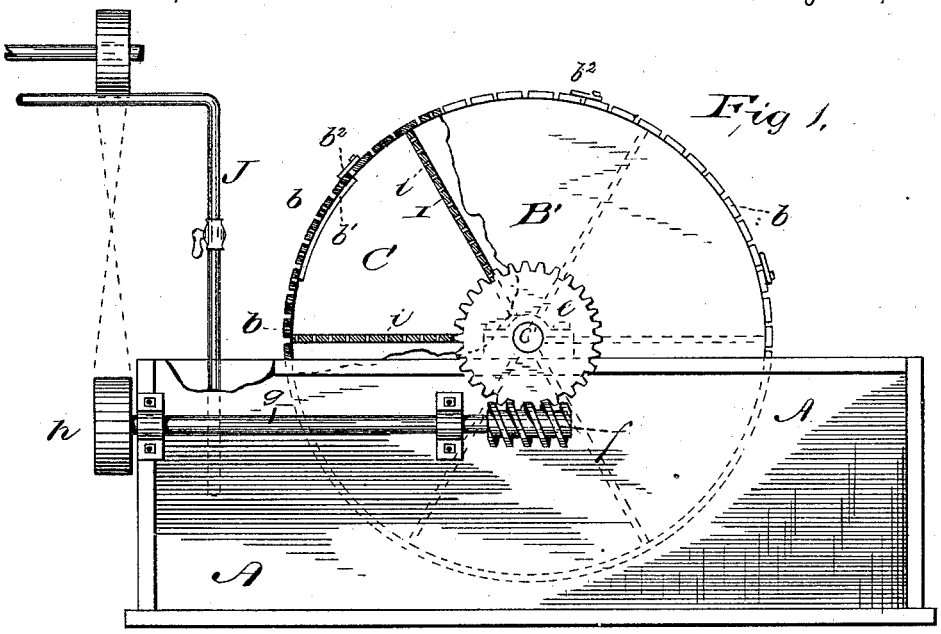
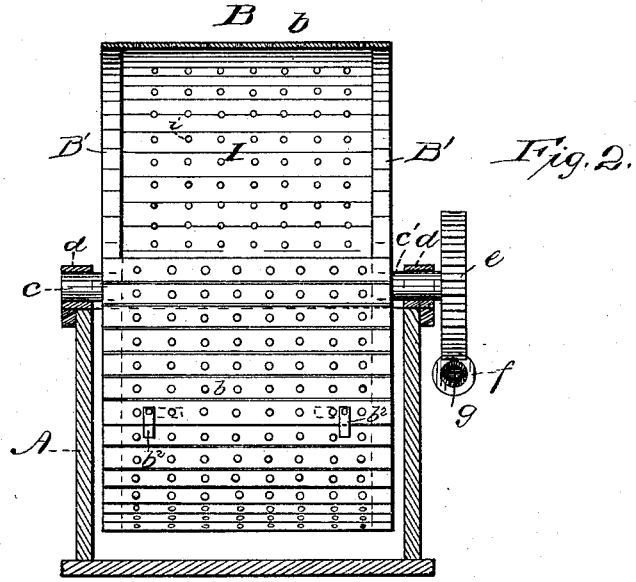
(No Model.)

E. S. WARD.

TANNING WHEEL.

No. 302,454. Patented July 22, 1884.





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UNITED STATES PATENT OFFICE.

ELIAS S. WARD, OF NEWARK, NEW JERSEY.

TANNING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 302,454, dated July 22, 1884.

Application filed February 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELIAS S. WARD, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tanning-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to reduce the labor employed and time occupied in handling grains or splits during the process of tanning, to more effectually tan the same, improving the quality thereof, as described hereinafter.

The invention consists in the arrangement, construction, and operation of the apparatus employed in tanning the hides, substantially as illustrated in the drawings and described and claimed hereinafter.

