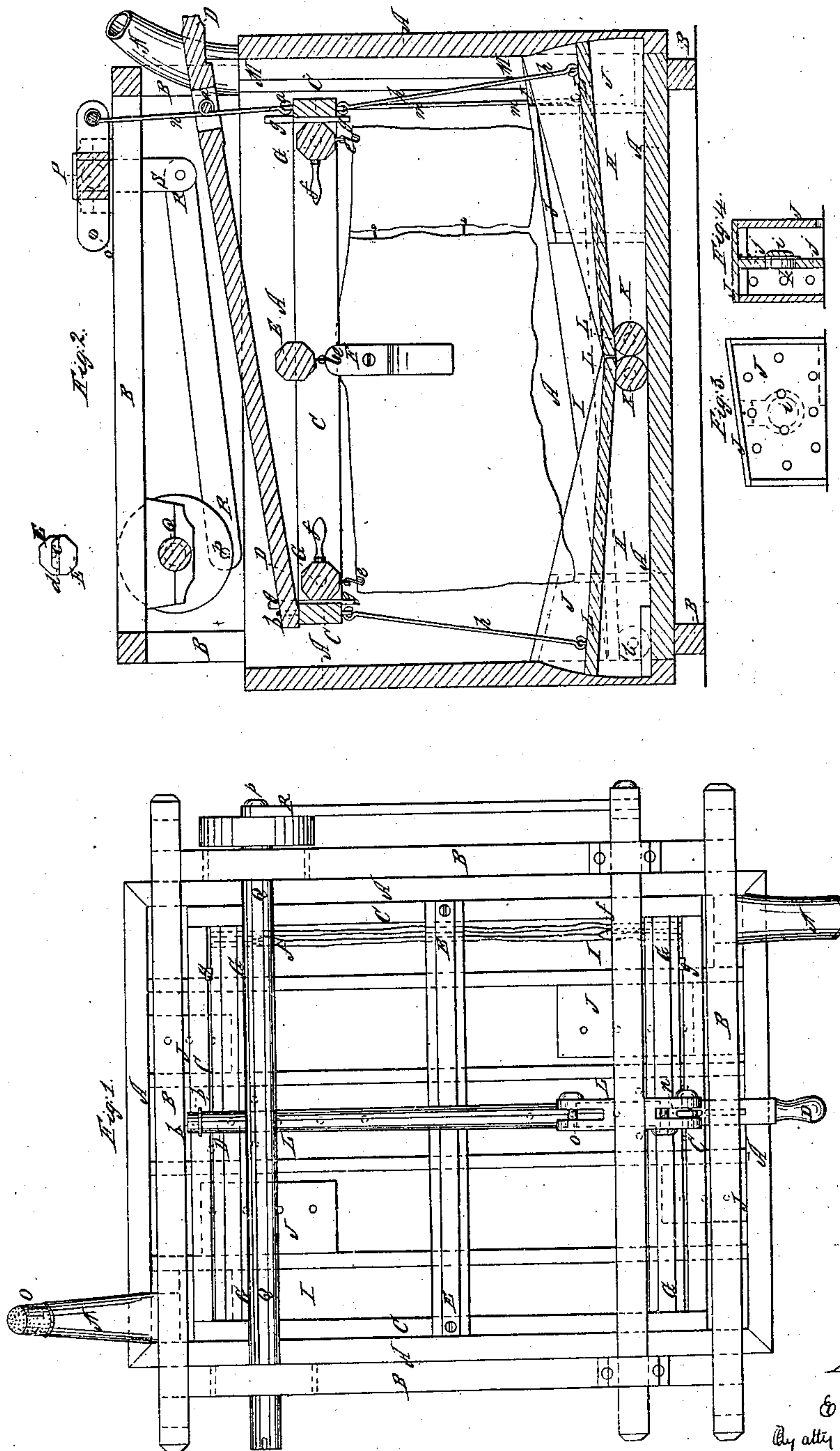


No. 82,815.

PATENTED OCT. 6, 1868.

A. G. EATON.
APPARATUS FOR TANNING HIDES.



Witnesses:

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Letters Patent No. 82,815, dated October 6, 1868.

IMPROVEMENT IN APPARATUS FOR TANNING HIDES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALBERT G. EATON, of Gouverneur, in the county of St. Lawrence, and State of New York, have invented certain new and useful Improvements in Apparatus for Tanning Hides or Leather; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a top plan of the vat and apparatus for circulating the tanning-liquor.

Figure 2 represents a vertical longitudinal section through the same, and

Figures 3 and 4 represent, respectively, a side view and section of the filtering and valve-boxes for straining and circulating the tanning-liquid.

Similar letters of reference, where they occur in the separate figures, denote like parts in all of them.

My invention consists, in conjunction with the moving of the hides or leather in the tanning-liquid, the agitating and throwing up, by forced means, of the tanning-liquid from the bottom of the vat to the surface, so as to equalize, by mixing, the strength of such liquid, and thus attain more uniformity in the quality of the tanning of the whole skin, hide, or side of leather.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings, first premising that I am aware that an agitator has been worked in the bottom of a vat for circulating the liquid therein; but though such agitator may circulate the heavier and stronger liquid at the bottom, it does not throw it up to and cause it to mix with the lighter and less strong liquid at the surface, and the result of this properly and uniformly mixing of the liquids and changing them from bottom to top is very apparent in the uniform quality of the tanning, whilst the absence of it leaves portions of the leather but indifferently tanned, and "streaky" in appearance.

