G. D. BURTON.

METHOD OF UNHAIRING AND TANNING HIDES OR SKINS.

APPLICATION FILED SEPT. 9, 1904. RENEWED APR. 1, 1910.

976,036.

Patented Nov. 15, 1910.

3 SHEETS—SHEET 1.

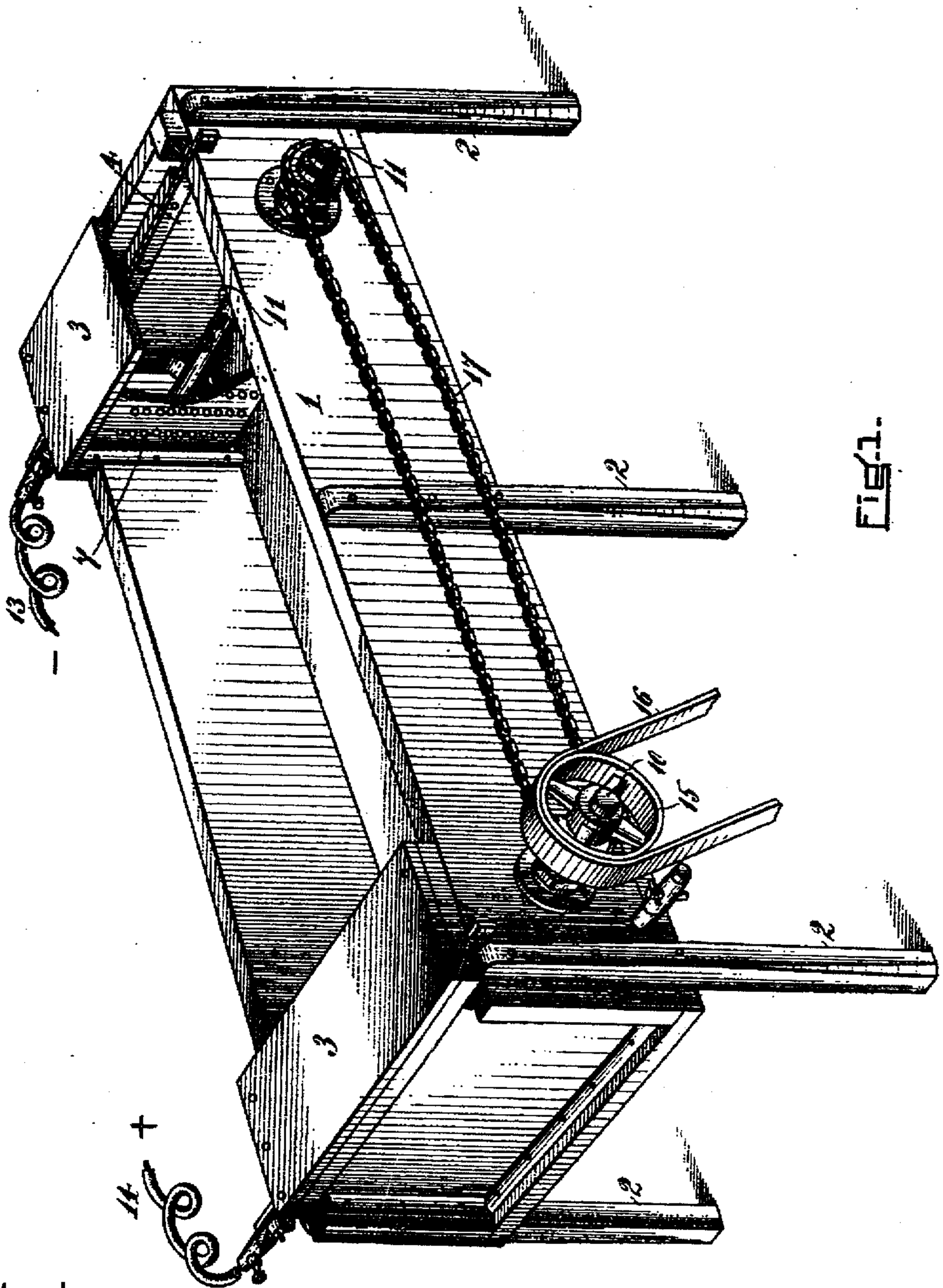

Fig. 1.