Referring to the accompanying drawings, in which similar letters of reference indicate like parts in each of the figures, Figure 1 is a side elevation of a vat and drum partly broken away; and Fig. 2 is a transverse section of the same, taken centrally through the drum and vat as shown in Fig. 1.

The various methods and devices employed in tanning hides have been defective in that they caused great labor in handling the same, and also, by allowing the hides to be entirely or nearly submerged in the liquor for a long time, were liable to impair the quality thereof, thereby necessitating the use of weak liquor, and taking considerable time to thoroughly subject the hides to the action of the tannin.

In treating the hides, grains, or splits it is very important that they should not be subjected to violent action, but slowly and thoroughly acted upon by the liquor, which, in my method, can be much stronger than is usually employed without injuring the stock. The tank or vat A, as shown in the drawings, is similar to the ordinary rectangular vat in common use. Within the tank is arranged the drum or handler B, revolving on journals *c* in bearings *d* upon the sides of the tank, Fig. 2. Upon one of the journals, as *c'*, is secured the cog-wheel *e* which is driven by the worm *f*, actuated by the shaft *g* and pulley *h*. The handler B is composed of the sides B', placed at a suitable distance apart, the peripheries of which are connected by the perforated strips *b*, placed close together or slightly separated, leaving an opening between, as desirable. The interior of the drum is divided into several sectoral compartments or pockets C by the partitions I, having openings or perforations *i* therethrough, access to each compartment being had through the circumference by removing the door *b'*, formed by uniting several strips by suitable braces, as shown in Fig. 1, said doors being held in position by the adjustable pieces b^2.

J is a steam-pipe extending down into the liquor in the tank, through which the steam for heating the tanning-liquid is conducted. The degree of heat best adapted to secure the most perfect results in tanning is about 90° Fahrenheit. Ordinarily the liquor is heated to about 130° Fahrenheit, and allowed to cool down to about 60° Fahrenheit. If the hides were allowed to remain in the vat while the liquor is being heated to the extreme temperature, they would become blistered and burned. Consequently it is necessary to remove the hides from the vat and replace them when the liquor is sufficiently cooled. This, as is evident, causes a great deal of trouble and labor, and, further, greatly impairs the quality of the stock. By means of my revolving drum the hides are kept continually moving in and through the liquor; hence the steam can be admitted, and the temperature of the liquor maintained at the degree of heat desired. In my process the hides are partially tanned or struck, then split into grains and splits, and subjected to the tanning process in my improved handler or drum. The grains or splits, either together or separately, are placed within the compartments or pockets, and by the rotation of the drum are dipped in the liquor in the tank, the tanning-liquid permeating the stock, running through the perforations in the periphery and partitions, and thoroughly subjecting every portion of the stock to the action of the

tannin. By alternately dipping or immersing the stock in the liquor and lifting it out of the same as the drum revolves, the grains and splits are in turn soaked and drained, and as the stock is not permitted to remain stationary in the liquor the strength thereof can be greatly increased; consequently reducing the time necessary to complete the tanning process. The methods and processes herein described, however, are reserved for a subsequent application, and are not intended to be covered by this application. As the drum revolves in one direction, the stock within the pockets is liable to become twisted or rolled tightly together, thereby preventing the thorough action of the tannin. To obviate this difficulty I reverse the motion of the drum at intervals, thereby untwisting the stock, the time varying according to the kind of stock in the drum.

To accomplish the reversing of the drum I may employ various devices, either by changing the worm for one having the thread running in an opposite direction, or by crossing the belt, as indicated by the dotted lines at the left of Fig. 1, the latter method being preferable.

Having thus described my invention, what I claim is—

In combination, a vat, a drum having solid sides, perforated strips connecting said sides, and perforated partitions dividing the interior of said drum, and mechanism, substantially as described, whereby the motion of said drum may be reversed at intervals, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of February, 1884.

ELIAS S. WARD.

Witnesses:

CHARLES H. PELL,

F. F. CAMPBELL.