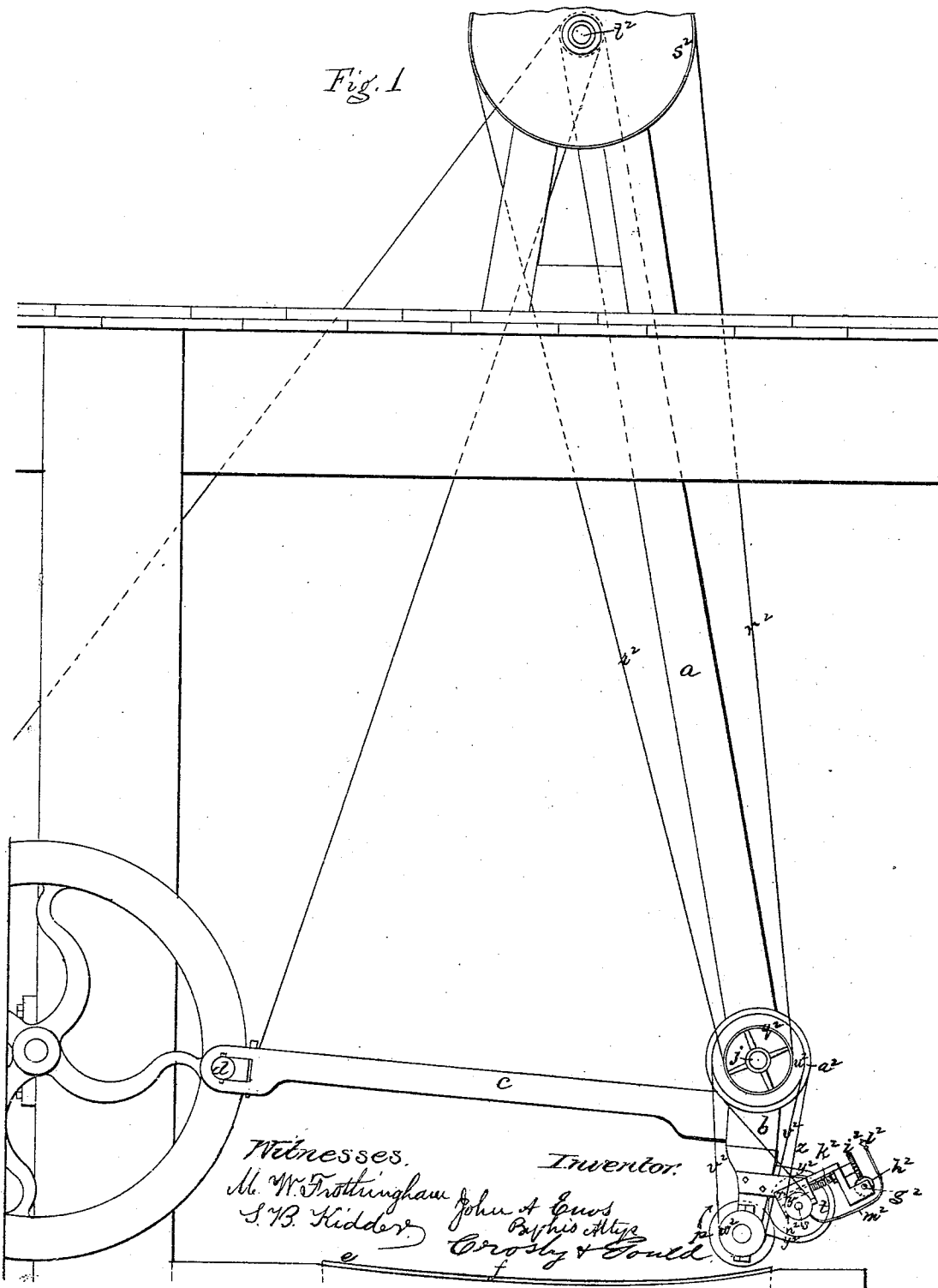


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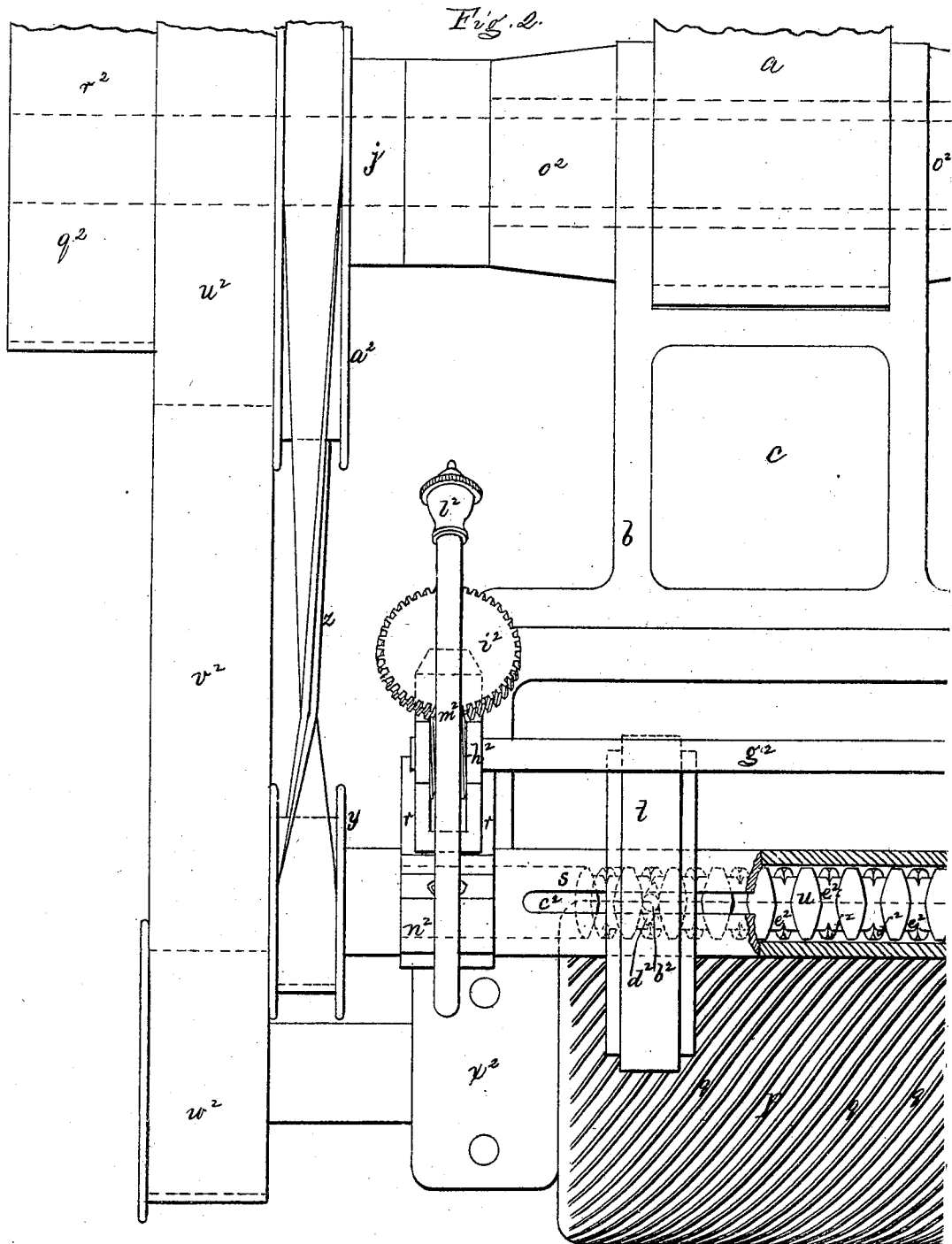
Patented May 13, 1873.



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Witnesses.
M. W. Frothingham.
S. B. Hildet.

