

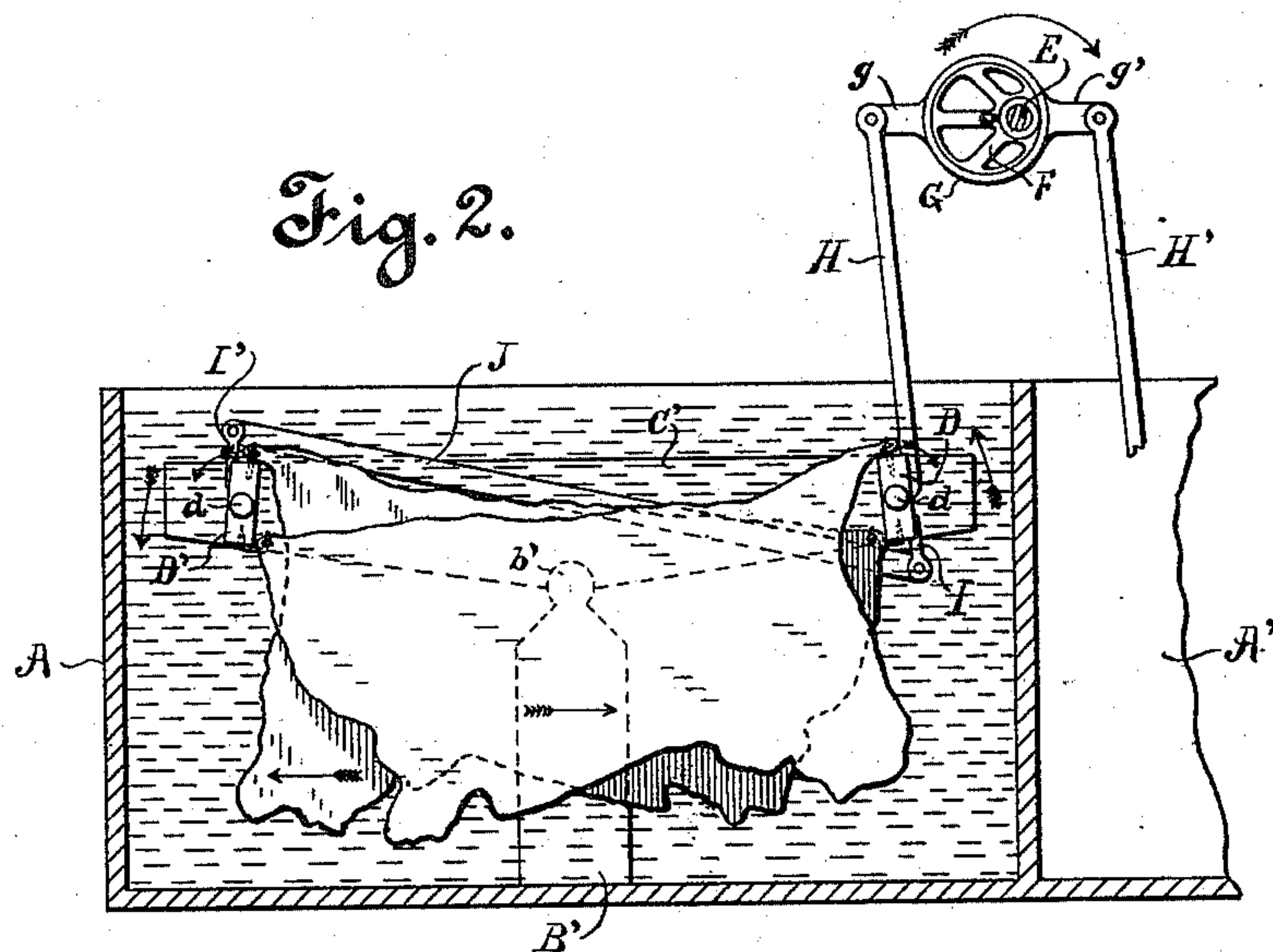
