

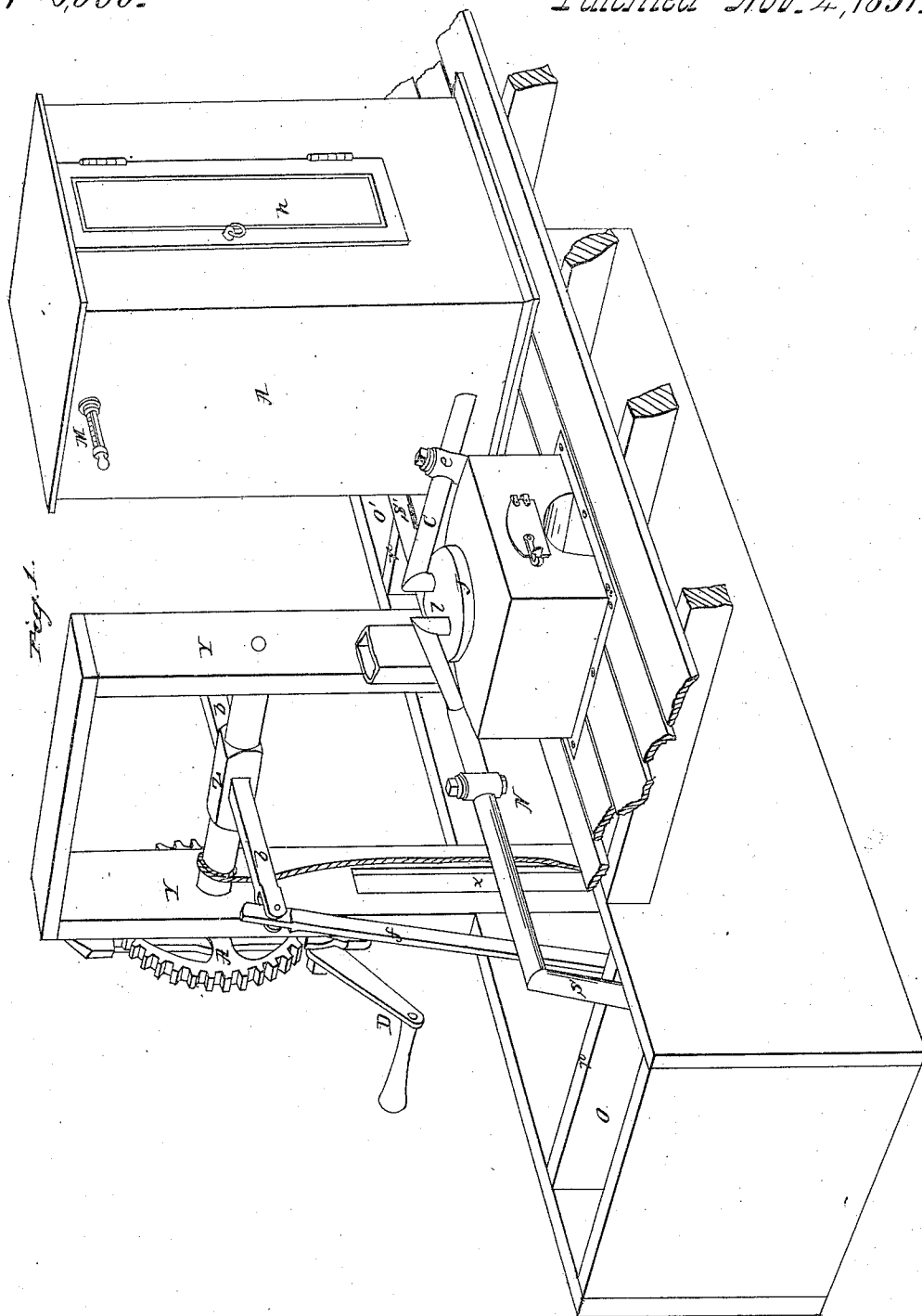
Sheet 1-38 Sheets

W. B. Milligan,

Tanning Apparatus,

Patented Nov. 4, 1851.

N^o 8500.