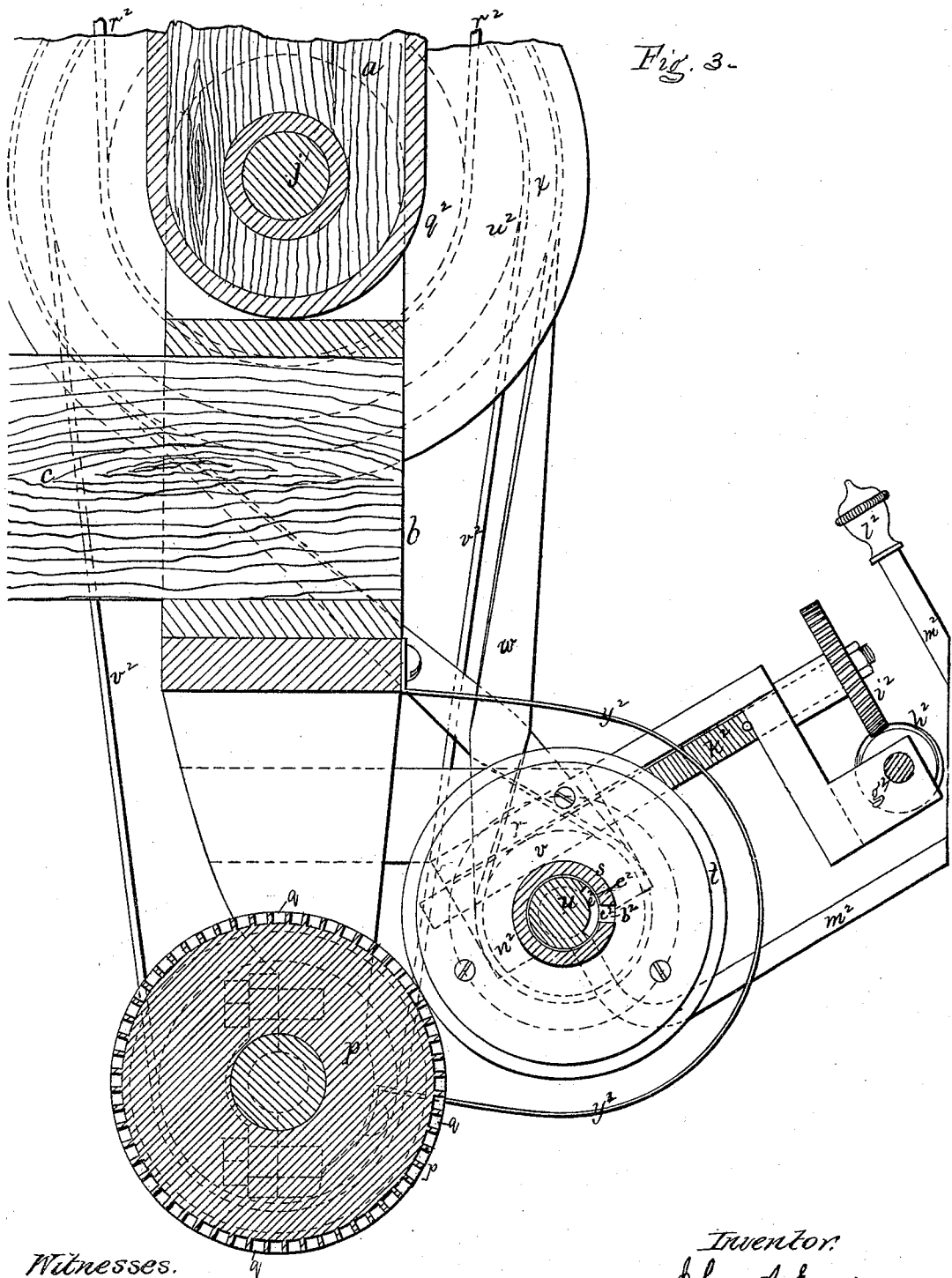
Inventor.
John A. Enos,
By his atty.
Crosby & Gould.

J. A. ENOS.
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Patented May 13, 1873.

Fig. 3-



Witnesses.

W. W. Frothingham.
J. B. Kiddle.

Inventor.
John A. Enos.
By his Atty.
Crosby & Gould

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Fig. 4.