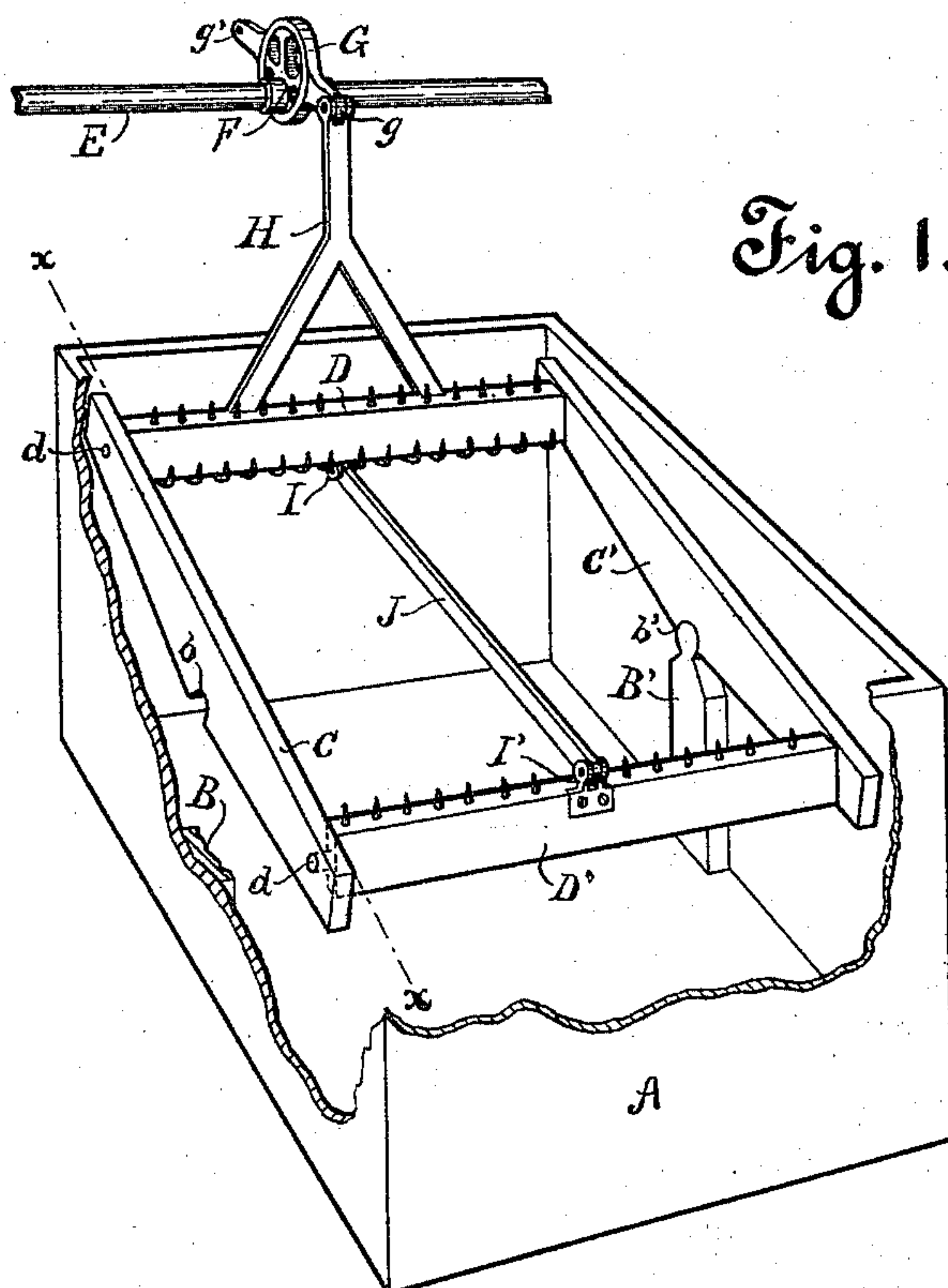
(No Model.)