Sheet 2-38 Sheets

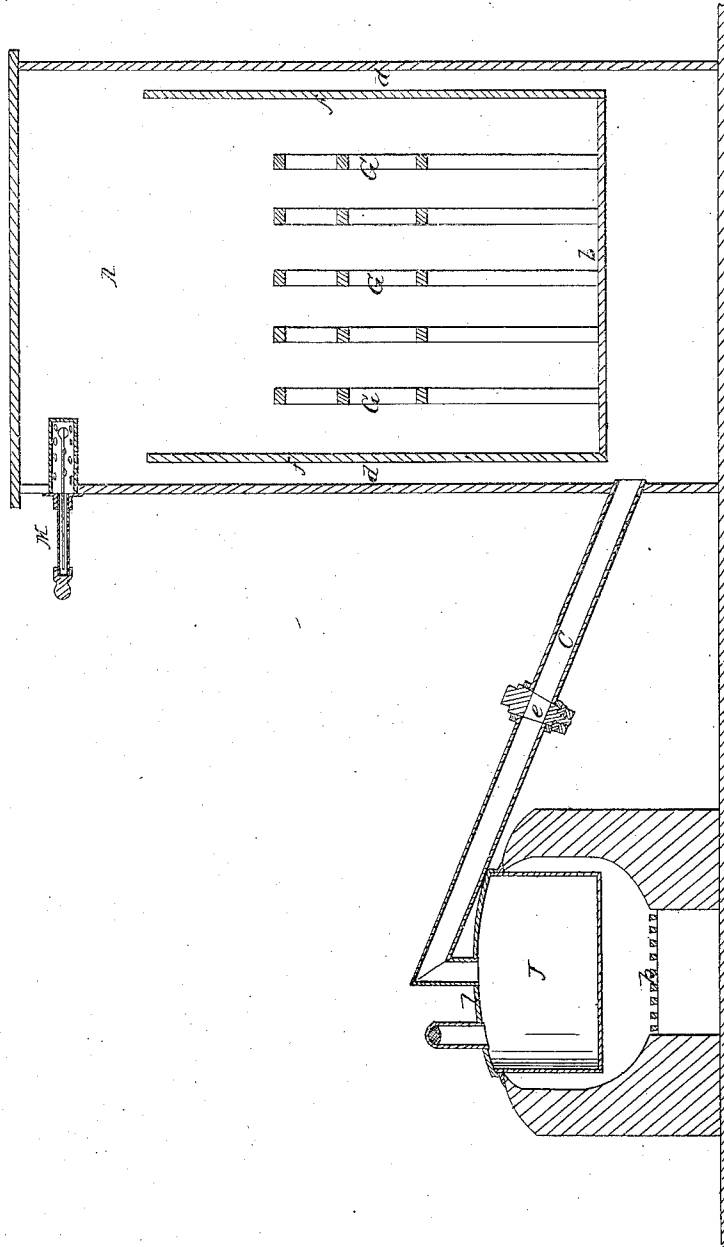
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Fig. 2.



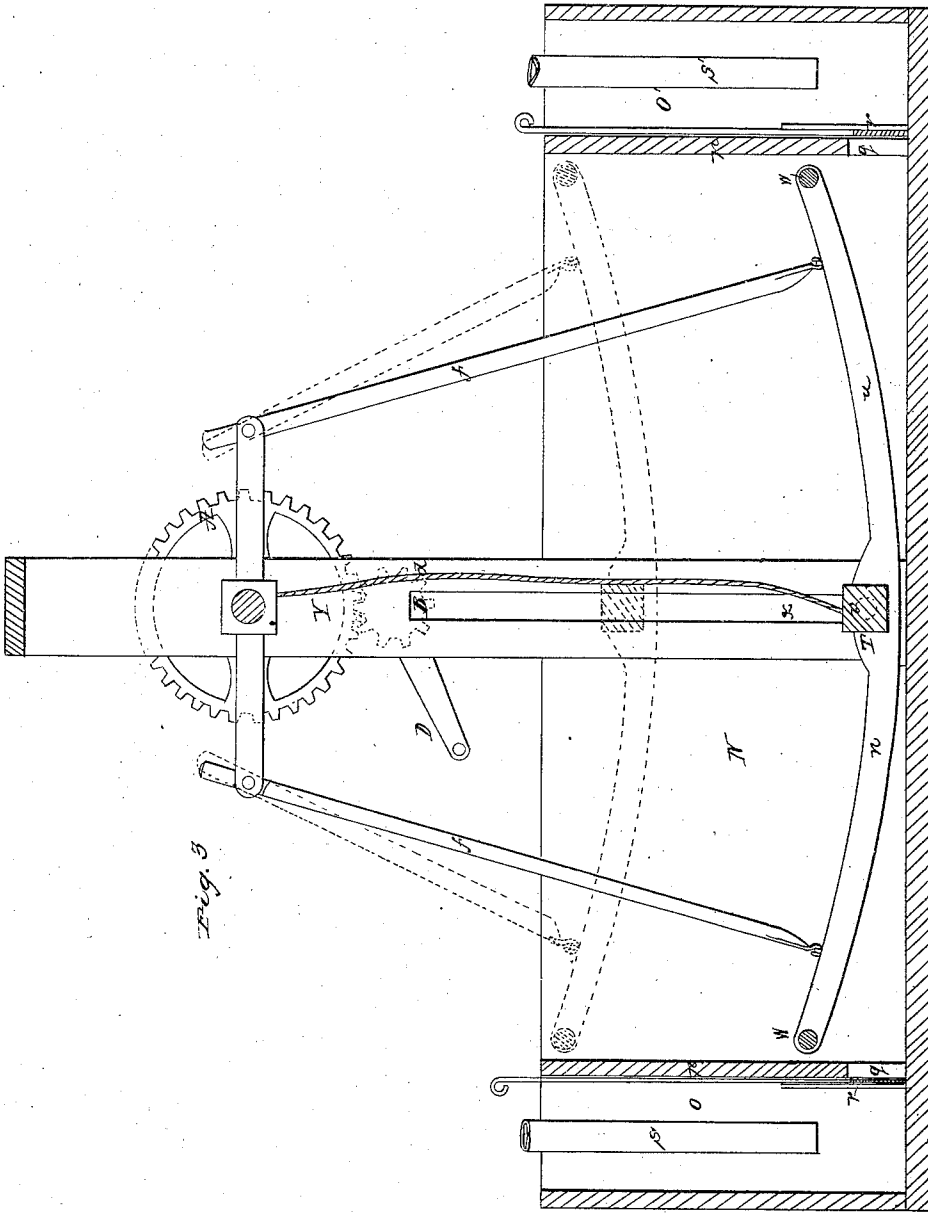
Sheet 3-3 Sheets.