WITNESSES.

Frank G. Parker.

John Buckler.

INVENTOR.

George Dexter Burton

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3 SHEETS—SHEET 2.

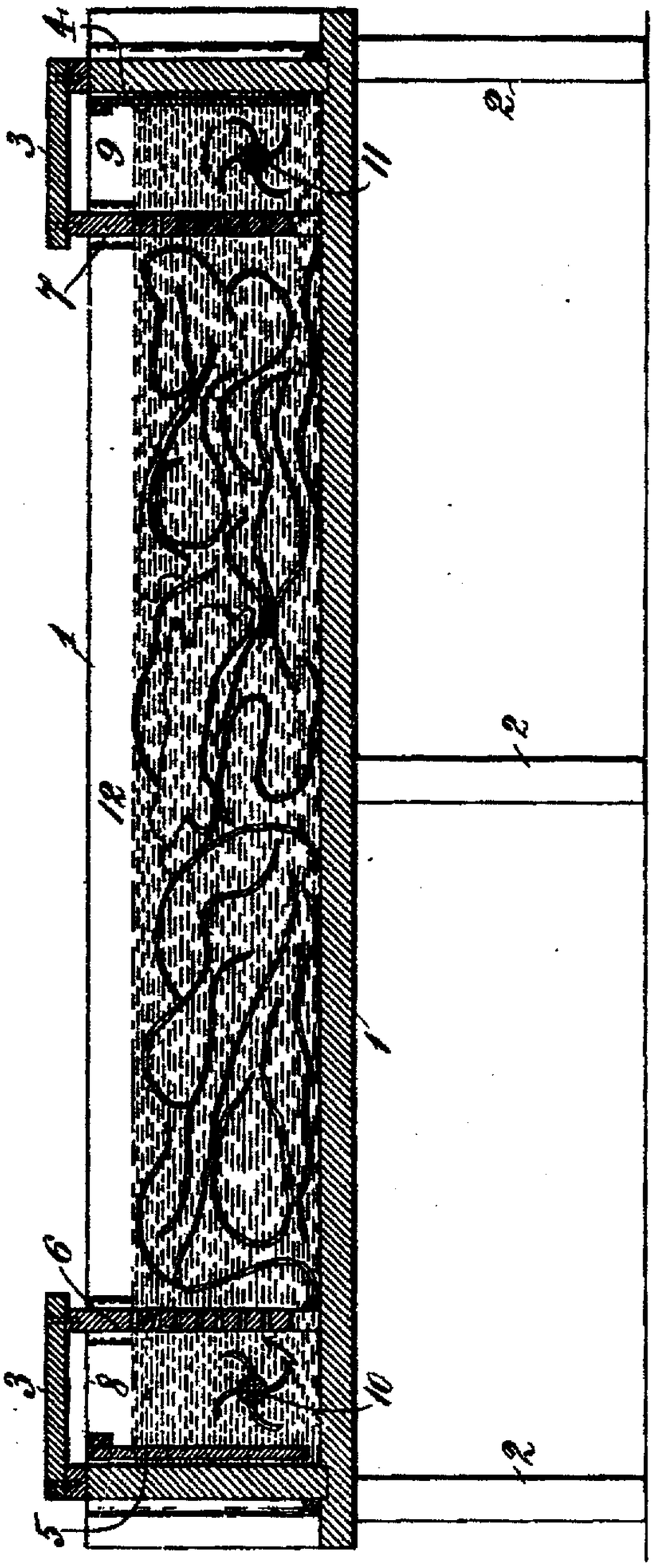

Fig. 2.

