H. CUNNINGHAM.

Improvement in Machines for Softening Leather.

No. 132,902. Patented Nov. 12, 1872.

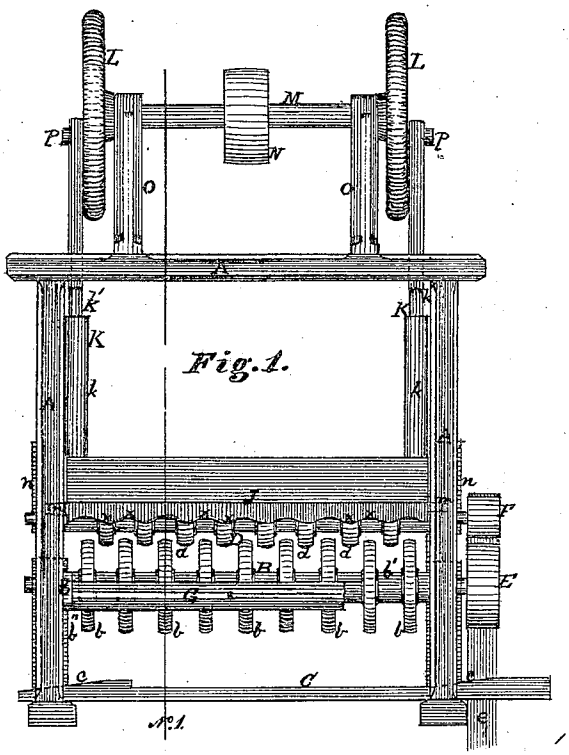

Fig. 1.

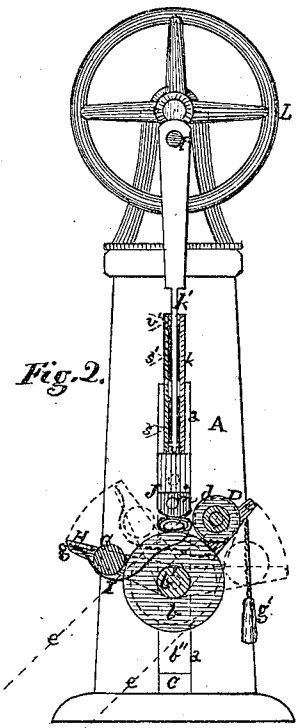

Fig. 2.

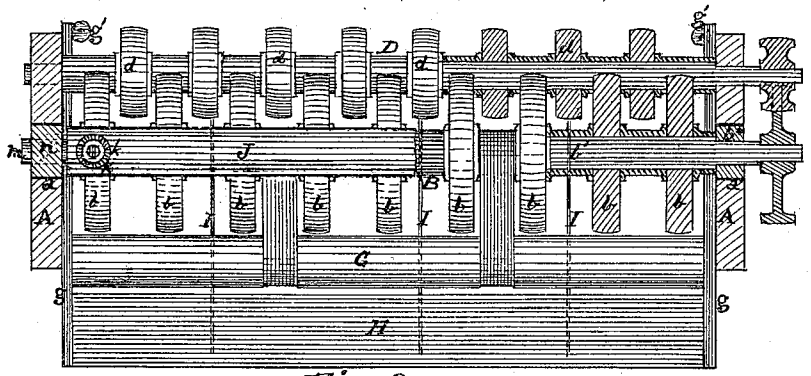

Fig. 3

Fig. 4.

Fig. 5.

Witnesses:

James C. Kunholtz

Daniel C. Covert

Henry Cunningham
by his Attorney
Abr. Selbrick
Inventor.

UNITED STATES PATENT OFFICE.

HENRY CUNNINGHAM, OF ALBANY, NEW YORK.

IMPROVEMENT IN MACHINES FOR SOFTENING LEATHER.

Specification forming part of Letters Patent No. **132,902**, dated November 12, 1872.

To all whom it may concern:

Be it known that I, HENRY CUNNINGHAM, of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Machines for Softening Leather; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a front view of the machine embodying the improvements of this invention. Fig. 2 is a side elevation of the same taken in the direction of line No. 1 in Fig. 1. Fig. 3 is a vertical view, on an enlarged scale, from above, of the working parts of this invention, illustrating the parts partially in perspective and partially in sections. Fig. 4 is a cross-section of the elastic tube, and with this invention, embodying the improvements therein. Fig. 5 is a cross-section through elastic tube and leather rolled around the same.

