that, starting from the neutral intermediate point a' , between the turn-outs y and z , the spur q of the shipper-rod can enter either of the said turn-outs only from one direction, as the entrance to the latter is stopped upon either side of central-disposed gates $b^1 b^1$ by sloping steps or inclined planes $c^1 d^1$. My object in this is, that the position of the shipper, when the latter is in its normal position, (that is, with its spur q situated in the intermediate passage a'), may be instantly changed, and, by clutching the slider o to one or the other of the sleeves g or n , cause the dressing-tools to instantaneously move over the skin.

In order to obtain a clear understanding of the operation of this portion of my improvements, attention is called to the fact that the turn-out y actuates the shipper in such a direction as to cause the beam R and tool-carriage to travel to the right, while the opposite or twin turn-out, z , causes the said truck and carriage to travel to the left. The operation of the parts, as hereafter stated, will be readily understood.

As I propose to employ, for purposes hereafter stated, a second shipping apparatus, disposed upon the opposite side of the beam R , I desire that the disk s shall operate both rods by reversing the position of such disk—that is to say, rotating it through one hundred and eighty degrees of a circle, so that the turn-outs y and z shall operate the second shipper-rod. As it is imperative that the shipper-rod p shall remain in an idle or neutral position while the opposite rod is acted upon, I employ the neutral passage x ; and as I prefer that the movement of either shipper-rod, in the act of shipping the slider o , shall commence only when the spur of such rod is intermediate between the turn-outs y and z , in order that I may lower or raise the rod, according to the direction in which I desire to move the tool-carriage, I employ the sloping steps $c^1 d^1$, in order that the spur of the rod may, when the disk is turned in one direction, ride over such sloping steps; but for this or an equivalent arrangement, the spur of the shipper-rod would, while the turn-outs are being brought into position to act upon it after leaving the opposite rod, be liable to enter the wrong one and start the tool-carriage in the wrong direction.

By allowing the shipping of the rod to be accomplished only from the point intermediate between the two turn-outs I avoid what would otherwise be serious objections, since the dressing-tools might inadvertently be caused to act upon a portion of a skin which was already sufficiently manipulated. We thus see that the operator, by simply turning the hand-disks, is enabled, with little exertion, to completely control the movements of the tool-

carriage to and fro of the table, from right to left, or vice versa.

When a large skin is to be manipulated it will frequently occur that the tool-carriage may be allowed to travel over and act upon the skin without the attendance of the operator, thus enabling the latter, while such movement is taking place, to remove the skin which may have been completed and substitute a fresh one.

Should the operator allow the carriage to travel too far, serious results would follow; and to guard against such results I employ a means of arresting the movement of the said carriage when it has reached the extreme point to which it is desirable it should move; and in furtherance of this object I provide a horizontal shipper-lever, e^1 , which I pivot at about its center to the lower bearing j of the shaft h , the inner end of such lever being pivoted to the rear extremity of a horizontal rod, f^1 , which is disposed between the beams $R^3 R^4$, and extends forward into close proximity to the hand wheel or disk s .

When the hand-wheel s is adjusted to bring the shipper-rod p into the turn-out y the truck K begins to travel to the right, and continues this movement, without further attention on the part of the operator, until the outer or free end g^1 of the lever e^1 arrives at, and abuts against, a post, h^1 , erected at the right of the table A , when a continued movement of the truck turns such lever upon its fulcrum, and in so doing drives forward the rod f^1 , which abuts against a spur, i , of the hand-wheel s , and rotates the latter upon its axis to such an extent that its neutral-passage point a' embraces the end of the shipper-rod, the sleeve o is released from engagement with the sleeve n , and the rotations of the gear e cease, and the travel of the tool-carriage is arrested.

If but one shipping apparatus were employed the long neutral passage x in the hand-wheel would be unnecessary; and in the present instance its purpose is only to receive the end of the shipper-rod, and retain the latter in an inoperative position while the turn-outs are being brought into a position to act upon the opposite rod.

The shipping mechanism, which I have already described, is to control the movements of the tool-carriage and tools with a slow movement, in order to operate to the best advantage upon a skin; and as it is very desirable that comparatively rapid movements should be imparted to such carriage while it is being brought into position to act upon a skin, or while moving from a finished skin to a fresh one, I employ a second shipping mechanism to effect such rapid movement. This second mechanism is a counterpart of the first in detail and operation, and is disposed upon the opposite side of the beam R , and consists of a beveled pinion, b^6 , short horizontal shaft c^6 , furcated standard d^6 , beveled gear e^6 , beveled pinion f^6 , sleeve g^6 , clutch-shaft h^6 , bearings $i^6 j^6$, pulley l^6 , second beveled pinion m^6 .

and sleeve n^6 , tubular slider o^6 , shipper-rod p^6 and its spur q^6 , shipper-lever e^7 , and rod f^7 .

