J. Southwick,

Tanning Leather,

No. 2,552, Patented Apr. 11, 1842.

Fig 2.

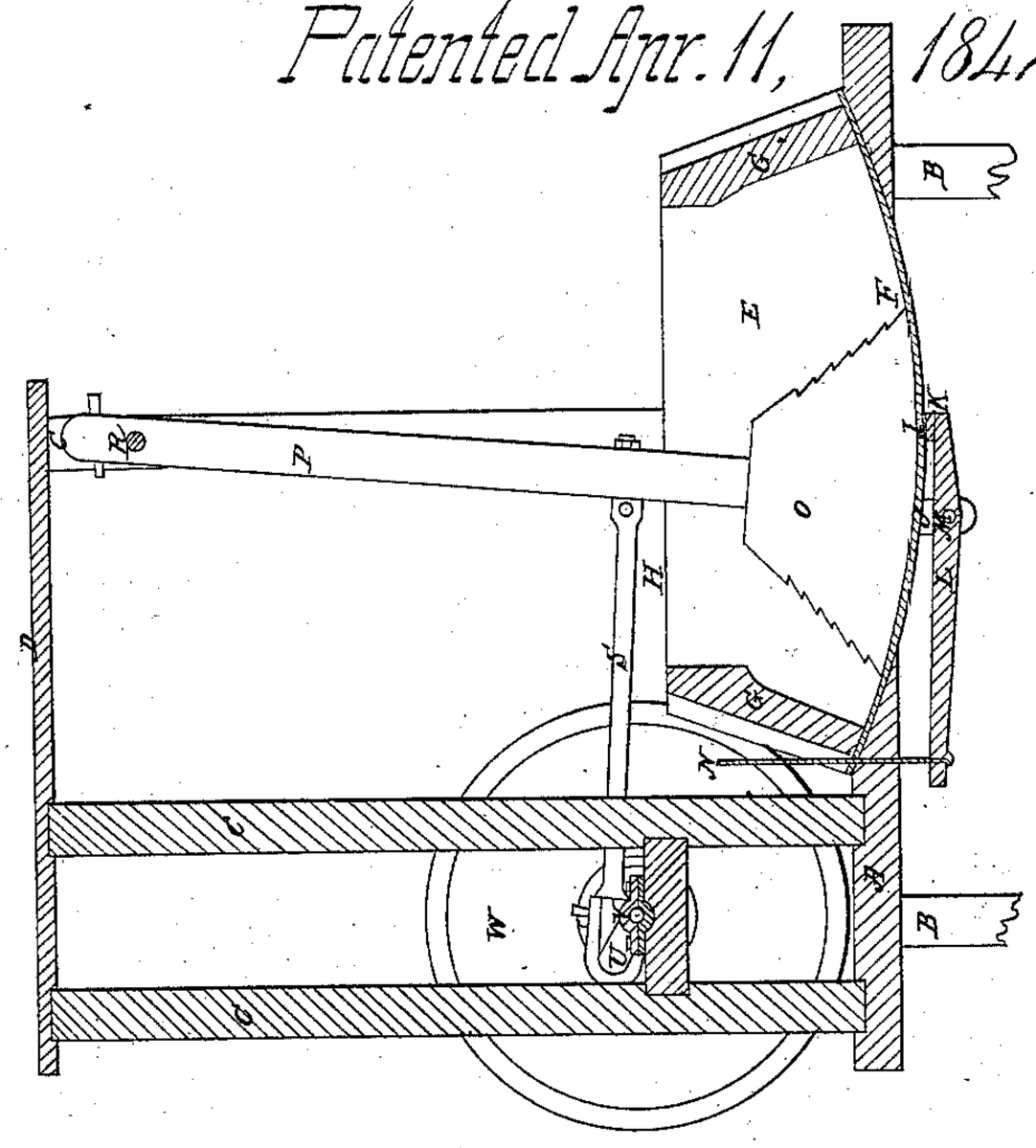


Fig 3.