2 Sheets—Sheet 1.

E. DU BOIS.  
APPARATUS FOR TANNING.

No. 573,077.

Patented Dec. 15, 1896.



Witnesses  
H. H. Mills.  
A. S. Diven

Inventor  
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Attorney

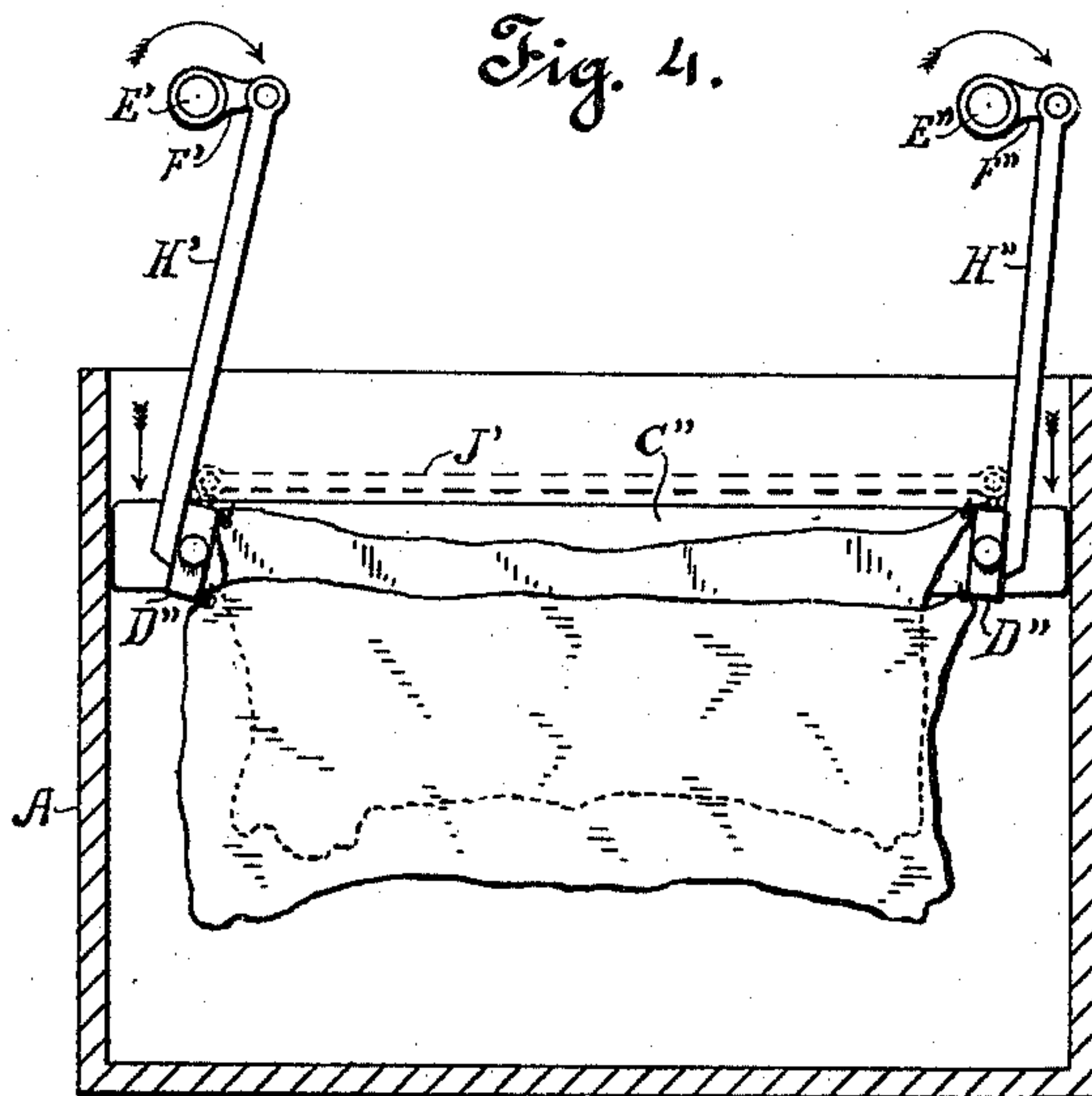
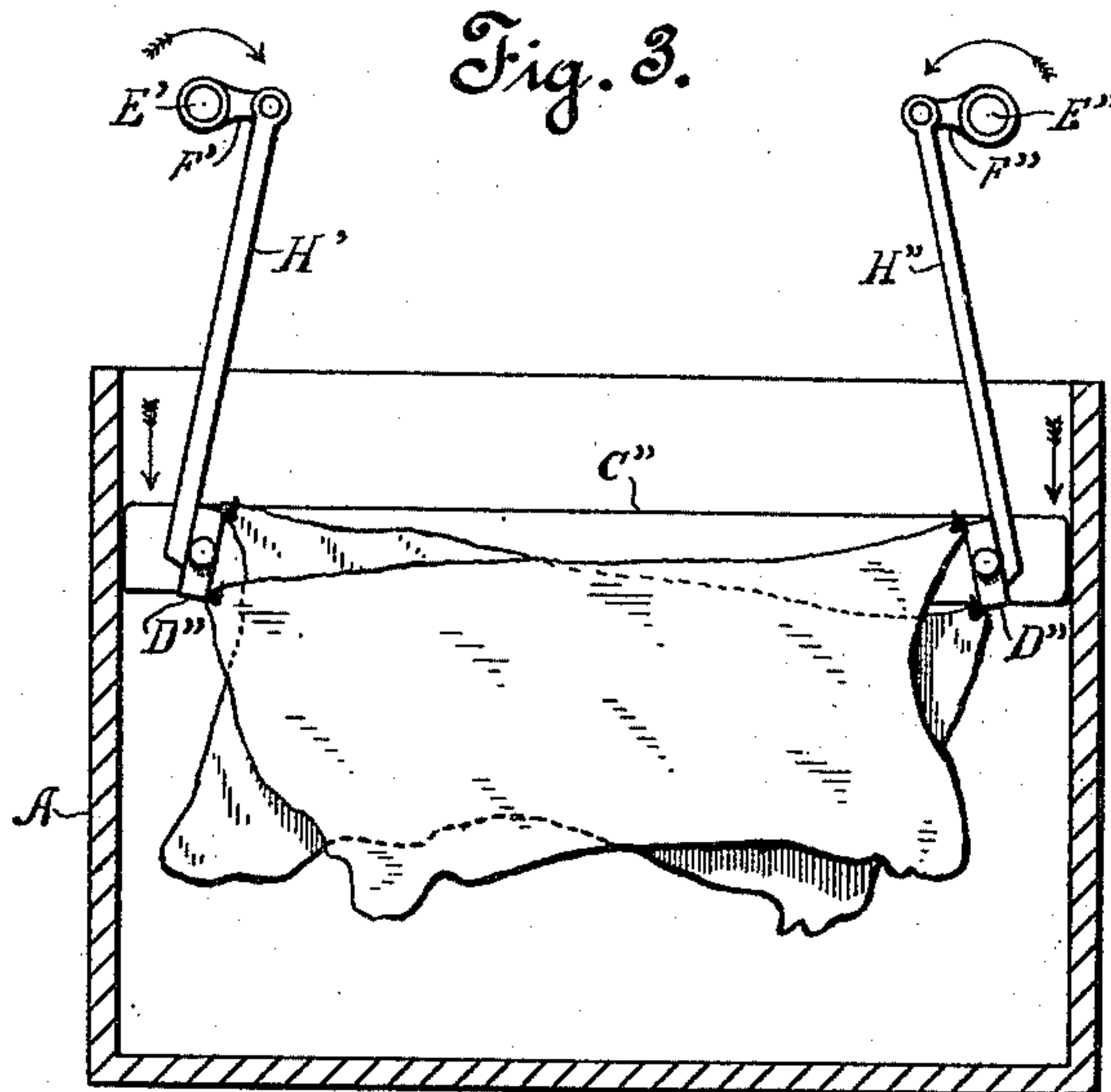
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# UNITED STATES PATENT OFFICE.