As the operation of this second shipping mechanism is precisely similar to the first, it is believed it will be readily understood without further explanation; and I would merely add that the pulley l^6 is of much less diameter than that of the pulley l , in order that the respective movements of the tool-carriage and truck may be correspondingly rapid.

To effect the vertical adjustment of the beam R and tool-carriage and tools, and thus adapt the latter to act with equal effect upon skins of varying thicknesses, I employ an eccentric, j^1 , which I pivot to a start, k^1 , projecting from the rear end of the beam R, and bearing upon a roller, l^1 , pivoted to the top of the cross-bar Y, before alluded to. The pivot of the eccentric j^1 is a short horizontal shaft, m^1 , which passes through the start k^1 , and bears at one end a beveled gear, n^1 , which engages a beveled pinion, o^1 , which in turn is affixed to the rear end of a long horizontal shaft, p^1 , which is disposed within the upper part of the trussed beam R, and protrudes through the front end of the latter, where it is provided with a hand-wheel, q^1 , by which its rotations are readily effected. By turning the hand-wheel q^1 in one or the other direction, the beam R and the tool-carriage and tools are raised and lowered at pleasure.

To effect the requisite traverses of the tool-carriage to and fro of the beam R, which are necessary to enable the dressing-tools carried by the carriage to reach and operate upon all parts of a skin, I proceed as follows: The main support of the tool-carriage is an arched or trussed beam or yoke, r^1 , which is suspended at its crown or center from the lower end of an upright shaft, s^1 , such shaft, in turn, depending from the center of a cross-head or carriage, t^1 , which slides within the beam R upon suitable guides or ways w^1 , applied to the inner sides of the latter, while the shaft, near its lower part, revolves in a hanger, v^1 , depending from the beam R.

To the upper and lower part of the shaft s^1 I mount loosely a sleeve, w^1 , or x^1 , upon each of which I form beveled pinions y^1 or z^1 , while alongside the said shaft, and capable of engaging these pinions, I pivot upon a horizontal shaft, a^2 , a beveled gear, b^2 . Between the sleeves w^1 or x^1 , and encompassing the shaft s^1 , I dispose a tubular slider, c^2 , the arrangement and operation of shafts s^1 and a^2 , and pinions y^1 or z^1 , gear b^2 , sleeves w^1 or x^1 , and slider c^2 , being precisely the same as that of the shafts c and h , pinions f and m , gear e , sleeves g and n , and slider o , before referred to as a portion of the mechanism for effecting the lateral traverses of the truck K.

To the outside of the gear b^2 I affix a toothed pinion, d^2 , which engages a horizontal toothed rack, e^2 , extending from end to end of the beam R, while swiveled at one end to the slider c^2 I employ a T-shaped lever or shipper, f^2 , which is pivoted at its bend, as shown at

g^2 , to a bracket, h^2 , projecting forward from the front side of the cross-head t^1 , the lower arm or handle i^2 of such lever straddling a rigid arm, j^2 , which extends forward horizontally from an annular frame or plate, k^2 , upheld by the hanger v^1 , before referred to, a friction-shoe, l^2 , being applied to the lever, and impinging against the arm, to prevent accidental misplacement of such arm, or clandestine engagement of the slider c^2 with one or the other of the sleeves w^1 or x^1 .

The shaft s^2 being in rotation by means of a pulley, p^2 , affixed to its upper end, it is obvious that when the lower arm or handle i^2 of the lever f^2 is pushed outward by the attendant, the slider c^2 will be thrown into engagement with the upper sleeve w^1 ; consequently the gear b^2 and pinion d^2 will be rotated, and the latter act upon the rack e^2 , to drive the latter and the tool-carriage forward upon the beam R, while a reverse movement of the handle i^2 will reverse the movement of said pinion and gear, and the tool-carriage will be moved in an opposite direction, the friction of the said handle upon the arm j^2 being sufficient to retain the slider in contact with the pinion which it engages.