W. B. Milligan,

Tanning Apparatus

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Patented Nov. 4, 1851.



UNITED STATES PATENT OFFICE.

WILLIAM B. MILLIGAN, OF EDINBURG, VIRGINIA.

BATING AND TANNING HIDES.

Specification of Letters Patent No. 8,500, dated November 4, 1851.

To all whom it may concern:

Be it known that I, WILLIAM B. MILLIGAN, of Edinburg, in the county of Shenandoah, in the State of Virginia, have invented certain new and useful Improvements in the Process of Tanning Leather, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this description, and in which—

Figure 1 is a view in perspective of my improved apparatus. Fig. 2 is a vertical longitudinal section of my bating-chamber, and Fig. 3 is a similar section of my handling apparatus.

The first part of my invention relates to the bating of the hides after they have been withdrawn from the lime-vats, and it consists in subjecting the hides to the action of a vapor bath by means of which the process of bating is accomplished in a much shorter time than usual.

The second part of my invention relates to the process of handling hides, and it consists of an apparatus by means of which a pack of hides are handled, aired, rehandled and drained by the exertion of a small amount of power and in a most thorough and effectual manner.

In the accompanying drawings A is a close chamber in which the bating is effected. This chamber is fitted with a false bottom *b* which is separated from the true bottom by a space into which the vapor of water is conducted by a pipe C which communicates with a suitable generator. The space beneath the false bottom is connected with the upper part of the chamber by narrow upright spaces *d d* which are formed by introducing false sides *f, f*, into the chamber, and the space within the false sides is fitted with a series of bars G upon which the hides to be bated are hung. A door *h* is also provided through which the hides are introduced and withdrawn.

The generator from which vapor is supplied to the bating chamber consists simply of a boiler J set over a grate *k* on which fire can be made, and fitted with a close top *l* from which the conducting pipe C leads. This pipe is fitted with a stop-cock or valve *e* to regulate the quantity of vapor supplied to the chamber, and a thermometer M is introduced into the chamber to indicate the temperature.

Hides to be bated are hung upon the bars

G in the chamber, and the door is closed; steam is then supplied from the boiler to the space under the false bottom, (as the steam enters this space it is condensed into vapor which rises in the spaces *d, d*, between the false and true sides,) and descends in the form of a warm mist upon the hides. By the action of this warm vapor or mist the lime is wholly removed and the bating is accomplished. The time required varies according to the thickness of the hides; calfskins have been bated in twenty minutes; heavier skins require a longer period, which can readily be learned by a few trials. During the process care must be taken that the heat of the chamber does not rise so high that the steam is not transformed into vapor before coming in contact with the hides, as they will then be scalded and their strength and quality will be impaired; as the heat is shown by the thermometer the attendant can ascertain the temperature by inspection and can vary the supply of steam from the boiler by turning the stop-cock.