WITNESSES.
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John Buckler.

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George Dayton Burton

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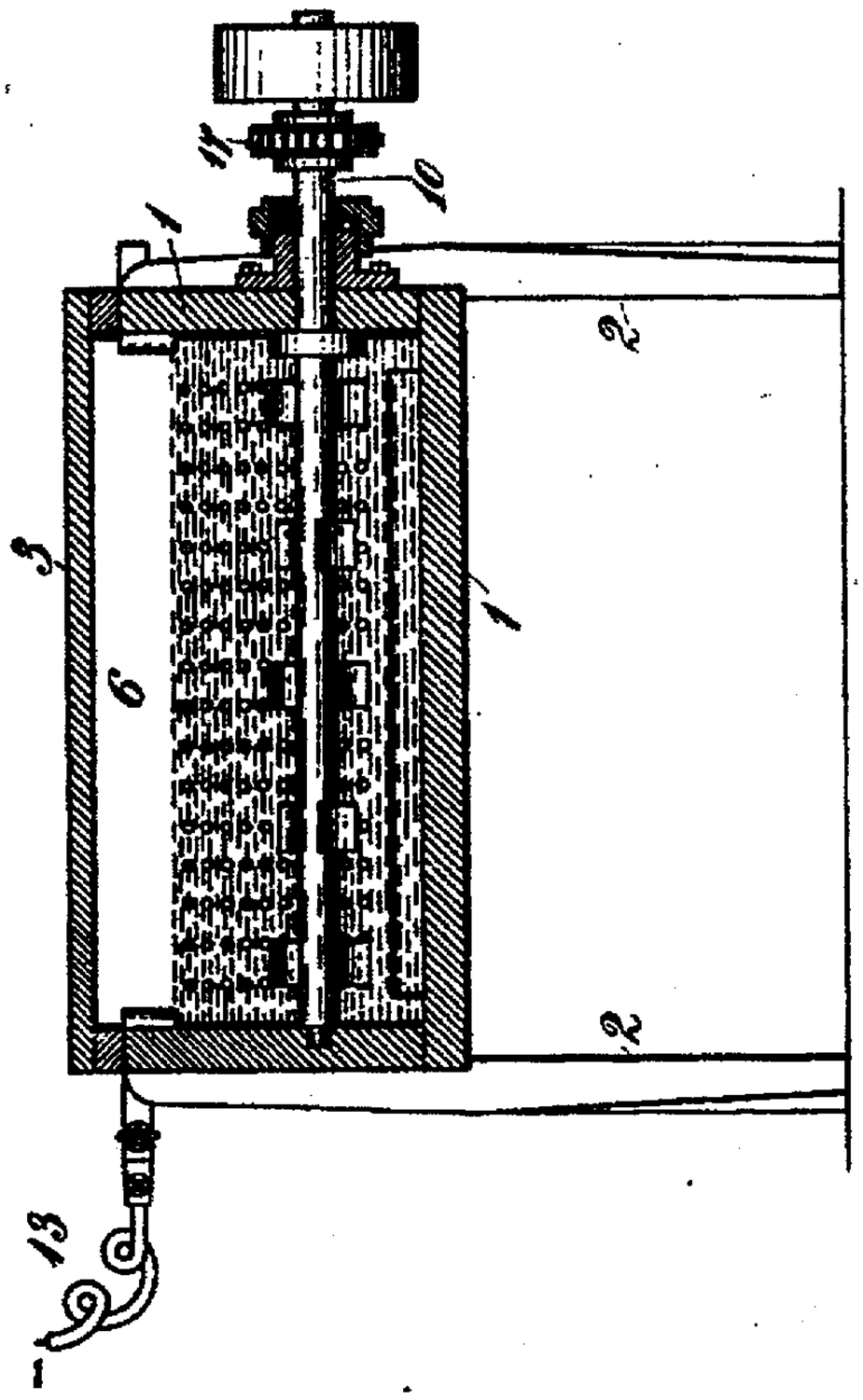

Fig. 3.

