

B. SCHWERIN.
PROCESS OF THE TREATMENT OF MATERIALS FOR IMPREGNATING THEM ELECTRO-OSMOTICALLY.
APPLICATION FILED JAN. 4, 1915.

1,174,903.

Patented Mar. 7, 1916.

Fig. 1.

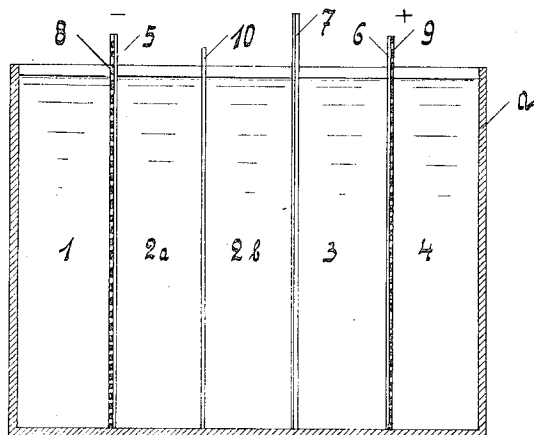


Fig. 2.

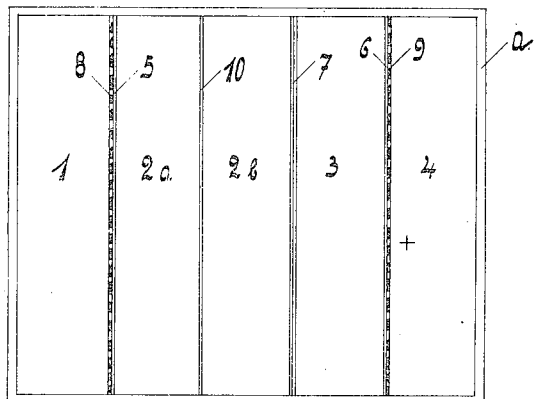
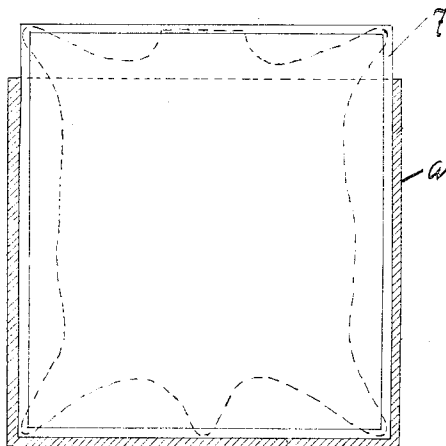


Fig. 3.



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BOTHO SCHWERIN, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO ELEKTRO-OSMOSE AKTIENGESELLSCHAFT (GRAF SCHWERIN GESELLSCHAFT), OF FRANKFORT-ON-THE-MAIN, GERMANY, A CORPORATION.

PROCESS OF THE TREATMENT OF MATERIALS FOR IMPREGNATING THEM ELECTRO-OSMOTICALLY.

1,174,903.

Specification of Letters Patent.

Patented Mar. 7, 1916.

Application filed January 4, 1915. Serial No. 460.

To all whom it may concern:

Be it known that I, BOTHO SCHWERIN, a subject of the German Emperor, and residing at Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements in Processes of the Treatment of Materials for Impregnating Them Electro-Osmotically, of which the following is a specification.

In my application Ser. number 860,731, filed September 8, 1914, I have described a method of tanning or otherwise impregnating materials, in which the liquid containing the material to be treated is subjected between diaphragms to electro-osmosis. The specification describes in detail the application of the process to the operation of tanning with aid of electricity. It is shown that the tanning solution is transported through the hide by the electric current, whereby the hide is changed into leather. It is also shown that during the process the tanning solution used is automatically purified by the osmotic passage through the hide. The present invention is a modification or improvement of that described in the said specification.