My invention relates to certain improvements in machines for softening leather, morocco, and the like; and consists in certain mechanical elements, constructed, combined, and arranged in the manner which I will proceed to describe, to enable others skilled in the art to make and use this invention.

In the drawing, A A represent any suitable frame-work for supporting the several parts of this invention. *a a* are vertical guiding-slots, made centrally in the frame A A. B is the revolving bed, consisting of a greater or less number of wheels or circular flanges, *b b b*, (according to the size of the machine to be used,) made with or secured to a common shaft, *b'*. The journals of the said revolving-bed shaft *b'* have their bearings in the vertical boxes *b'' b''*, Figs. 1 and 3, which boxes *b''* work in the vertical slots *a a* in the frame, with their lower ends properly supported. C is the adjusting-bar, and consists of a bar provided with the wedge-shaped ends *c c*, made to correspond with the faces of the lower ends of the boxes *b''*, which are supported on the said wedges *c c* of the said bar C, as shown in Figs. 1 and 2. The said bar can be moved longitudinally in either direction to raise or lower the bearing *b'' b''*. D is the revolving keeper, and consists of greater or less number of circular flanges *d d*, either made with or secured to the shaft *d'*. The said keeper D has its bearings in the sides of the frame A A, and is placed a little back of the revolving bed B and above the same, as shown in Figs. 2 and 3. E is a band-pulley, secured to one end of the shaft *b'* of the revolving bed B, to drive the same. F is a band-pulley attached to the shaft of the revolving keeper D. The said band-pulleys E and F are driven by the same band, running somewhat in the direction of the band *e*, shown in dotted lines in Fig. 2, from any suitable counter-shaft placed in a room below. G is the tilting-roller, which is placed in front of the revolving bed B, and has its bearings in the tilting-levers *g g*, shown in Figs. 2 and 3. The said levers *g g* swing on the shaft *b'* of the revolving bed B, and are weighted at their ends by the weights *g' g'* in such a manner that the whole will be about on an equipoise, so that when the roller G is thrown down, as shown by outline, its position will be so maintained until thrown up by design. H is the tilting-table, attached to the lever *g g* front of the roller G, and is carried with it. I I I are hooks attached to the tilting-table H, which hooks work between the flanges *b* of the revolving bed, and are capable of being thrown back past the center of the revolving bed or forward of the same. J is the pounder, suspended directly over the revolving bed B by the pitmen K K. The said pounder is made weighty with iron, and is provided with journals *m m*, having their bearings in the vertically-moving boxes or blocks *n n*, from which the said pounder oscillates when operated. The face of the said pounder is made with a waving surface, *x x*, as shown in Fig. 1, to correspond with the flanges of the revolving bed B. The pitman K is made elastic, and consists of the tubular portions *k* and solid pitmen *k'*, Figs. 2 and 3. Within the said tubular portions *k k* are placed rubber or equivalent elastic pieces or springs *s* and *s'*, which pieces are separated by the piston or ring *v* secured to the solid portion *k'* of the pitman K. The upper end of the tubular portion *k* is closed over to hold the elastic piece *s'* down by means of a plug, *v'*, or a cup, through which the solid portions *k'* work. The one pitman is a duplicate of the other. The said pitmen K K connect with the fly-wheels L L by the cranks or wrist-pins *p p*, and are operated thereby by means of the

shaft M, driven by any suitable band-wheel, N. The shaft M has its bearings in the standards O O, as shown. If desired, a crank-shaft or eccentrics, properly constructed or arranged, may be used to operate the pitmen. P is a rubber or any other elastic tube, about two inches, more or less, in diameter. The ends *q* of the said elastic tube is partially closed or contracted, as shown in Fig. 4. Within the tube, at nigh the ends, is placed the valve *q'*, which may be of any suitable form or construction, and arranged so that when the tube is compressed the air within will tend to close the said valve, and when not compressed the valve will open.