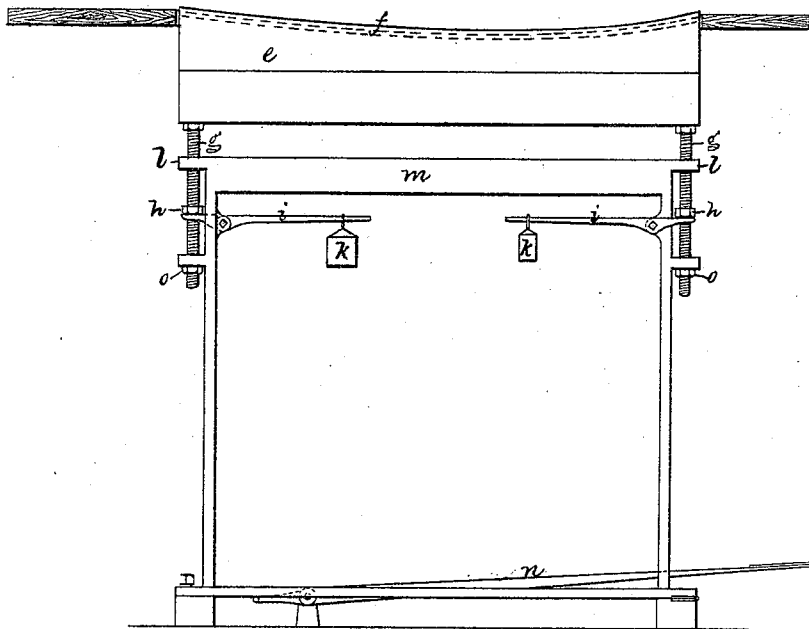
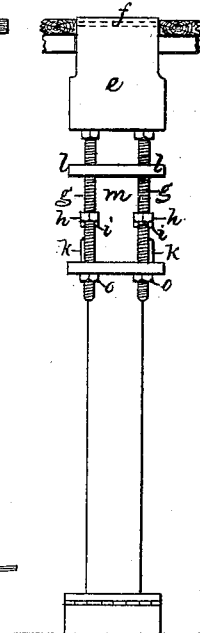


Fig. 5.



Witnesses.

W. W. Nottingham.
S. B. Kidder.

Inventor.

John A. Enos.
By his Atty.
Crosby & Gould

UNITED STATES PATENT OFFICE.

JOHN A. ENOS, OF PEABODY, MASSACHUSETTS, ASSIGNOR TO JAMES M. CALLER, TRUSTEE.

IMPROVEMENT IN LEATHER-DRESSING MACHINES.

Specification forming part of Letters Patent No. **138,874**, dated May 13, 1873; application filed February 6, 1873.

To all whom it may concern:

Be it known that I, JOHN A. ENOS, of Peabody, in the county of Essex and State of Massachusetts, have invented certain Improvements in Leather-Dressing Machines; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

Leather-dressing machines in most general use are so constructed and organized as to operate the particular tool employed to and fro upon and over a bed in such manner as to apply the tool with pressure to the surface of the leather placed on the bed during its forward movement, and to swing the tool clear of the bed and of the leather placed thereon during its backward movement. Such machines have heretofore been adapted to operate only two classes of tools—namely, those which are clamped or rigidly fixed in the end of the tool-stock and act upon the surface of the leather to abrade, polish, or figure it by a rub or friction stroke, and those which are hung on gudgeons or journals in bearings at the end of the tool-stock and are made to rotate by virtue merely of their contact with the surface of the leather upon which they act, to imprint, emboss, or compress it.

There is another class of leather-dressing tools which have never been adapted or applied to the machines hereinabove referred to, but which, having a positive rotation upon their own axes, produced by power applied through the shafts whereon they are journaled, have hitherto been operated in bearings fixed in position relatively to the other parts of the machine, and have thus been capable of acting upon the surface of the leather to be dressed only as its various portions have been successively presented to the same working point. Tools of this latter class, however, as heretofore constructed and operated, have never had any considerable use among leather-dressers, owing to the practical difficulties attending their mode of working; and, accordingly, the main object and result of the invention herein set forth have been to contrive and organize an efficient and serviceable leather-

dressing machine in which the tool employed, while being made to traverse forward and backward upon and over a bed, is at the same time caused to rotate in a direction opposite to that which would be produced merely by its contact with the face of the bed or with the surface of the leather placed thereon.

This invention relates, moreover, to details of the organization of the machine, and the character and features of the invention will further appear by the following description of the mechanism:

Figure 1 shows the machine in side elevation. Fig. 2 is a front view of the dressing-tool and of the mechanism adjacent thereto. Fig. 3 is a cross-sectional elevation of the dressing-tool and of the grinder-cylinder shaft. Fig. 4 shows in side view, and Fig. 5 in end view, the yielding bed and its supports.