I have found that even tannin extracts, which on account of their numerous non-tannin constituents, cannot be used without more ado for tanning, can be employed for electric tanning if the present invention be applied.

The invention resides in combining the osmotic tanning process with an osmotic purification of the tannin extract.

In the accompanying drawing Figure 1 is a vertical section of an apparatus which may be employed. Fig. 2 is a plan view thereof and Fig. 3 is a cross section.

A receptacle *a* is divided by the diaphragms 5 and 6 by the leather 7, to be tanned, and by another diaphragm 10 into the spaces 1, 2^a, 2^b, 3 and 4. Diaphragms 5 and 6 can consist of a cellulose preparation, as for instance parchment paper, viscose, etc. Diaphragm 10 should be a positive and can be made of leather. Viscose is an aqueous solution of the sodium salt of cellulose xanthogenate, which is obtained by the action of carbon disulfid on mercerized, unwashed cellulose.

Electrodes 8 and 9 are preferably per-

forated and are located as shown with reference to diaphragms 5 and 6. The electrode 8 is connected with the negative pole, the electrode 9 with the positive pole of a source of electricity. The leather 7 to be tanned can be placed in a frame or other support. All these divisions are filled with water, with the exception of space 2^a between the cathode diaphragm 5 and the positive diaphragm 10, in which space the tanning extract to be purified is put. If now, the circuit is closed, the basic impurities of the extract go through the cathodic diaphragm 5 into the cathode space 1, whereas the acid impurities, which are not as great in amount as the basic, go through the positive diaphragm 10 into the space 2^b, from there through the hide 7 and finally through the anodic diaphragm 6 into the anode space 4. When a certain purification of the extract is thus obtained, then the tanning material of the extract goes through the diaphragm 10 and accumulates in pure form in the space 2^b, and thence on account of the current it passes through the leather and appears in the space 3, from which the solution can be withdrawn. The leather is thereby tanned.

Diaphragm 6 is chosen of such material as for instance, parchment paper, that the tanning extract cannot pass into the anode space 4.

The process is obviously applicable also to other materials and for other purposes than tanning.

From the foregoing description it will be seen that the present invention relates to a method of purifying tanning extracts involving the use of a positive diaphragm of leather, and in the same electro-osmotic process employing the purified solution for tanning purposes. In my application, Serial No. 860,731 this additional diaphragm and consequently this step in the process are omitted.

What I claim is:

1. A process for the purification and for the simultaneous impregnation of materials, consisting in confining the impure impregnating substance between a diaphragm lying against an electrode and a second diaphragm, and causing an electric current to pass through the impregnating substance

and through the substance to be impregnated, suspended between the said second diaphragm and a third diaphragm, lying against the other of said electrodes.

- 5 2. A process for the purification of tanning extract and the dressing of hides, consisting in confining the tanning extract between a cathodic diaphragm and a positive diaphragm, and causing an electric current
10 to pass from the anode toward the cathode, and through a hide suspended between said positive diaphragm and an anodic diaphragm.
- 15 3. A process for the purification of tanning extract and the dressing of hides, consisting in confining the tanning extract between a cathodic diaphragm permeable for basic substances and a positive diaphragm permeable for acid substances and for the
20 tannin, and causing an electric current to pass from the anode to the cathode and through a hide suspended between said positive diaphragm and an anodic diaphragm,

said diaphragm last mentioned being permeable for acid substances but impermeable 25 for tannin.

4. A process for the purification of tanning extract and the dressing of hides, consisting in confining the tanning extract between a cathodic diaphragm permeable for 30 basic substances and a leather diaphragm permeable for acid substances and for the tannin, and causing an electric current to pass from the anode to the cathode and through a hide suspended between said 35 leather diaphragm and an anodic diaphragm, said diaphragm last mentioned being permeable for acid substances but impermeable for tannin.

In testimony whereof I affix my signature 40 in presence of two witnesses.

BOTHO SCHWERIN.

Witnesses:

JEAN GRUND,
CARL GRUND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."