When the slider c^2 is in engagement with one or the other of the sleeves w^1 or x^1 , the tool-carriage will travel automatically along the beam; and to estop this movement as the carriage reaches its extreme position in either direction, should the attendant fail to do so by changing the shipper, I provide a means of automatically effecting the requisite throw of the shipper, which means, in the present instance, consist in the employment of two horizontal rods or bars, m^2 or n^2 , which extend inward from each end of the beam R, and approach within a short distance of the finger o^2 of the lever f^2 . The rods m^2 or n^2 are so arranged that, as the tool-carriage A^3 approaches its extreme position in either direction, the finger o^2 abuts against one or the other of the said rods, and the continued movement of the carriage moves the lever upon its fulcrum until the slider c^2 is removed from engagement with the sleeve w^1 or x^1 , as the case may be.

The driving-pulley, from which the machine derives motion, is shown at q^2 as mounted upon a shaft, r^2 , within an open frame or head, s^2 , disposed upon the top of a post, t^2 , bolted to, and forming part of, the table-frame at the left end, the rotations of such pulley being imparted to a beveled gear, u^2 , affixed to the outer end of said shaft, and engaging a second beveled gear, w^2 , which, in turn, is affixed to an upright stud, x^2 , erected upon the top of the open head s^2 , before named, a pulley, y^2 , being secured to, or making part of, the last-named gear w^2 .

An idle-pulley, z^2 , is pivoted to the top of the post h^1 , before named as erected at the right of the table A, the purpose in securing this standard a^3 and the head s^2 to their respective posts being to render them interchangeable, and permit the driving power to

be placed upon either side of the machine, while the method of securing the head s^2 adjustably to its support is to enable the angle of the driving-pulley to be changed at pleasure, and adapt it to the position of the pulley from which it derives power. The pulley z^2 also serves as a belt-tightener, as its position with respect to the pulley y^2 is easily changed.

At various positions upon the top of the beam R I pivot idle pulleys or rollers, these latter being shown in Fig. 2 of the drawings at b^3 , c^3 , d^3 , and e^3 , and serving, in connection with the pulleys l , p^2 , q^2 , y^2 , and z^2 , to enable me to drive the entire machine with one belt. This belt is shown at f^3 as passing about the series of pulleys in the order shown in Fig. 2 of the drawings, by which means the pulleys l , p^2 , q^2 , and y^2 are rotated in the direction of their arrows.

I will now describe the mechanism immediately connected with or composing the tool-operating agencies. To the extreme lower end of the shaft s^1 I affix a crank, g^3 , to the pendent wrist-pin of which crank I pivot a horizontal spur-gear, h^3 , which constitutes an epicycle, and travels within and engages an annular toothed rack or epicycloidal wheel, i^3 , which, in turn, is upheld by a horizontal ring-plate, j^3 , secured to the arched bar r^1 , and disposed concentrically with the axis of the shaft s^1 . From the under side of the gear or epicycle h^3 , and near its periphery, depends a stud, l^3 , while pivoted or swiveled at its upper end to this stud is an upright post, m^3 , erected centrally upon a barrel or tubular slider, n^3 , which encompasses and slides to and fro upon a horizontal rod or beam, o^3 , spanning the arms of the arched bar r^1 . As the dressing-tools which operate upon the skin, and which are shown at p^3 p^3 , are carried by the slider n^3 , and as the latter is caused by the epicycloidal wheels h^3 and i^3 to travel upon the beam o^3 in reciprocating rectilinear paths of movement in a horizontal plane, the tools are compelled to travel over and wipe upon the skin in a right line, while the rotary motion of which the arched support r^1 is susceptible combines to permit of a universal freedom of motion to the tools in any direction. The upper part of the arched bar r^1 is provided with a semicircular plate, q^3 , which is received within a rabbet in the under side of the ring-plate j^3 , and is formed with notches r^3 , while operating with these notches is a spring-latch, s^3 , pivoted to the arm j^2 , hereinbefore referred to as extending forward from the said ring-plate j^3 . In connection with this spring-latch s^3 I employ a bent lever or catch-bar, t^3 , which is pivoted at its bend to the front end of the said arm j^2 , and has its upper end converted into a hook, u^3 , to seize hold of the said latch and prevent it from engaging the notches r^3 .

When it becomes desirable to change the path of motion or angle with which the tools act upon a skin the operator depresses the handle of the latch, and removes it from the notch r^3 , in which it may at the same time be,

when it is seized by the catch-bar t^3 and retained in this position. The operator is now enabled to readily turn the tool-carriage and tools about in the arc of a circle, and permit such tools to act upon the skin in any desired direction.

When it is desired that the tools shall describe a number of strokes in any one direction, the catch-bar t^3 is raised, and the latch is elevated by a spring, v^3 , interposed between the two and forced into one of the notches r^3 .