The instrumentalities by which the leather-dressing tool receives its traversing movements in the machine herein described and represented, consist of the vibrating pendent arm *a*, the tool-stock *b*, the connecting-rod *c*, and the revolving crank-pin *d*. The tool-stock is jointed to the lower end of the pendent arm, and is rigidly attached to the outer end of the connecting-rod, the relation and proportion of the parts being such that the forward and backward movement of the tool takes place in different paths, the one above the other.

The bed of the machine, by and upon which the leather is presented to the action of the dressing-tool, consists of a rigid block, *e*, having its upper or working surface shaped to correspond substantially with the path of the tool in its forward movement, and covered with a bolster, *f*, consisting of a strip of stout, firm leather, cushioned upon a sheet of vulcanized rubber. From the bottom of the bed-block *e* extend screw-threaded rods *g*, whereon are nuts *h*, which rest upon the outer arms of levers *i*. These levers project inward beneath the bed-block and carry upon their inner arms weights *k*, which exert a constant and practically-uniform stress upon the bed-block, tending to keep its working-surface in the requisite position for the proper action of the dressing-tool, and permitting it to readily yield downward to accommodate any inequali-

ties in the thickness of the leather operated upon, while the elastic bolster *f* prevents any abrupt action of the machine caused by the inertia of the bed-block. The amount of stress exerted by the weights may be regulated by adjusting their positions upon the lever-arms.

The rods *g* pass through projections *l* from a frame, *m*, which constitutes the support of the bed, and which, being pivoted at one end of its base and at the other end left free to be raised by the foot-lever *n*, can thereby, at the will of the operator, be made to supplement the action of the weighted levers *i* in presenting the working-surface of the bed to the stroke of the dressing-tool. The upward movement of the bed under the stress of the weights is limited by suitable nuts *o*, which strike the bottom of the projections *l*.

The specific leather-dressing tool *p* represented in the drawing is particularly intended and adapted to effect the operation known in the trade as "whitening" or "buffing," which consists in scraping off more or less of the surface of the tanned hide, upon the flesh side or the grain side, as the case may be. This tool is a cylinder, upon the peripheral surface of which is fixed a series of parallel spiral blades, *q*, arranged in such close proximity to each other and pitched at such an angle with the axis of the cylinder as to insure practical continuity in their successive action without any appreciable chattering or rhythmical jar while the tool is rotated upon its work, and at the same time sufficiently far apart to freely discharge the scrapings removed from the surface of the leather to be dressed.

In the reduction of this part of the invention to practice, the foregoing requisites have been efficiently accomplished by the construction of a metal cylinder, five and one-half inches in diameter and seven inches in length, containing thirty-six steel blades, one-quarter of an inch apart, and pitched at an angle of about forty degrees, so that the opposite ends of each blade are nearly upon opposite sides of the axis of the cylinder. These dimensions and proportions are of course capable of considerable variation without departing from the principle of the invention, and without materially affecting the advantages to be gained by the employment of such a structure, the substantial characteristics of which are, first, that the tool is a relatively short one, viewed in comparison with the rotating scraping-tools heretofore used for the same or analogous purposes, so that it is capable of being made to traverse rapidly forward and backward upon and over a bed, and to operate at regularly recurring intervals on successive narrow portions only of the leather to be dressed, so as not to be practically affected in its action by variations which may occur in the thickness of the leather transverse to its line of movement, as would otherwise be the case if it had substantially greater length; second, that the blades are so inclined to the axes of the cylindrical surface in which they are fixed that the edge

of each comes to its work progressively and gradually from one end to the other, and not simultaneously and abruptly along any material portion of its length, thus effecting in its action a combined shaving and scraping operation; and third, that the distance of adjacent blades from each other is so small that there is no practically appreciable break in their successive action, and when caused to traverse under rotation and pressure upon the leather to be "whitened" or "buffed" they produce a uniform effect over the entire surface on which they are made to operate.

In order to keep this tool at all times in the most efficient working condition, it is desirable to have the edges of its blades continuously and automatically sharpened while the machine is in operation.