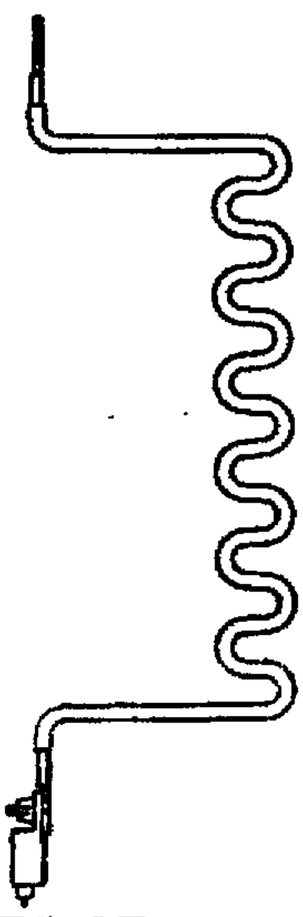

Fig. 4.

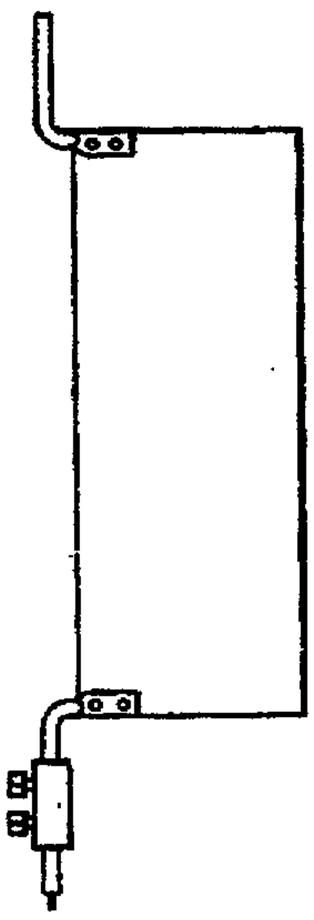

Fig. 5.

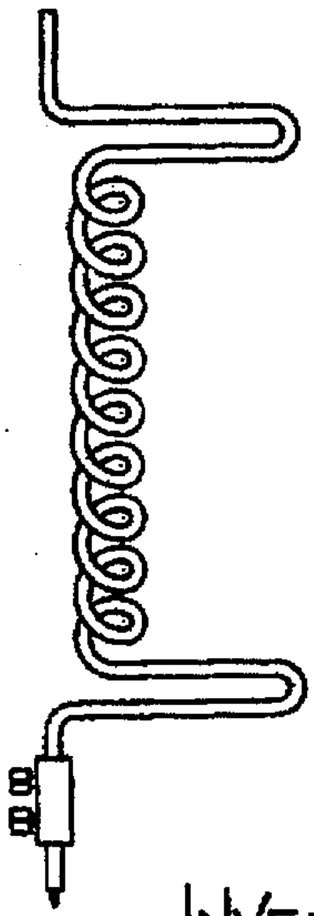

Fig. 6.

WITNESSES.

Joseph G. Parker.

John Buckler.

INVENTOR.

George Dexter Burton

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, MASSACHUSETTS.

METHOD OF UNHAIRING AND TANNING HIDES OR SKINS.

976,036. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed September 9, 1904, Serial No. 223,865. Renewed April 1, 1910. Serial No. 552,901.

To all whom it may concern:

Be it known that I, GEORGE DEXTER BURTON, of Boston, county of Suffolk, and Commonwealth of Massachusetts, electrician, having invented certain new and useful Improvements in the Methods of Unhairing and Tanning Hides or Skins, do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the method of unhairing and tanning or otherwise treating hides or skins, by subjecting them to the action of a suitable electrolytic solution and passing an electric current through said solution in which the hides or skins are placed and also circulating said solution during the tanning or unhairing operation.