EDWIN DU BOIS, OF RALSTON, PENNSYLVANIA.

## APPARATUS FOR TANNING.

SPECIFICATION forming part of Letters Patent No. 573,077, dated December 15, 1896.

Application filed July 10, 1896. Serial No. 598,662. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN DU BOIS, a citizen of the United States, residing at Ralston, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Tanning, of which the following is a specification.

My invention relates to improvements in the apparatus by which the "sides" of leather are suspended in the tannic-acid bath; and its object is to bring the tanning agent into contact with all parts of the leather to such regular and uniform extent as to secure an even tanning thereof. I attain this object by giving to the sides, when submerged in the tanning-vat, a vertical reciprocating motion and at the same time to adjacent sides horizontal motions in opposite directions by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a tanning-vat supplied with my apparatus; Fig. 2, a longitudinal vertical section on line  $xx$  in Fig. 1, showing the relative positions of the sides when suspended in the vat; and Figs. 3 and 4, similar sectional views showing modifications in the arrangement of the parts.

Similar letters refer to similar parts in the several views.

Referring to Figs. 1 and 2,  $a$  represents the vat for containing the tan liquor. Within the vat and supported upon the bearing-blocks  $B B'$  is a rocking frame composed of the side bars  $C C'$  and the cross-bars  $D D'$ . The side bars are pivoted upon the bearing-blocks at  $b b'$ , and the cross-bars are fitted to the side bars by round tenons  $d d'$ , upon which they are adapted to oscillate. Above one end of the vat, in suitable hangers, is supported a shaft  $E$ , upon which is an eccentric  $F$ . The eccentric-strap  $G$  is provided with arms  $g g'$ , and between arm  $g$  and cross-bar  $D$  is a pitman  $H$ , which I have shown forked, the forked ends being rigidly fastened to the cross-bar. To the other arm  $g'$  is attached a second connecting-bar  $H'$  to hold the eccentric-strap from turning. This connecting-bar  $H'$  may have its free end pivoted to a fixed support or preferably attached to a rocking frame in a second tanning-vat adjacent to the first, as  $A'$  in Fig. 2. From an arm  $I$  on the under side of bar  $D$  runs a connecting-rod  $J$  to

an arm  $I'$  on the upper side of the bar  $D'$ . Upon the upper and lower edges of the bars  $D D'$  a series of hooks or pins, preferably of composition metal to withstand the action of the tannic acid, are driven in such manner that the hooks of the upper and lower series on each bar alternate with each other, or, in other words, are staggered, and the lower hooks of one bar are in line with the upper hooks on the other.

In operation the sides of leather are suspended by neck and tail from these hooks, as shown in Fig. 2, being submerged in the tan liquor to such a depth that the rocking of the frame will not lift any portion of the hides above the level of the liquor. As the shaft revolves, the arms  $g g'$  of the eccentric-strap are given a rotary motion. This causes the frame to rock in the vat and raise and lower the hides. At the same time the rigid connection of the pitman to the bar  $D$  causes the bar to oscillate, an opposite oscillation being imparted to the bar  $D'$  through the connecting-rod  $J$ . This motion of the cross-bars causes the hides to move back and forth at the same time with their up-and-down movement, and the manner in which the hides are suspended causes adjacent hides to move horizontally in opposite directions. It will be seen that by this means corresponding parts of adjacent hides are given relative motions in opposite directions. These motions of the hides thoroughly agitate the tan liquor and cause it to circulate freely between the several hides. No parts of adjacent hides are allowed to adhere to each other, so as to exclude the liquor from between them, and the liquor in equal strength is brought into contact with all parts of every hide, so that each is equally acted upon by the tannic acid throughout and a perfect and uniform tanning of the leather results.