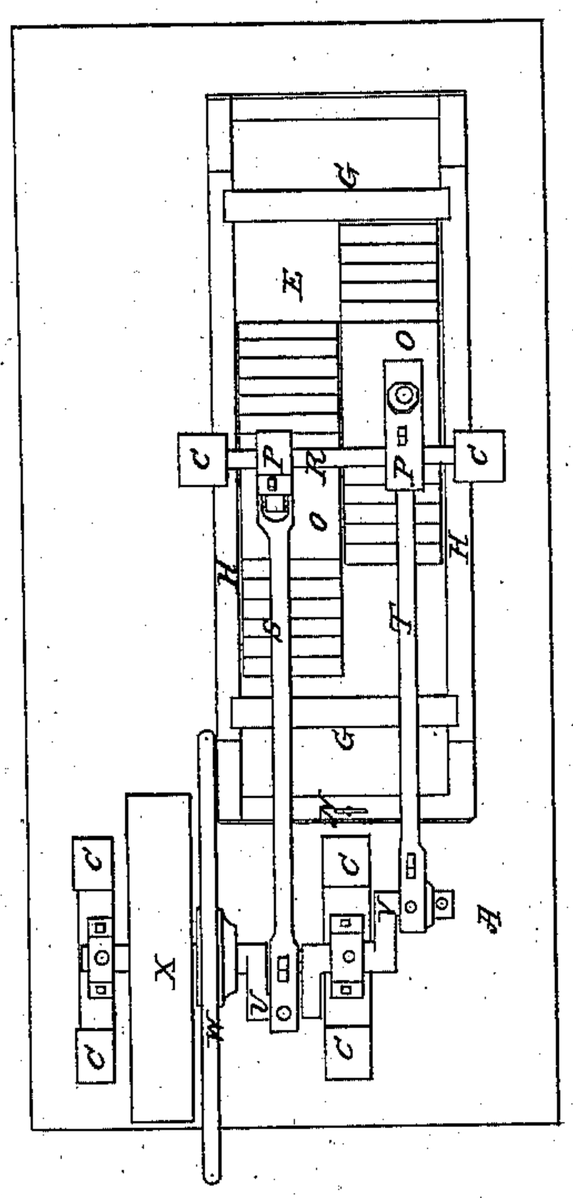
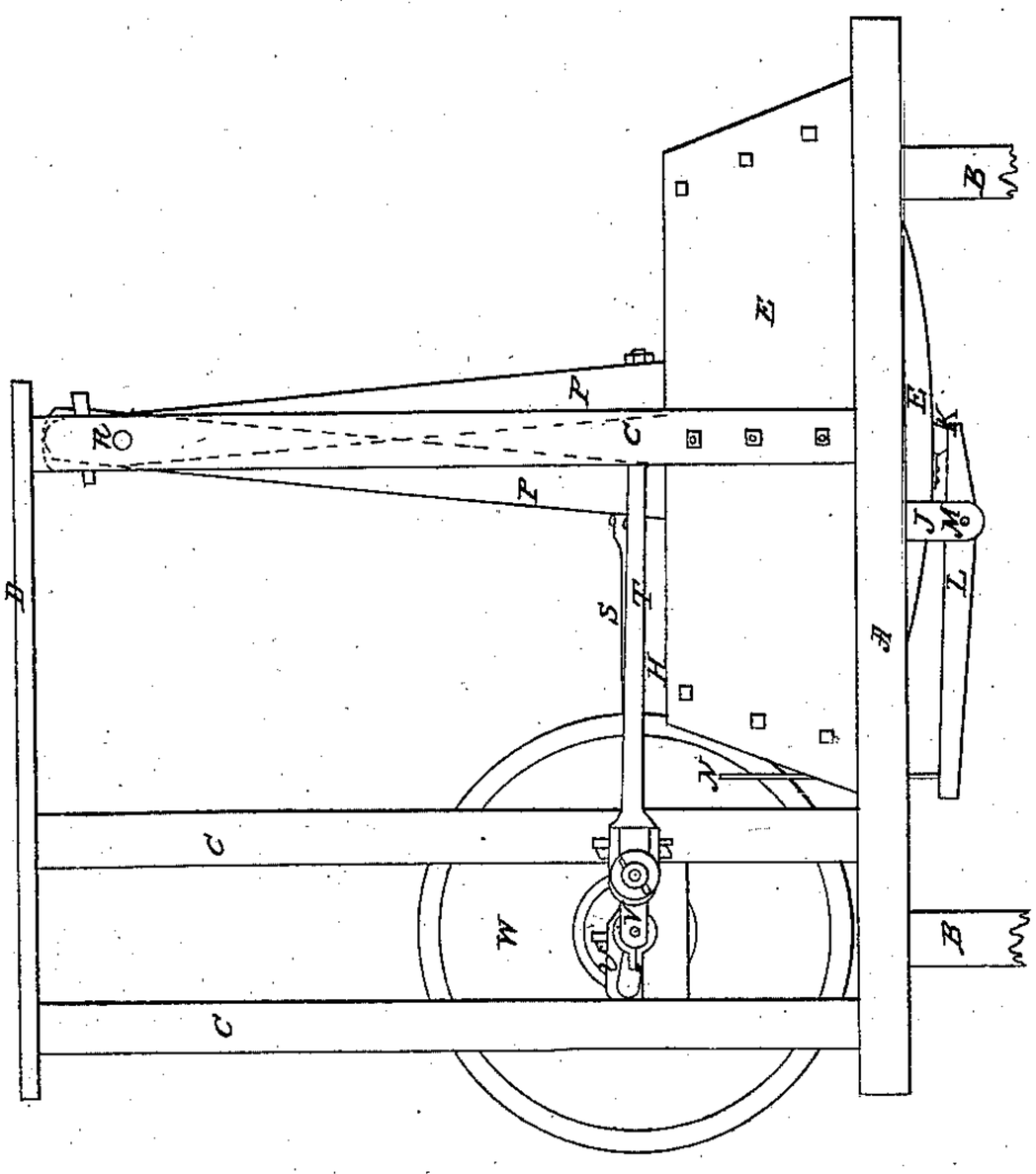


