

# UNITED STATES PATENT OFFICE.

JAMES McGEARY, OF SALEM, MASSACHUSETTS.

IMPROVED MODE OF EXTRACTING TANNING PROPERTIES FROM BARK.

Specification forming part of Letters Patent No. **45,421**, dated December 13, 1864.

*To all whom it may concern:*

Be it known that I, JAMES McGEARY, of the city of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in the Method of Extracting the Tanning Properties of Bark and other Substances; and I do hereby declare that the following is a full and exact description of the same.

The nature of my invention consists in a new method of extracting the tanning properties of substances used in tanning leather, by means of which all the properties useful for the purpose are preserved in the best condition and a larger percentage of astringent qualities obtained from the material or substance.

It also consists in preventing the formation of acids injurious to the liquor by the absorption of oxygen.

It also consists in operating upon the material—as hemlock, oak, or other bark—in whole sheets without grinding or other reduction.

It is a well-known fact to those who are conversant with the details of the tanning process that a large portion of the best properties of bark, &c., is lost by the imperfect handling of the material; that the grinding, steeping, and other processes requisite in getting the liquor for tanning wastes a great portion of it, and that all the tannin is not extracted, and that by the changes in its combination with the oxygen of the atmosphere its composition is altered, which not only injures it, but the hide which is to be tanned by it. These difficulties are overcome and the process cheapened and hastened by the means shown, and the residuum of the bark is left in a more valuable condition for fuel, &c.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same and the means which I have used to carry out the process.

A boiler or tank is made of iron in the most suitable shape to contain the material or substance to be operated upon. If bark, it should be so shaped as to hold a large quantity at once—say a cord or more. This tank is placed in a furnace, or it may be connected with a steam-boiler used for generating steam and heated in that way. If placed over a furnace,

the fire-grate may be mounted on wheels for the purpose of removing the fire when the process is completed, and thus avoid burning the boiler when the contents are drawn off. The boiler is provided with a door placed in a convenient part of it, which is large enough to take out the entire contents of the boiler at once. It is secured steam-tight by means of a flange and rubber gasket, and for convenience may be hinged on one side. On the bottom of the boiler (inner side) a track is laid, and upon it a truck is placed supporting a grating, upon which the material to be operated upon is placed, and being filled with water (or sufficient to cover the material) and the fire being lighted, steam is produced until the pressure reaches about forty pounds to the square inch, or a temperature of 270°. This is continued a longer or shorter time, according to the material to be operated on, and until it is thoroughly leached, which in most cases will be in about three hours; and if it should appear that all the tanning properties of the bark thus operated on should not be thoroughly extracted it may be repeated a sufficient number of times to fully accomplish the object. The desired pressure and temperature are regulated by means of a safety-valve, which is inserted in the top of the boiler, and which is weighted to the pressure desired, so as to blow off the surplus steam. This valve is connected by a pipe to a condenser formed by a coil of pipe immersed in cold water, so that all the steam is condensed and drawn off at a cock. The liquor is drawn by the pipe and conducted to a tank or other vessel. All the properties of the bark are extracted. It is accomplished in a tight vessel without contact with the atmosphere. The whole sheet is used and there is no waste in grinding. The leached bark is worth in most instances two-thirds the price of the material for fuel, whereas the spent tan is not so valuable. The expense of grinding and imperfect leaching is saved, and the whole process is more thoroughly and economically conducted.

If it is desired, and a sufficient time is allowed, to act directly on the bark without the intervention of water, a more concentrated extract will be obtained, which may be useful in transporting it to a distance, in this case into

another boiler and conducted to the tank containing the bark.

Having thus fully explained the nature of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The extraction of tanning properties of barks or other substances by means of steam under pressure.

2. The extraction of tanning properties of bark in sheets or large pieces without previous grinding or other reduction, substantially as and for the purpose set forth.

3. The extraction of tanning properties of barks or other substances by means of boiling under pressure in a tight vessel, in the manner substantially as shown and described.

4. Saving the tanning properties contained in the steam which may escape from the boiler or other vessel by the means described.

JAMES McGEARY.

Witnesses:

A. MOORE,

N. W. HEILBORN.