The tool carriers or stocks are two in number, in order that the machine may be double-acting—that is, operate upon a skin with equal effect at each traverse of the tool-supporting carriage—and are shown at w^3 x^3 , respectively, each being suspended from and pivoted at its inner corner or edge to one end of the barrel or slider n^3 before named; and in order that each backward-going tool may be lifted from off the skin while the opposite tool is acting upon the latter, each tool-stock has pivoted to its outer edge, by a pivot, b^3 , the lower end of a rod, y^3 , the upper end of which is pivoted, by a pin-and-slot connection, z^3 z^7 , to the outer end of a sleeve, a^4 , which encompasses the adjacent end of an oscillating beam, b^4 , such beam being disposed longitudinally over the barrel n^3 , and pivoted at its center to the post m^3 of such barrel by a pivot, c^4 . The pivot b^3 , by which each tool-carrier is connected with its rod y^3 , plays within a vertical slot, d^4 , created in such rod, in order that some play may be permitted the tool in passing over inequalities in the skin, and thus preserve the adjacent parts of the machine from the undue thrusts and strains to which they would otherwise be liable, a spring, e^4 , being combined with each rod and tool-carrier, to retain the latter in close contact with the skin, and aid in relieving the thrusts and strains before alluded to.

As the oscillating beam b^4 must tilt from one sloping position to the other with each traverse of the tool-supporting barrel or slider n^3 , it becomes necessary to provide a means of alternately locking such beam in position while one traverse is being made and one tool is acting upon the skin, and, when such traverse is completed, of unlocking or releasing the said beam, and permit it to change its position and lower the opposite tool into contact with the skin, and at the same time elevate from off such skin the tool which has completed its traverse. To effect this result I employ a horizontal annular cam plate or ring, f^4 , which is affixed to the under side of the epicycle or gear h^3 , and concentric with the stud l^3 , before named, the under surface or side of the ring f^4 being deeper upon one half than the other, as shown at g^4 h^4 , and operating in connection with rigid studs i^4 j^4 , erected upon the oscillating beam b^4 , the disposition of the deepest portion or cam g^4 with respect to the other portions of the tool-operating mechanism being such that as the slider n^3 reaches its extreme position in one direction, and the outgoing tool arrives at its extreme limit, the said cam

g^4 recedes from the adjacent stud i^4 or j^4 , and permits that end of the beam to rise, and at the same time wipes against the opposite stud and depresses the end of the beam upon which the latter is erected. The value of this cam-movement for effecting the oscillations of the beam b^4 is seen in the fact that it is simple, durable, and inexpensive, certain in operation, and noiseless.

In order that the operator may, while the machine is in motion, elevate either of the dressing-tools to such an extent as to raise it above the skin during its outgoing movement, or to lower it into action thereupon, and thus cause a cessation of the operation of the machine or put it into operation, I extend the ends of each pivot z^7 into slots z^3 , which incline outwardly and are created in the ends of each sleeve a^4 . By pushing in either of the sleeves a^4 upon the beam b^4 the inclined slots j^4 act upon the adjacent pivots z^7 , to elevate the rod y^3 and dressing-tool, while an outward movement of the slider upon the beam lowers the tool into action.

To enable the operator to readily effect these movements of the sleeves a^4 I dispose upon each side of, and in the same plane with, the beam b^4 a horizontal rail, k^4 , which is supported at each end by a hanger, l^4 , depending from the ring-plate before alluded to, and I combine with each rail k^4 two horizontal bolts, m^4 , each of such bolts being forced outwardly by a spring, n^4 , and being so arranged that when one is pushed inward by the attendant its inner end shall protrude beyond the inner face of the rail, and so as to intercept a stud, o^4 , projecting outwardly from the side of each slider.

Supposing one tool to be in its depressed or working position, and effecting its outgoing or active movement, and it is desired to raise it out of action, the attendant, in such case, pushes inward the bolt which may be in advance of, and nearest to, the stud projecting from the adjacent sleeve o^4 , and, as the slider or carrier n^3 completes its traverse, this stud is intercepted by the bolt, and pushed inward upon the oscillating beam b^4 to its fullest extent, the result being, as before stated, that the inclined slot acts upon the pivot z^7 to elevate the rod y^3 and the outer or working edge of the dressing-tool.