I am also aware that the tanning-liquid has been pumped out of one vat into the next adjacent one, where a series of processes, with liquids of reduced strength, is used, as in morocco-tanning or dressing; but neither of these things accomplishes what I do by my plan, which is not only circulating the liquid at the bottom of the vat, but raising the heavy, strong liquor from the lower part of the vat, and mixing it with the less strong at the surface, and in so doing to throw, if deemed important to do so, the heavy liquid in spray, jets, or column, on to or against the suspended hides, and thus very much expedite and improve the process.

A represents a vat, made in any of the usual ways, and of such dimensions as may be preferred, and B represents the framework upon or within which the appliances and vat may be placed.

Within the vat A is a frame, C, which is so supported as that it may be vibrated or rocked on its supports by a lever, D, connected to it at the points *a b*, or by any other well-known means. This frame C is quadrangular in form, and nearly of the size of the interior of the vat, or just enough smaller to allow it to rock or vibrate therein. A central cross-piece, E, is attached permanently to the side-pieces of the frame, and under this cross-piece the supports F, on which the frame is hung, may be placed, and pins or studs, *c*, in the sides of the vat, may pass into curved slots, *d*, in the ends of said cross-piece, (as seen in the separate sketch at the top of fig. 2,) to prevent it and the frame from rising or leaving its supports. At or near each end of the frame C there is a roller-bar, G, to which hooks *e* are fastened for suspending the hides to, as also to the bar E, for the same purpose. These roller-bars G have each a handle, *f*, by which they may be turned on their journals or bearings, for placing the hides thereon, and then for straining them up, and when thus stretched or strained up, a key or wedge, *g*, is put in between the roller and frame, which firmly holds the roller from turning.

On the bottom of the vat I arrange circulating-pumps, as seen more distinctly at H H, in fig. 2, and lifting-pumps I, one of which is seen also in fig. 2. I have represented two circulating-pumps at or near the centre of the vat, and two lifting-pumps, one at each side of the bottom of the vat. I do not, of course, restrict myself to these locations, or the number of pumps mentioned, as they may be changed. Each pump has a screening-box, J, or filterer, annexed to it, to prevent the bark or other crude material in the tanning-liquor from getting into and clogging the pumps.

The circulating-pumps H are hung upon rocker-shafts K K, which serve for hinges for the plungers L to work on. The free ends of these hinged plungers L are connected by rods *h h* to opposite ends of the vibrating-frame C, so that as these ends alternately rise and fall, the pumps will be alternately worked. The plungers L have holes through them, so that when they are forced down, the liquid in the pump-chamber will be forced out through said holes, and thus be kept in agitation at the bottom of the vat. The filterers or screens J, figs. 3, 4, are furnished with holes for the liquid to pass through, and there is a partition, *j*, inside of them, with an opening, *k*, through it, covered by a valve, *i*, on the side thereof next to the pump, so that when the plungers are raised up the liquid is free to be strained and pass through into the pump-chamber; and when the plungers are brought down, the valve *i* is closed, and the contents of the pump-chamber pass through the openings in the plunger, or, as in the case of the lifting-pumps to be yet described, to be forced up through the tube or trunk to the surface.

The lifting-pumps I have a long hinged plunger, supported on a roller, *l*, at one end of the vat. The other end of the plunger is connected to the rocking-frame C by a rod, *m*, and at this end, there is a vertical tube or trunk, *M*, up which the liquid is forced, and, by means of a hose or tube, *N*, may be thrown on to the hides in column, or in jets, as shown at O, and thus the hides are moved up and down, the liquid agitated, and raised from the bottom of the vat and mixed, and thereby making it of uniform strength throughout the vat.

I have shown the pump-plungers as connected to and worked by the frame to which the hides are suspended. They may be worked by means independent of the frame containing the hides, as follows:

A crank-bar or rod, *P*, may be hung on the main frame B in bearings, in which it may be rocked by a rod, *n*, connecting it to the lever D, or otherwise, and to this bar the pump-rods may be connected as at *o*. Another rock-shaft, *Q*, at the other end of the main frame, may be driven from that, *P*, by a pitman, *R*, and the crank-arm S and crank-wrist at *p*, and the pumps be worked from this rock-shaft *Q*, or the whole of the movements may be transmitted by any fast-moving power applied to either of the rock-shafts *P Q*.

The hides are represented, by red lines in figs. 1 and 2, as hooked to the bars E G and to each. The forcing or throwing of the tanning-liquid against the hides whilst they are in motion, causes them to "plump" and "color," and saves the expense of doing the "plumping and coloring" by a separate operation. The straining of the hides on the frames puts them in the best possible condition for admitting the tanning-liquid into the pores, and when thus strained and the liquid is forced against the hides, the strength of the jet or column of liquid thus thrown is sufficient to vibrate or swing the hides, and also to agitate the liquid into which they are dipped.

Having thus fully described my invention, I would state that I am aware that a pump outside of a vat for raising the liquid has been used, and that false vats, with valves, have been used. These I do not claim; but

What I do claim herein as new, and desire to secure by Letters Patent, is—

1. In combination with vats for tanning hides, a series of lifting-pumps, arranged in and operated at the bottom of the vat, for raising the heavier and stronger liquids from the bottom to the top of the vat, and thus by mixing render it of more uniform strength throughout, substantially as described.
2. Also, in tanning hides, the throwing of the tanning-liquid against the hides, suspended in the air by a force-pump, or in a forced column or spray or jet, substantially as described.
3. Also, in combination with a series of pumps, arranged in and operated at the bottom of the vat for raising the liquid in the bottom of the vat to the surface, an agitating or circulating-pump, also arranged in and operated at the bottom of the vat, for keeping the liquid mixed there, and of uniform strength, substantially as described.
4. Also, in combination with a series of hides suspended in a vat, and at times dipped into the liquid and then raised therefrom and suspended in the air, a circulating and a lifting-pump, or two or more of each, operated by or with the vibrating-frame, carrying said hides, substantially as described.

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