The object of this invention is to facilitate the passage of the electric current and the strengthening and circulation of the unhairing or tanning solution.

A form of mechanism for putting my invention into practice is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of one of my vats and its connected parts. Fig. 2 is a longitudinal vertical section of the same, also showing the contents of the vat. Fig. 3 is a cross vertical section of the same. Figs. 4—5 and 6 show in elevation modified forms of the electrodes.

This invention relates more particularly to the unhairing and tanning of the hides or skins of seal, walrus and the like; and to the particular kind of solution used for treating the said hides or skins, both as regards the unhairing and tanning of the same, including the method of extracting the oil or fatty substance from them.

In order to successfully tan either seal or walrus hides or skins, it is necessary to first eliminate the oil and fatty matter therefrom. I have found after a long series of experiments that a solution composed of sal soda of a specific gravity of from 1.100 to 1.125 is best adapted to this purpose. The action of the current when passed through a soda solution develops a gas which acts upon the fatty or oily globules of the hides or skins and causes said globules to open or burst and free the oil from the fatty part of the hide or skin.

The hides or skins are first soaked for a short time for the purpose of eliminating the salt. They are then placed in the soda solution for a period of about twenty-four hours, and a current of electricity is passed therethrough at varying intervals for a period of about twenty minutes every three hours. A large portion of the oil will be forced from the hides or skins and will rise to the surface of the solution, from which it may be removed in any suitable manner and saved. The hides or skins, after remaining in this solution for a period of from twelve to twenty-four hours, are in a condition ready for unhairing and they may be removed from the solution. The hides or skins are then immersed in a fresh and stronger solution of sal soda, through which a current of electricity is passed, and the solution agitated, for the purpose of breaking up the fatty globules which remain in the hides or skins after the first operation above described. The breaking up of these remaining fatty globules or sacs which hold the oil in the hide or skin is accomplished in this manner, and this oil will rise to the top of the solution, from which it may be removed in any suitable manner. After the grease or oil has been removed from the surface of the solution the hides or skins are removed and properly fleshed, and are then placed in a weak solution of acetic or sulfuric acid—about a five degree liquor or solution—for the purpose of drenching and cleansing said hides or skins. When taken from this solution the hides or skins are placed in a vat containing the tanning solution, which may be composed of any suitable tanning material, such as quebracho, oak, hemlock, etc., through which a current of electricity is passed while the hides or skins are in the tanning vat. This solution may be agitated by any well-known mechanical means, such as a pump or paddle, during the whole or only a part of the time the hides or skins are in the tanning solution. The current of electricity may be passed through the solution in the tank or vat containing the hides or skins during the whole or only a portion of the time said hides or skins are being treated. Usually a direct current of electricity of 110 volts and from 5 to 140 amperes is employed, the amount of amperage and voltage varying with the size of the treating vat or tank and the character and quantity of the solution and the number of hides or skins to be acted upon. As the treating solution becomes heated by the cur-

rent of electricity the amperage of the current is increased and consequently more current is flowing through the solution contained in the tank, and the effect is a greater and more rapid action of the solution upon the hides or skins under treatment. The electric current is preferably passed intermittently through said solution to subject said hides or skins to abrupt changes of stress, as the solution becomes heated more current flows through the solution and there is more pressure or pull upon the fibers of the hides or skins under treatment, and when the solution is agitated the amperes are varied from 5 to 8 according to the amount of solution and size of the tank.

In the trade, the skin of the seal is known as skin—while that of the walrus is known as hide.

I will now describe one form of apparatus for carrying my invention into practice, reference being made to the accompanying drawings.

