J. J. JOHNSTON.

PROCESS AND APPARATUS FOR LEACHING TAN-BARK.

No. 193,120. Patented July 17, 1877.

Fig. 2.

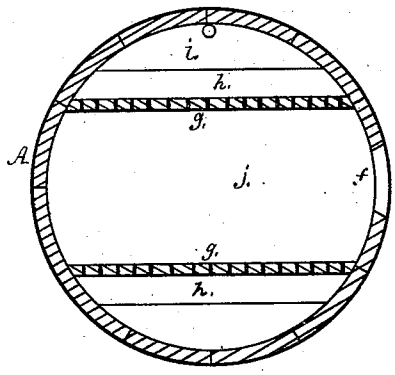


Fig. 1.

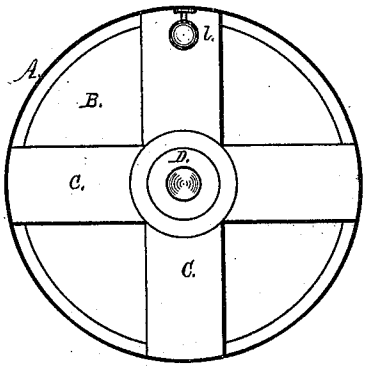
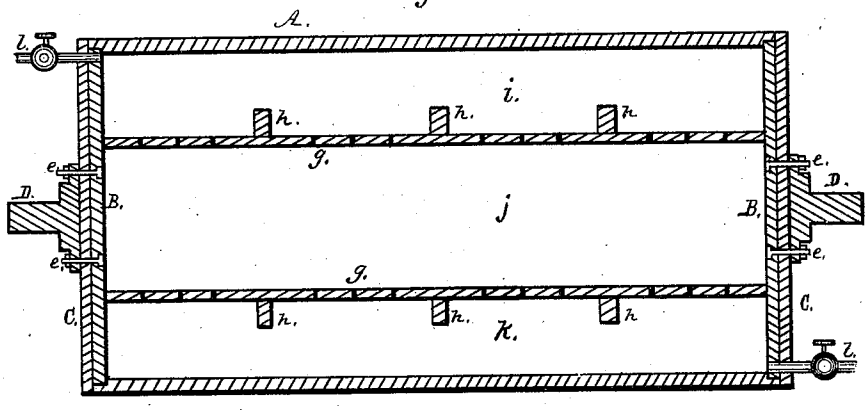


Fig. 3.



Witnesses

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IMPROVEMENT IN PROCESSES AND APPARATUS FOR LEACHING TAN-BARK.

Specification forming part of Letters Patent No. **193,120**, dated July 17, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that I, JAMES J. JOHNSTON, of Columbiana, in the county of Columbiana and State of Ohio, have invented a certain new and useful Improvement in Process and Apparatus for Leaching Bark for Tanning; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in process and apparatus for leaching bark for obtaining liquor for tanning purposes; and consists in placing suitable bark in a vessel, and partly exhausting the air from the vessel and bark, so as to form a partial vacuum in the vessel and cells in the bark, and subsequently furnishing the bark in the vessel with a sufficient supply of water, which is caused to pass a number of times through the whole body of the bark, by turning the vessel on its axis, and finally forcing the liquor from the bark by atmospheric pressure.

To enable others skilled in the art with which my invention is most nearly connected to make and use it, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is an end view of a leach or vessel which I use for leaching bark for obtaining a liquor for tanning purposes. Fig. 2 is a transverse section of said leach or vessel. Fig. 3 is a vertical and longitudinal section of said leach or vessel.

In the accompanying drawings, A represents the body of the leach, which is constructed of oak plank of about three inches in thickness, formed into staves of any desired width. I have found that staves six inches wide answer best; but I wish it clearly understood that I do not confine myself to any one width or thickness, nor kind of timber or other material, for the construction of my improvement in leach, but leave such matters to the judgment and skill of the mechanic.