The manner in which the several parts of this invention operate is as follows: The leather to be operated upon and softened is rolled around the elastic tube P, as shown in Figs. 2 and 5. The revolving bed B and keeper D are revolved in the direction of the arrow in Fig. 2 by the band *e*, shown in dotted lines, which will be in direction from the tilting-roller, which tilting-roller will be revolved in the same direction by the bands *f f*, Figs. 2 and 3. The leather rolled round the elastic tube P is placed on the tilting-table H, while in the position shown by outline in Fig. 2. When it is desired to throw the roll P′ of leather under the pounder J, the operation will throw the tilting-table H and roller G up from position in outline to position of shaded lines, when the roller G, revolving in direction toward the revolving bed B, will throw or carry the said roll of leather on the bed B and under the pounder J to be operated upon. The tilting-roller is allowed to remain in its thrown-up position, and acts with the revolving keeper D to box the leather between the two, and prevent its being thrown from the revolving bed. It is seen in Fig. 2 that the band *e*, shown by dotted lines, runs over the pulley F of the revolving keeper, and also presses on the sides of the band-wheel E of the revolving bed. The object of driving the said band-wheels E and F by one and the same band, and in the manner above described, is to secure a stoppage of the revolving of the bed B when the pounder J is brought in contact with the roll P′ of leather. This said stoppage of the bed B, when the pounder J is in contact with the leather, is necessary to prevent the leather being pinched, which pinching would be effected were the bed permitted to revolve while the pounder was in contact with the leather. When the pounder is raised from off the roll P′ of leather, the band *e* will again give motion to the bed B and also to the keeper D, and cause the roll of leather to turn and present another surface for the contact of the pounder J as it descends a second time. This operation is continued until the roll P′ of leather has been sufficiently softened, and each blow will be received on a surface other than the preceding. The waving surface of the striking-face of the pounder J, with the several flanges or wheels *b* of the revolving bed B and the spaces between the same, causes the roll P′ of leather to take a fastened serpentine form at each blow of the pounder J, which fastened serpentine form is changed to its original form by the reacting of the elastic tube P within the roll the instant the pressure of the pounder J is removed. The contracted ends *q'* of the tube and the valve *q* in the same gives to the said tube P a greater reacting power, for the reason that the air within is not allowed to wholly escape, and the elasticity of the air is utilized to aid the tube in its action to throw out the indentures and flattening made in the roll P′ by each stroke received. Should the roll P′ of leather to be operated upon be of large diameter, the adjusting-bar C should be moved in the direction of arrow 1, which would permit the vertical bearing *b''* to drop and carry with it the revolving bed B, and thus increase the distance between the said bed and the pounder J. A reverse movement of the said adjusting-bar will adapt the said distance to the size of a smaller roll. The elastic pitmen not only take off the shock of the blow given, but it makes its blow more gradual on the leather and insures a longer period of pressure of the pounder on the same before being relieved therefrom. When it is desired to withdraw the roll P′ from under the pounder to replace it with another, the tilting-table H is thrown down, when the hook I I I attached to the same will strike the back of the roll and throw it toward the said table, thus obviating the necessity of using the hands to remove the roll.

By this machine no part of the leather escapes being manipulated, and the several portions will be evenly softened, while no part will be injured, as in the case with the pin-block machine. The size of this machine in its construction may be varied to suit the size of the rolls to be operated upon, whether for morocco, sides, or hides, and can be used to advantage for softening all kinds of leather made with or without oil that requires to be softened.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The revolving bed B, constructed as described, and arranged directly under the pounder J, substantially as and for the purpose set forth.

2. The waving striking-surface *x x*, in combination with the pounder J, substantially as and for the purpose set forth.

3. The combination of the pounder J with the revolving bed B, substantially as and for the purpose set forth.

4. The combination of the elastic pitmen K K, with the pounder J and revolving bed B, substantially as and for the purpose set forth.

5. The combination of the tilting-roller G, table H, levers *g g* with the revolving bed B, substantially as and for the purpose set forth.

6. The combination of the revolving keeper D with the tilting-roller G, substantially as and for the purpose set forth.

7. The combination of the hooks I I with the tilting-table H, substantially as and for the purpose set forth.

8. The adjusting-bar C, in combination with the vertical bearings *b b* and revolving bed B, substantially as and for the purpose set forth.

9. In combination with the elastic tube P, the contracted end openings *q'* and valve *q*, substantially as and for the purpose set forth.

HENRY CUNNINGHAM.

Witnesses:
JAMES C. KEENHOLTS,
DANIEL C. COVERT.