Should it be desired to lower said tool into working position, advantage should be taken, preferably, of the point in the outgoing traverse of the slider n^3 when the latter has nearly completed its movement, at which time the bolt last named is again pushed inward, and, as the slider completes its traverse in this direction, the stud upon the sleeve is intercepted by the bolt, and pushed outward upon the beam b^4 and the rod y^3 , and the adjacent tool lowered.

In order that each bolt may be readily operated from the opposite side of the tool-carriage I connect with each a rod, g^5 , which extends across such carriage, and is provided with a handle, h^5 , at its extremity.

The scouring-brush of this machine is shown at p^4 as disposed intermediate between the tool-stocks; but as the arrangement and operation of this brush is practically the same as shown in my Letters Patent No. 157,691, before referred to, I shall make no allusion to it, except to say that I dispense with the spring formerly employed to retain it in a given position, and allow the point of the cam b^8 to enter a notch in the outer end of the head or bar c^3 , from which such brush is suspended. The brush is depressed by spiral springs placed over it.

In order to remove from each dressing-tool such foreign matter as might otherwise adhere to, and interfere with its thorough working, I combine with it a scraper, which passes over or across its working edge at each traverse of the tool-carriage; and this scraper, in the present instance, consists, simply, of a wire or rod, q^4 , bent into the form shown in perspective in Fig. 4 of the drawings. The inner ends of the arms r^4 of this wire are coiled, as shown at s^4 , to provide springs by which to elevate the lower portion, or scraper t^4 , and the extremities of the arms r^4 are inserted in the upper side of each tool-stock, w^3 or x^3 . An eye, v^4 , is formed at each bend or corner of the rod q^4 , and in these eyes I insert the ends of a rod, w^4 , while through such ends I pass the legs x^4 of a yoke, y^4 , the extremities of such legs being inserted in ears z^4 , erected upon the top of each tool-stock. The outer end of each yoke terminates in curved prong or nose a^5 , which, when the tool-carriage reaches its extreme outward position, wipes against the under side of a stud, b^5 , which is secured to the lower end of each arm of the arched bar, the contact of the nose with the said stud serving to lower the scraper t^4 , and force it across the edge of the tool, and thereby scrape or clean from the latter any foreign matter which may have accumulated upon it.

I have further added to this machine a device for relieving certain portions of it of the strain and thrusts which would ordinarily result from the crank g^3 passing its dead-center; and such device consists in the employment, in combination with the barrel or slider n^3 , of two horizontal rods, c^5 , affixed one to each end, and upon opposite sides of such slider, each rod projecting somewhat beyond the respective end of the slider, and being provided at its extremity with a piston, d^5 , to operate in connection with an air-cylinder, e^5 , secured to the lower part of the adjacent arm of the arched standard r^1 . The disposition of the rods c^5 , pistons d^5 , and cylinders e^5 is such that as the tool-carriage reaches its extreme outgoing position, the advance piston enters the cylinder a short distance, and encounters the air in the latter.

As the opposite or outer end of each cylinder e^5 is closed by a valve, f^5 , which opens inward, it follows that as the piston enters the cylinder its advance is obstructed by the air

in the latter, which air constitutes a cushion to receive and lessen the thrust of the crank g^3 as it passes its dead-center.

As the piston reverses its movement and leaves the cylinder, the valve f^5 opens and permits of a free circulation of air through such cylinder, and obviates the noise, and relieves the gearing from the thrusts, which would otherwise ensue as the piston leaves the mouth of the latter.

Having thus explained the nature and operation of my improvements, I claim, and desire to secure by Letters Patent of the United States, the following:

1. In machinery for scouring, setting, or glassing leather or beaming hides, the combination, with the table A, of the upright truck, carrying an overhanging beam, which bears the tool-operating mechanism, said truck being located at one side of the table, and arranged to travel to and fro of said table, as and for the purposes set forth.

2. In machinery for scouring, setting, or glassing leather or beaming hides, the combination, with the skin-supporting table, of a rigid horizontal beam, supported at one end, and susceptible of variable or adjustable movements in right lines horizontally, or both horizontally and vertically, bearing a tool-carriage, substantially as and for the purposes stated.

3. In machinery for scouring, setting, or glassing leather or beaming hides, the combination, with a stationary skin-supporting table, of a horizontal rigidly-attached beam overhanging the table, and an upright truck disposed to one side of the latter, the beam carrying the tool-carriage, and being supported by and sliding vertically upon the truck, and the latter susceptible of traverses to and fro of the table, upon suitable rails or ways, substantially as and for the purposes stated.

