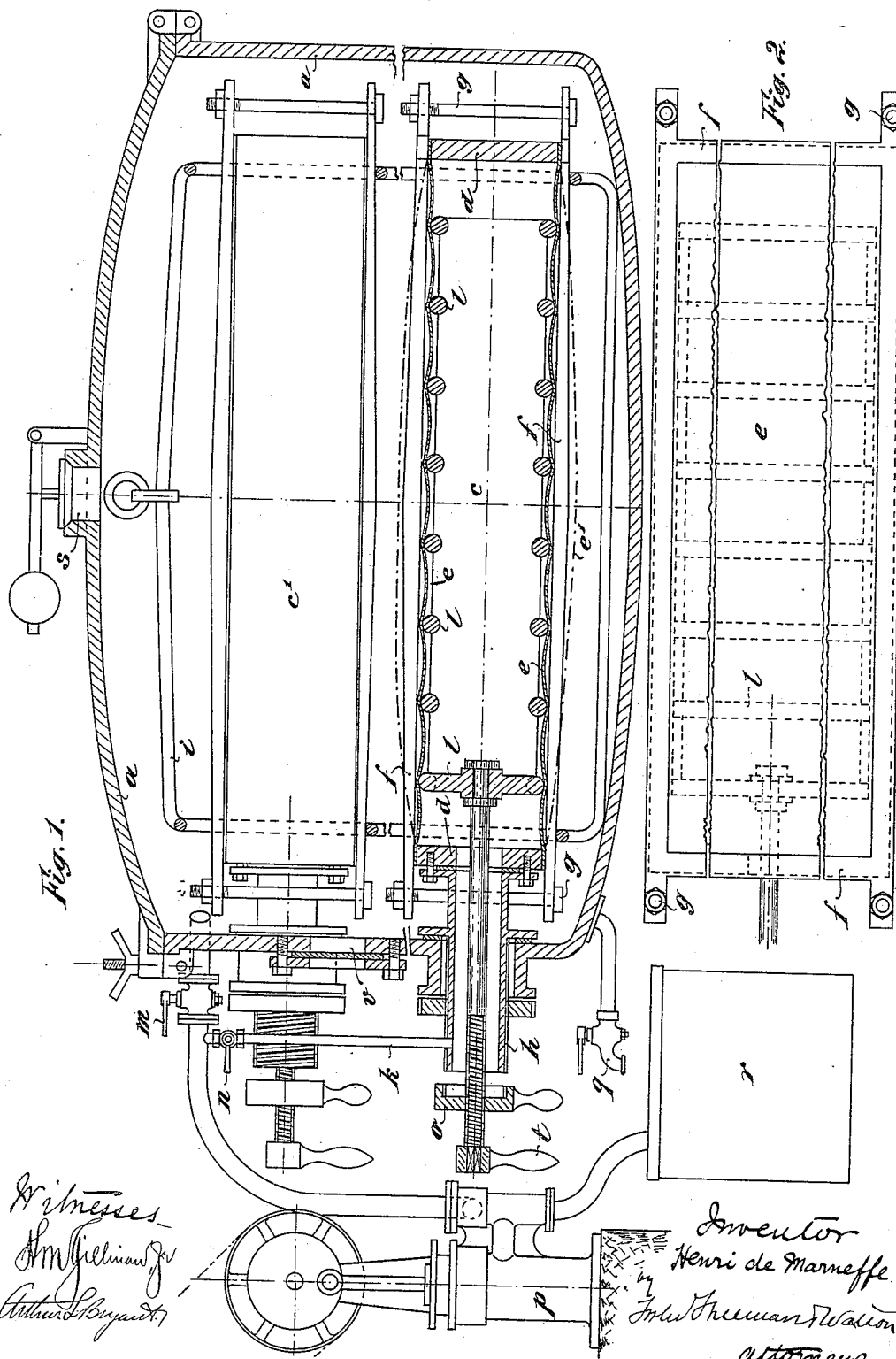


No. 816,670.

PATENTED APR. 3, 1906.

H. DE MARNEFFE.
APPARATUS FOR TANNING LEATHER.

APPLICATION FILED OCT. 29, 1904.



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UNITED STATES PATENT OFFICE.

HENRI DE MARNEFFE, OF LIEGE, BELGIUM.

APPARATUS FOR TANNING LEATHER.

No. 816,670.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed October 29, 1904. Serial No. 230,579.

To all whom it may concern:

Be it known that I, HENRI DE MARNEFFE, manufacturer, a subject of the King of Belgium, residing at 31 Mativa Quay, Liege, in the Kingdom of Belgium, have invented certain new and useful Apparatus for Tanning Leather, of which the following is a specification.

This invention relates to apparatus for the rapid tanning of leather.

In order to expedite the different operations of tanning, it is proposed, according to the present invention, to arrange the hides in such a manner that the tanning solution, as well as the other liquids with which the hide is treated or impregnated, and the air for drying it, are applied under pressure to one of the sides or surfaces of the hide, while the other side is in communication with a medium under a lower pressure. The tanning solution or the like is thus enabled to penetrate the thickness of the hide with the desired rapidity, while the other operations of tanning are also greatly facilitated.

The accompanying drawings represent an apparatus for the performing of this process.

Figure 1 is a partial vertical section of the whole of the arrangement. Fig. 2 shows in plan one of the frames on which the hides are stretched.