In Fig. 1 the rocking frame is shown tilted up to the rear, the eccentric being in its highest position. In Fig. 2 the frame is in horizontal position, the upper portions of the cross-bars  $D D'$  being, in this position of the frame, thrown toward each other to the extreme of their respective oscillations, the arrows indicating the direction of motion which the several parts are about to take.

The connecting-rod  $J$  causes the oscilla-



tions of the bars D D' to be positive and equal and prevents the hides from being strained or stretched.

Changes in the details of construction may  
 5 be made without departing from the spirit of my invention, as, for instance, such as illustrated in Figs. 3 and 4. Here cranks have been substituted for eccentrics, an obvious substitution, which may also be made in Figs.  
 10 1 and 2. Two shafts E' and E'' are shown, with cranks F' and F'', from which hang the pitmen H' and H'', attached to the cross-bars D'' and D''. By this arrangement the frame C'' C'' D'' D'' is supported from the shafts  
 15 and is made to rise and fall in the vat in a horizontal position instead of being rocked, as in Figs. 1 and 2. By revolving the shafts in opposite directions, as indicated by the arrows in Fig. 3, the cross-bars D'' D'' are  
 20 oscillated and the hides moved relatively in the same manner as described in connection with Figs. 1 and 2. By revolving the shafts in like directions, as indicated by the arrows in Fig. 4, the cross-bars D'' D'' are made to  
 25 oscillate in like directions. In this case the hooks on the upper portion of one bar must be in line with those on the upper portion of the other, and the hooks on the lower portions of the two bars must also be in line, ad-  
 30 jacent hides being hung from the upper and lower hooks, respectively. The connecting-rod J is not required in the arrangement shown in Figs. 3 and 4, since the cranks and pitmen give the required positive motions to  
 35 the cross-bars. If the manner of hanging the hides shown in Fig. 4 is substituted for that shown in Fig. 2, the connecting-rod will be attached, as indicated by the broken lines at J'. Several vats may be arranged back to  
 40 back, as indicated in Fig. 2, and the frames in each operated from one central shaft.

I am aware that prior to my invention a tanning apparatus has been constructed in which  
 45 the sides of leather have been given a vertical motion in the vats, also in which adjacent sides have been given opposite horizontal

motions, and I do not claim either of these things broadly.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a tanning-vat, of a pair of oscillatory bars positioned as shown and each provided with a series of hooks or leather supports above and below its center of vibration, the upper series of hooks being  
 55 in different vertical planes from the lower series on each bar for the purpose set forth, a driving mechanism, and connections between the driving mechanism and the bars whereby they are given simultaneous vertical and os-  
 60 cillatory motions, substantially as described.

2. The combination, with a tanning-vat, of a frame composed of side bars and cross-bars, the cross-bars being journaled in the side bars, a driving mechanism, a connection be-  
 65 tween the driving mechanism and frame whereby the frame is given a vertical motion within the vat and the cross-bars of the frame an oscillatory motion, and hooks or leather supports on the cross-bars so located that ad-  
 70 jacent sides of leather suspended therefrom are made to move in opposite directions by the oscillations of the cross-bars.

3. The combination, with a tanning-vat, of a rocking frame therein composed of side  
 75 bars pivoted in the vat and cross-bars journaled in the ends of the side bars, a connecting-rod between the cross-bars, a driving mechanism, a pitman actuated by the driv-  
 80 ing mechanism to rock the frame and oscillate the cross-bars, and hooks or leather supports on the cross-bars so located that adjacent sides of leather suspended therefrom are made to move in opposite directions by  
 85 the oscillations of the cross-bars.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWIN DU BOIS.

Witnesses:

W. H. SQUIRES,

M. J. C. WOODWORTH.