Fig 1.



UNITED STATES PATENT OFFICE.

JOSEPH SOUTHWICK, OF BOSTON, MASSACHUSETTS.

TANNING BY MACHINERY.

Specification of Letters Patent No. 2,552, dated April 11, 1842.

To all whom it may concern:

Be it known that I, JOSEPH SOUTHWICK, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in the Process of Tanning Hides, Leather, &c., by Means of Machinery, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms my specification.

In said specification I have set forth the nature of my said improvements by which they may be distinguished from other inventions for a similar purpose, together with such parts or combinations as I claim, and for which I solicit an exclusive property to be secured to me by Letters Patent.

The machinery which I use is represented in the figures of the accompanying plate of drawings.

Figure 1, is a side elevation of the same. Fig. 2, is a longitudinal vertical section, and Fig. 3 is a plan with the top-plate removed.

The usual and well-known process of tanning hides is (after the preliminary operations of softening, taking off the flesh and hair, and cleansing them from all impurities, have been accomplished), to immerse them in vats containing the tanning solution or liquor and occasionally shift them from vat to vat, each having a stronger solution than the one last used. This part of the process, which is technically called "handling" the hides, is repeated frequently (for a fortnight or more) until the color is distributed or set evenly over the hides, or throughout their surfaces, which is the object of the operation. When the hides are thus far prepared they are next "laid away with bark" in the vats containing the tanning solution or astringent liquid, and kept therein until they become sufficiently impregnated with the same to be in a state of preservation, or until the tannin has had the necessary chemical effect upon the gelatine in the hides.

By my improvements, the necessity of "handling" the leather is entirely superseded, as well as a great portion of the succeeding process above described, and the time for tanning the leather, or rendering it fit for use, greatly reduced.

The construction and operation of the machinery by which my improvements in the process are secured is as follows:

A in the several figures is a platform, having suitable legs B, B, B, &c., of sufficient length to keep it at the desired elevation above the floor.

C, C, C, C, &c., are vertical standards or posts, for supporting the operative parts of the apparatus, and which are mortised into or otherwise properly secured to the platform A at the bottom and the cap-plate D at their tops.

E is the tanning trough which has its bottom F and ends G, G, curved in the interior and otherwise constructed as seen in section in Fig. 2; the sides H, H, being vertical and shaped as seen in Figs. 1 and 2.

A proper shaped hole or aperture I is formed at the lowest part or point of the curved bottom, which is opened or closed at pleasure, by means of a valve K operated by a lever L. This lever has a fulcrum at and turns or vibrates on the stationary rod M supported by the two vertical projections or studs J, J, which depend from the bottom of the platform A. The longer arm of the lever is formed or weighted so as to be sufficiently heavy to press the valve against the mouth of the aperture I, and prevent whatever liquid may be in the trough from flowing out. The valve is withdrawn or allowed to descend from the aperture I by raising the vertical rod N, which is attached to the longer arm of the lever L, and passes up through a proper hole in the platform as shown in Fig. 2.