The handling apparatus consists mainly of a rocking frame to which the hides or skins are secured, of the vat in which they are immersed and of the apparatus for moving the frame and raising it with the hides or skins from the vat. The vat is divided into three compartments N, O, O', by two transverse partitions *p, p*, and each side compartment thus formed communicates with the central one by an aperture *q* in the partition which is fitted with a gate or valve *r* by means of which the communication can be cut off. Each side compartment is also fitted with a steam pipe S, S', by means of which steam can be conducted to it from the generator or boiler J. These steam pipes are each fitted with a valve or stop-cock by means of which the supply can be regulated or wholly shut off. The side compartments, O, O', constitute the leaches or latches in which the tanning liquor is prepared, the central one constitutes the vat proper in which the hides or skins are handled.

The central vat is fitted with a rocking frame T which is composed mainly of two curved longitudinal bars or rails *u, u*, of a central transverse shaft *v* and of suitable cross bars *w, w*, which connect the side rails together. The gudgeons of the central shaft are received in vertical slots *x, x*, which are formed at the sides of the vat and

which permit the shaft and its frame to be raised and lowered vertically but prevent any lateral movement. These slots in this example are formed in upright posts Y, Y, which extend above the top of the vat and are connected at their upper extremities by a cross-bar. A transverse shaft Z is supported by these posts above the rocker shaft beneath. One of its extremities extends beyond the post in which it is supported and is fitted with a cog-wheel A whose teeth engage with those of a pinion B which can be turned by means of a crank D. This shaft is connected with the rocker shaft beneath by means of ropes *a, a*, so that by turning the crank these ropes are wound upon the upper shaft and the rocking frame is drawn up from the vat. The upper shaft is also fitted with arms *b, b*, which project in opposite directions from it, and these arms, are connected with the corresponding extremities of the rocking frame by removable rods *f, f*, so that when the ropes are slackened the frame can be rocked by turning the crank D alternately in opposite directions.

When the hides or skins are to be handled with this apparatus the connecting rods *f, f*, are removed and the frame is drawn up out of the vat by turning the crank D; the hides or skins are then secured to the frame by tying them to the rails or cross bars, and the frame is lowered to immerse the hides in the liquor in the vat, which if fresh should be very weak, or should be liquor partially exhausted by preceding operations. When the frame is lowered to the proper limit the connecting rods are applied, and a rocking motion is imparted to the frame by occasionally turning the crank to and fro. As the operation progresses the liquor must be strengthened, this is effected by shutting off the communication with one of the leaches, pumping out the liquor in it and filling it with fresh bark, after which a quantity of either fresh water or liquor partially exhausted of tan is let in among the bark and steam is introduced through the steam pipe (S) to heat the whole sufficiently to enable the water to dissolve the tannin out of the bark. When this operation is effected the gate is gradually opened to permit the strong liquor to pass into the central vat. While one leach is being used the other one should be cleaned

out and refilled with bark, and a fresh quantity of strong liquor be prepared to be ready for use when that from the other leach is exhausted. As the operation progresses it is necessary to air the skins frequently; this is effected by dismounting the connecting rods and turning the crank to wind up the ropes and thus withdraw the frame from the vat; when the skins have been aired sufficiently they are again immersed by lowering the rocking frame, and the connecting rods are applied in order that the frame may be suitably rocked. When the process is completed the frame is raised and the hides are not removed until the liquor has drained from them. By this operation much time and labor is saved as the whole labor of handling can be effected by the occasional work of a single attendant who can thus manage several vats. The skins can also be thoroughly aired, which greatly facilitates the process, and when the operation is completed they can be well drained over the vat by which means the slopping and loss of liquor consequent thereon are done away. As the handling is thus facilitated less time is required to complete the operation and the leather is also of superior quality.

In the process of bating, steam produced from water containing vegetable matter may be used with advantage. Hen manure may also be used if found convenient but steam from pure water alone will produce the required result.

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

1. The method herein described of bating hides and other skins in the process of tanning by subjecting them to a vapor bath applied substantially in the manner herein described.

2. I also claim the combination of the rocking frame and the shaft above, the two being connected as herein set forth in such manner that the shaft may be used either to rock the frame or to raise it from the vat.

In testimony whereof I have hereunto subscribed my name.

WM. B. MILLIGAN.

Witnesses:

EDWARD S. RENWICK,
P. H. WATSON.