A vat, 1, is made of any suitable material and size. This vat is suspended upon legs, 2, 2, and is divided into three compartments, viz—a central part, 12, which contains the hides or skins to be treated and also a portion of the solution, which must be electrolytic and suitable for the purpose intended. The compartments, 8 and 9, each contain a portion of the electrolytic solution and are separated from the central compartment, 12, by the perforated diaphragms, 6 and 7. The compartments, 8 and 9, may be closed by the covers, 3 3, and each contain winged shafts (see 10 and 11, Fig. 2). These winged shafts are made to rotate and thus produce a constant circulation of liquid in the compartments, 8—9 and 12. This circulation of the liquid insures an equal chemical and electrolytic action throughout the vat. Motion is given to the winged shafts, 10 and 11, by a belt, 16, acting through the pulley, 15, and sprocket chain, 17, and sprocket wheels on the said shafts. The power may be derived from any suitable power source. A current of electricity is furnished from any suitable source through the conductors, 13, electrode, 4, and passed through the solution in the several compartments of the tank or vat to electrode, 5, and conductor, 14, or any other desirable means. These forms of electrodes are shown in Figs. 4—5 and 6, and may be composed of aluminum, copper, lead, nickel, or any suitable substance. I may also use any shape or size of tank or vat suitable for the proper treatment of said hides or skins, preferably a tank or vat 9 feet long, 7 feet wide and 5½ feet deep, composed of cypress wood two inches thick.

I desire to reserve the right to use any suitable solution in combination with electricity which will cause the development of a gas or gases sufficient to expand or contract the oil globules or sacs of the hides or skins for the purpose of releasing the oil.

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

1. The method of treating hides or skins by electricity which consists in first placing the hides or skins in a solution of sal soda, then passing an electric current through said solution and causing the development of a gas which acts upon the fat or oil globules of the hides or skins and causes them to open and discharge their contents into the solution.

2. Method of treating hides or skins containing a fatty or oily substance, which consists in placing the same in a solution of sal soda and passing an electric current intermittently through the solution in said vat or tank containing said hides or skins.

3. The method of treating hides or skins by electricity, which consists in first placing the hides or skins in a solution of sal soda, then passing an electric current through said solution, and then agitating each end of said solution to produce a circulation thereof among said hides and skins.

4. The method of treating hides or skins by electricity, which consists in first placing the hides or skins in a solution of sal soda, then passing an electric current through said solution, and then agitating each end of said solution at points removed from said hides and skins to produce a circulation thereof among said hides or skins.

5. The method of treating hides or skins, which consists in first eliminating the oil from the fatty part of the hide or skin by subjecting it to the action of a current of electricity while immersed in a suitable electrolytic solution, then removing the hides or skins and fleshing them, then placing them in a weak acid solution to cleanse them, and then placing them in a tanning solution and subjecting them while thus immersed to the action of a current of electricity.

6. The method of treating hides or skins, which consists in first eliminating the oil from the fatty part of the hide or skin by subjecting it to the action of a current of electricity while immersed in a suitable electrolytic solution, then removing the hides or skins and fleshing them, then placing them in a weak acid solution to cleanse them, and then placing them in a tanning solution and subjecting them while thus immersed to the action of a current of electricity and agitating the solution.

7. The method of treating hides or skins, which consists in first eliminating the oil from the fatty part of the hide or skin by subjecting it to the action of a current of electricity while immersed in a suitable electrolytic solution at varying intervals for a period of twelve to twenty-four hours, then

immersing them in a stronger solution under agitating influences and the action of a current of electricity, then cleansing the hides or skins, and then tanning them.

8. The method of treating hides or skins, which consists in first eliminating the salt therefrom and then eliminating the oil from the fatty part of the hide or skin by subjecting it to the action of a current of electricity while immersed in a suitable electrolytic solution at varying intervals for a period of twelve to twenty-four hours, then immersing them in a stronger solution under agitating influences and the action of a current of electricity, then cleansing the hides or skins, and then tanning them.

Dated at Boston, Mass., August 10, 1904.

GEO. D. BURTON.

Signed in the presence of—
FRANK G. PARKER,
JOHN BUCKLER.