4. The combination, with the tool-carriage, of feed mechanism, substantially as described, adapted to operate the carriage to travel over the table in any desired direction, and at equal or variable speeds, substantially in the manner shown and set forth.

5. The combination, with the tool-carriage and the feed mechanism which operates said carriage, as described, of mechanism which automatically stops the movement of the carriage at the times and in the manner set forth.

6. The combination, with the table A and its supporting-frame or stage, of adjusting-screws, whereby the stage is adapted to inclined or irregular floors or foundations, and the table is adjustable with respect to the plane in which the tools move, essentially as and for the purposes stated.

7. The combination, with the beam R and truck K, of the eccentric j , operated substantially as described, to effect the vertical adjustment of the tools with respect to the table.

8. The combination of active and idle pulleys l , p^2 , z^2 , y^2 , b^3 , e^3 , d^3 , and t^3 , substantially

as shown, whereby the tools may be operated in different positions with respect to the table with one belt, in addition to the belt of the driving-pulley q^2 , essentially as and for purposes stated.

9. The combination of the pulleys q^2 and z^2 with the standards or columns h^1 and t^2 , substantially as herein shown, whereby the positions or angles of such pulleys are readily adjusted, and they become interchangeable with respect to each other and to the machine, essentially as and for purposes stated.

10. The combination, with the tools or tool-holders, of an annular cam, arranged and operating to oscillate or alternately elevate and depress the tools, substantially as shown and set forth.

11. The combination, with each dressing-tool and its stock, or both, of a scraper, operating automatically to remove from the working edge of the tool accumulations of foreign matter, substantially as and for purposes stated.

12. In machinery of the class hereinbefore mentioned, the combination, with the tool-carriage, and crank and mechanism for operating said carriage, of air-cylinders and pistons, substantially as shown and set forth, whereby the thrusts and strains consequent upon the crank passing its dead-center are cushioned and lessened, and the machine is relieved from their effects.

13. The combination, with the tool-supporting carriage and the annular frame or plate k^2 , of the double latch, composed of the latch-bar s^3 and catch t^3 , supported upon the arm j^2 , and operating with the notched plate q^3 , essentially as and for purposes stated.

14. The combination, with the tools and beam or device which alternately raises and lowers the same, of the cam f^4 , formed substantially as shown and set forth, to confine or hold the opposite tools rigidly and powerfully in their respective positions, as described.

15. The combination, with the truck and tool-carrier, of the clutches by which the traverses of the same are effected, and the rods q^1 q^6 and governor wheel or disk s , substantially as set forth.

16. The mechanism for effecting the traverses of the truck and its adjuncts to and fro of the table, consisting of the rack V, pinion W, shaft X, gear a , pinions b b , gears e e^6 , pinions f f^6 and m m^6 , in combination with the intermediate sleeves o and o^6 , shipper rods q^1 q^6 , and governor hand-wheel s , substantially as and for the purposes stated.

17. As a means of arresting automatically the travel of the truck and tool-carriage, the curved levers e^1 e^1 and rods f^1 f^1 , in combination with the governor-wheel s , to throw the shippers q^1 q^6 and disengage the clutch-sleeves o o^6 from the pinion with which it is engaged, substantially as and for purposes stated.

18. The double latch, constructed substantially as described, in combination with a notched plate carried by the tool-carriage, in

order to lock the latter in any given position, substantially as and for purposes stated.

19. As a means of automatically arresting the travel of the tool-carriage upon the beam R, the bent lever f^2 , in combination with the rods m^2 and n^2 , substantially as stated, such movement of the lever having the effect of disengaging the clutch by which the carriage is coupled to the mechanism which drives it, essentially as and for purposes stated.

20. The combination, with the bolts m^4 , of the rods g^5 , by which such bolts may be operated from opposite sides of the tool-carriage, substantially as and for purposes stated.

21. The means herein described for maintaining the elevation of the brush, consisting in the point of the cam t^3 entering a notch, u^3 , in the bar v^3 , substantially as and for purposes stated.

22. The truck K, in combination with the trundles M and guide-rollers N, operating upon the rail L, as stated, and the rollers Q and hooked studs O, operating upon the ledge P, as stated, the whole being substantially as and for purposes stated.

23. The combination, of the wiper-cams t^0 and notched lifting-bar v^0 , for maintaining the elevation of the brush, or lowering the same, substantially as and for purposes stated.

24. The combination, with the oscillating beam b^4 , of cam-sleeves a^4 , for elevating or lowering the tools p out of or into working position while the machine is in motion, substantially as and for purposes stated.

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Witnesses:

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