The ends B are provided with cross-pieces C for strengthening them. To the pieces C are secured trunnions D, by means of bolts *e*, the heads of which must be covered with brass or copper, (cast over the heads,) to prevent the liquor from contact with the iron which is injurious to it, causing it to blacken the skins in the process of tanning.

The leach A is provided with a door, *f*, and perforated partitions or floors *g*, which are supported on cross-timbers *h*. By means of the perforated partitions *g* the leach is divided into three compartments, *i*, *j*, and *k*.

The compartments *i* and *k* are each furnished with a valve, *l*, which is connected, by means of a strong gum hose or by a brass or copper pipe, with an air-engine.

The joints in the leach A should be calked, and the hoops or bands used for holding the staves (as in a barrel) must be made strong.

The leach is mounted on a frame, which should be sufficiently high to allow the workman to stand under it for the purpose of removing the waste bark. The trunnions D should be placed in suitable bearings in the supporting-frame of the leach A.

The outer walls of the leach should be coated with paint.

The operation of my improvement is as follows: The bark is ground in the usual manner and by the ordinary means, and conveyed to the leach by elevators, the construction of which is well understood. The compartment *j* is filled with the ground bark and the door *f* closed. The air-engine being connected to the valve *l* of the compartment *k*, the air is partly exhausted from the leach and cells of the bark.

The valve *l* of the compartment *i* being connected with a water-supply, the compartment *i* is filled with water, which passes through the partition *g*, and is thereby evenly distributed to the bark in the chamber *j*, from which the liquor flows through the perforations in the partition *g* into the compartment *k*. The leach A is then turned on its axis, so as to bring the compartment *k* uppermost, and the liquor in it flows again through the bark and into the compartment *i*. Thus is the leach turned alternately, changing the position of the compartments *i* and *k*, causing the liquor to flow several times through the bark in the compartment *j*.

While the liquor is flowing from the compartment which is uppermost down through the bark into the lower compartment, the air-

engine should be exhausting the air from the upper compartment, so operating the engine as to remove only part of the air from the several compartments and cells of the bark.

I have found that removing one-half the air answers a good purpose, and will not subject the leach A to too much external atmospheric pressure, which must be guarded against; otherwise the leach A will be injured by undue pressure.

After the liquor has flowed a number of times through the bark it is drawn off into a suitable receiving-vessel. During the time the liquor is flowing from the lower compartment of the leach, air should be forced into the upper compartment of it, for the purpose of removing the liquor from the cells of the bark by atmospheric pressure.

After the liquor is drawn off from the leach and bark, a fresh supply of water is used for extracting the remaining tannin of the bark, which fresh supply of water is caused to flow a number of times through the bark, in the same manner as the first supply. After drawing off this second liquor the leach is turned so as to bring the door *f* on the under side of the leach. It is then opened and the bark discharged from the leach into a suitable device for carrying it off to a suitable place of deposit. The leach is then turned so as to bring the door *f* uppermost, and the compartment *j* is again filled with bark, which is subjected to the leaching process, as hereinbefore described.

By means of the leach A, constructed and operated as described, bark can be rapidly leached, and much time and labor saved, and the tanning-liquor increased in strength to any desired degree.

These facts have been fully demonstrated by a practical test of a large leach constructed as set forth.

Having thus described my improvement in process and apparatus for obtaining liquor for tanning purposes, what I claim as of my invention is—

1. The process hereinbefore described for leaching bark for obtaining liquor for tanning purposes—viz., placing bark in a vessel, and partly exhausting the air from said vessel and the cells of the bark, and supplying it with water, which is caused to flow through it a number of times, and subsequently forcing the liquor from said vessel and bark by atmospheric pressure.

2. The vessel or leach A, pivoted on trunnions, and divided into compartments *i*, *j*, and *k* by perforated partitions *g*, the compartments *i* and *k* having each a valve, *l*, and the compartment *j* a door, *f*, substantially as herein described, and for the purpose set forth.

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Witnesses:
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