O, O, are two beaters arranged side by side as shown in Fig. 3, and having bottoms curved concentrically with the bottom F of the trough and their ends formed at an acute angle with their bottoms and notched substantially as represented in Fig. 2. Vibrating beams P, P are mortised or otherwise properly secured to the tops of the beaters O, O, said beams turning at their upper ends on a cylindrical rod R which is supported, so as not to turn, in two of the vertical posts C C as shown in Fig. 3.

Connecting rods S, T, are attached at one of their ends, by means of common loose joints (see Figs. 1, 2, 3), to each of the beams P, P, just above the tops of the beaters, their other ends being connected to the cranks U, V, respectively, of the double crank shaft U, V.

A regulating or fly wheel W is arranged on one side of the shaft U V, and adjacent to

it, is a fixed pulley or drum X which receives motion from any adequate driving power.

It will be seen, without further explanation, that the revolutions of the pulley X and shaft U V will impart a vibratory motion to the beams P, P, and consequently the beaters will receive a reciprocating curvilinear or vibratory motion. It will likewise be observed that the motion of one of the beaters is always opposed to that of the other, or in other words, that while one is advancing to the front of the apparatus, the other is receding from the same.

Having thus described the construction of my machinery, I shall now proceed to explain the mode or manner of operating on the hides so as to produce the desired effect. The first part of the process, which my machinery accomplishes is to cleanse the hides from impurities after they have passed through the usual preliminary operation for preparing them for the bark. To do this the trough E should be partially filled with water, and a number of hides (so as to be of considerable weight), be immersed in the same on each side of the beaters O, O; these beaters are then put in motion as hereinabove described, and it will readily be perceived that the notches in the ends of the same in combination with the curved forces of the bottom F and ends G, G, of the trough will cause the hides to rub upon each other and be revolved and changed in their position, one beater advancing and half turning or revolving the hides and then receding while the other advances to complete the operation. By this means in a few moments all external impurities are separated from hides and the water is then drawn off through the aperture I by opening the valve K as above described. The trough is next partially filled with a solution of tannin, or with the astringent liquid and the apparatus again put in motion, and the leather or hides soon receive a uniform and bright color, without the necessity of being "handled." When the essence of the solution is exhausted or imbibed by the hides, the liquid is withdrawn as before. Stronger solutions are then successively put in and the above specified operation repeated as often as necessary and by thus keeping the leather soft and pliable and the pores open the "pulling process" for such it may be called, soon impregnates the leather with a sufficient quantity of the tannin. The above described process is peculiarly effectual in "handling" and tanning upper leather, skins, and splits which after being partially operated on or tanned, have pass through a splitting machine and then require to be further tanned.

By my improved method of tanning the essence of the liquid is sure to penetrate the hides, whereas, when they are immersed in vats the animal fibers on the surface of the skin or hide sometimes absorb the essence of the solution, thereby forming a crust and obstructing the passage of the tanning principle to the interior fibers. The gelatin of the hide is likewise preserved by this process, bark and labor economized, the time required for tanning greatly shortened and the quality and color of the hides improved.

After passing the hides through the various stages of the operation above described, it may be thought necessary by most tanners to "lay the hides away with the bark in the vats," but the time that will be necessary to allow them to remain therein will be much less than that now required.

It will be evident that other kinds of "falling" apparatus may be successfully used, and it should be understood that my improvements are in the process rather than in the machine that which I have arranged being considered preferable by me.

Having thus described my improvements in the process of tanning by machinery I shall claim—

Superseding the necessity of "handling" the hides or skins (for the purpose of producing uniformity of color), and impregnating or infusing into the same the tannin, or essence of the astringent solution, by subjecting them to the action of the vibrating beaters in the tanning trough or the fulling process above described, the whole arrangement and operation being substantially as above set forth.

In testimony that the foregoing is a true description of my said invention and improvement I have hereto set my signature this eighth day of March in the year eighteen hundred and forty-two.

JOSEPH SOUTHWICK.

Witnesses:
CALEB EDDY,
EZRA LINCOLN, Jr.