The apparatus comprises a vat or receiver *a*, the cover of which carries a hydraulic or other valve *s* of any suitable construction, shown as a weighted lever-valve, to permit the regulation of the pressure within the vat. The vat *a* is supplied with tanning solution or other liquid under pressure from a pump *p* or other equivalent appliance, the suction-pipe of which pump communicates with the reservoir *r*, containing the tanning liquid. A tap *q* enables the vat or receiver *a* to be emptied. Within the vat are provided two cases or frames, which are shown as rectangular frames comprising the end pieces *d d*, to which are attached the longitudinal pieces *c c'*, the lower frame being shown in section and the upper frame in side view. The hides *e e* are placed upon the open sides of these frames, and over the hides are placed the clamping-frames *f*, and these frames are secured together by any suitable means, as the bolts *g*, so that the hides are clamped against the edges of the frames on opposite sides and constitute cases or chambers which are practically water-tight. A tube *h* is connected to one of the end pieces of each of the cases and

extends through glands or joints in the walls of the vat and forms a means of communicating with the interior of the cases. The cases are arranged on a suitable carrier or support *i*, resting on the bottom of the vat, and are capable of being drawn up to the top at the finish of the operations. The hides *e e* are supported internally or from the inside of the case by an open framework *l* of any construction, which can be displaced longitudinally from the outside of the vat. A pipe *k*, fitted with a tap *n*, is arranged as a communication between the feed-pipe from the pump *p* and the small tube *h*, a similar arrangement being provided in connection with each of the hide-supports. When the cases or chambers are completed or formed by the securing to the frames of the hides to be tanned, they are placed in the vat *a*, containing the tanning solution. The pressure of the liquid within the receiver is increased by the aid of the pump *p*, (or of any similar appliance,) the tap *m* being at this time open while the taps *n* are closed. In this way the outer surfaces of the hides are subjected to a pressure (which may be regulated as required) whereby the tanning solution is forced through the said hides, and when it accumulates within the chamber to the height of the aperture of the tube *h*, the excess then passes away through the small tube *h* into the reservoir or catch-tank *r*, and this operation will only cease when the pressures exerted on the two inner and outer surfaces of the hides are equal, and thus by altering the pressure the rate of penetration of the solution through the hides can be regulated. As parts of the hides which rest upon the support *l* would not be tanned (on account of the said parts having been under equal pressures) if the said support were a stationary one, provision is made for the removal of the same for a convenient distance into a fresh position within the interior of the case *d* at any stage of the process. When it is desired to effect this movement, the small outlet-tube *h* is first stopped up by the nut *o* by opening the tap *n* of the pipe *k*, and after closing the tap *m* a suitable quantity of liquid under pressure is admitted to the case *c*, whereby the hides *e e* are forced outward by the internal pressure into the positions represented by dotted lines *e' e'* in Fig. 1. When in this position, the hides are held clear of the support *l*, and by operating the handle *t*, the nut *o* being still maintained in its closing position against the end of the outlet *h*, it is

possible to move the support *l* longitudinally into a fresh position. The tap *n* is then closed and the nut *o* unscrewed, which allows the liquid inside the case to escape and allows the hides *e e* to fall back onto their support, when the operation of forcing the solution through the hides by pressure may be resumed. In order that an attendant or workman may ascertain if the hides have been sufficiently subjected to the action of the tanning solution or other liquid, an opening *v* is made in the vat of a diameter equal to the distance which the support *l* is capable of being moved, and this opening is covered with a disk of hide which is thicker than that contained in the receiver and is also exposed to the action of the tanning solution inside the vat, so that when this disk is wet through a visible indication is afforded that the hides which form the cases will also be wet through. This means of indicating can be applied to any other part of the apparatus subjected to the same variations of internal pressure. A pressure of one atmosphere can thus be applied to the exterior surfaces of the hides by creating a vacuum in the interior of the cases formed by the hides and frames and simply putting the vat *a* in communication with the outside air.

In order to dry the hides or to oil them and to subject them to treatment with lime-water, it is necessary to have recourse to an analogous process, still using the same apparatus. The air compressed in the receiver *a* drives out of the hides the liquid which they contain, while by introducing oil into the receiver *a* in place of the tanning solution the hides may be impregnated with the oily substances which are generally used for greasing them and the excess of oil may be forced out or extracted by an operation similar to that of drying.

It is obvious that the apparatus represented and described for the performance of this process of tanning is capable of considerable constructive modifications in the details and that the sequence of operations can also be reversed—that is to say, the tanning liquid, the oil or other liquid, and the air, as the case

may be, may be forced under pressure into the interior of the cases or chambers formed by the stretching of the hides upon the frames, the framework *l* for supporting the hides being then arranged on the outside of these cases.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In an apparatus of the character described, the combination with a closed vessel, of a frame to which the hides are secured, and an adjustable internal frame, substantially as described.

2. In an apparatus of the character described, the combination with a closed vessel, of a frame to which the hides are secured, an internal frame having ribs to support the hides, and means for adjusting the internal frame within the first frame, substantially as described.

3. In an apparatus of the character described, the combination with a closed vessel, of a frame to which the hides are secured, means for varying the air-pressure in said vessel, an internal frame, and means for adjusting said internal frame, substantially as described.

4. In an apparatus of the character described, the combination with a closed vessel, of a frame to which the hides are secured, an internal adjustable frame, means for varying the pressure outside of the supporting-frame, and means for varying the pressure inside the supporting-frame, substantially as described.

5. In an apparatus of the character described, the combination with a closed vessel, of frames supporting the hides, and an indicator comprising a piece of material such as is being treated, arranged to cover an opening in said vessel, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRI DE MARNEFFE.

Witnesses:

PAUL GAILLARD,
GASPARD LOCHET.