To this end there is provided the following mechanism: From the tool-stock *b* extend bearings *r*, in which is journaled a tubular slotted shaft, *s*, having mounted upon it an emery-roll or other grinding-cylinder, *t*, which turns with it and slides upon it. Within this tubular shaft *s* is a reversing shaft, *u*, which extends at one end through the adjacent bearing *r*, and carries a pulley, *v*, belted by a cross-belt, *w*, to a pulley, *x*, on the shaft *j*. The tubular roll-shaft *s* also has at one end a pulley, *y*, also belted by a cross-belt, *z*, to a pulley, *a*², on the shaft *j*, so that both shafts turn in the same direction. From the grinder-roll *t* a pin, *b*², extends through a groove, *c*², in the shaft *s*, said pin bearing a button, *d*², which enters a spiral groove, *e*², of the shaft *u*, or a similar groove, *f*², running around the shaft in the opposite direction. The grinder-roll shaft is belted so as to turn in the opposite direction to the rotation of the whitening or buffing tool, and the grinder-cylinder is speeded to run faster than the tool to be sharpened, so as to grind toward the edges of the blades instead of from such edges. The grinder-cylinder being so speeded the reversing shaft *u* is driven at a less speed, and by the differential movement between them, or by the rotative movement of the shaft *s* relatively to the shaft *u*, the button or shoe *d*² moves endwise of the shafts in the groove *e*² or *f*², causing the roll to move with it, the button running into the other groove at the extremity of its end motion, and thereby turning and moving toward the opposite end of the tool *p*, when its motion is again reversed, the grinder-roll *t* by these means automatically traversing to and fro across the working-face of the leather-dressing tool. By means of a worm-shaft, *g*², turning in suitable bearings extending from the tool-stock *b*, and having worms *h*² meshing into and driving worm-wheels *i*² on screw-shafts *k*², which rotate in stationary bearings and have their screw-threaded ends entered into nut-threads in the bearings *r*, the shaft *s* may be accurately moved up toward or from the cylindrical tool *p* to preserve its parallelism to the axis of such tool, and adjust the sharpening cylinder *t* to grind the blades

q to edges concentric with the axis of the cylinder on which they are fixed. By means of oil-cups l^2 and pipes m^2 leading under the worm-shaft g^2 to the boxes n^2 , the bearings of the grinding-cylinder may be kept lubricated. By rounding off the edges of the blades of the whitening or buffing tool hereinabove described, and dispensing with its sharpening mechanism, its operation upon the leather will be kindred with that known as "glassing" or "stoning." Nor are these the only leather-dressing tools capable of being advantageously and effectively employed in the machine which embraces the invention herein set forth. The tools which have heretofore been clamped or rigidly fixed in the end of the tool-stock, and caused to act upon the surface of the leather by a rub or friction stroke, can, by being made cylindrical in shape and provided with gudgeons or journals, be usefully operated for polishing, glossing, or "dicing," by having given to them a positive rotation in a direction opposite to that which the friction generated by their movement in contact with the surface of the leather tends to produce.

The rotation of the leather-dressing tool employed in this machine is accomplished by the following mechanical instrumentalities: The tool-stock is pivoted to the arm a by means of two hubs, o^2 , hung upon a shaft, j , extending through the arm a and hubs o^2 , and upon the opposite ends of this shaft j are pulleys q^2 connected by belts r^2 with pulleys s^2 on the driving-shaft t^2 , the shaft j also carrying pulleys u^2 connected by belts v^2 with pulleys w^2 on the ends of the gudgeons of the

tool p , these gudgeons rotating in bearings x^2 of the tool-stock.

A sleeve may extend through the hubs o^2 and arm a , (for the hubs directly to rest upon,) and the shaft t^2 may have a similar sleeve between its bearings for the immediate pivotal support of the pendent arm.

A hood or shield, y^2 , may be attached to the tool-stock, and extend around the front side of the grinder-roll, this shield catching the flying emery dust and dust ground from the blades.

What is claimed to be novel herein is—

1. In a leather-dressing machine, a tool having, in addition to a traversing movement in contact with the work and a return movement out of contact therewith, a positive rotation in a retrograde direction, by means substantially as described.

2. In combination with the traversing tool-stock, the system of shafts and pulleys, substantially as described, by which the rotating tool is driven.

3. The leather-dressing tool, provided with parallel spiral blades, arranged and constructed substantially as described.

4. In combination with the traversing tool-stock, the whitening or buffing tool and the grinding-roll, constructed and operated substantially as described.

5. The bed-block supported upon weighted levers, substantially as described.

Executed this 1st day of February, A. D. 1873.

Witnesses:

JOHN A. ENOS.

RUFUS H. BROWN,
OLIVER C. SMITH.