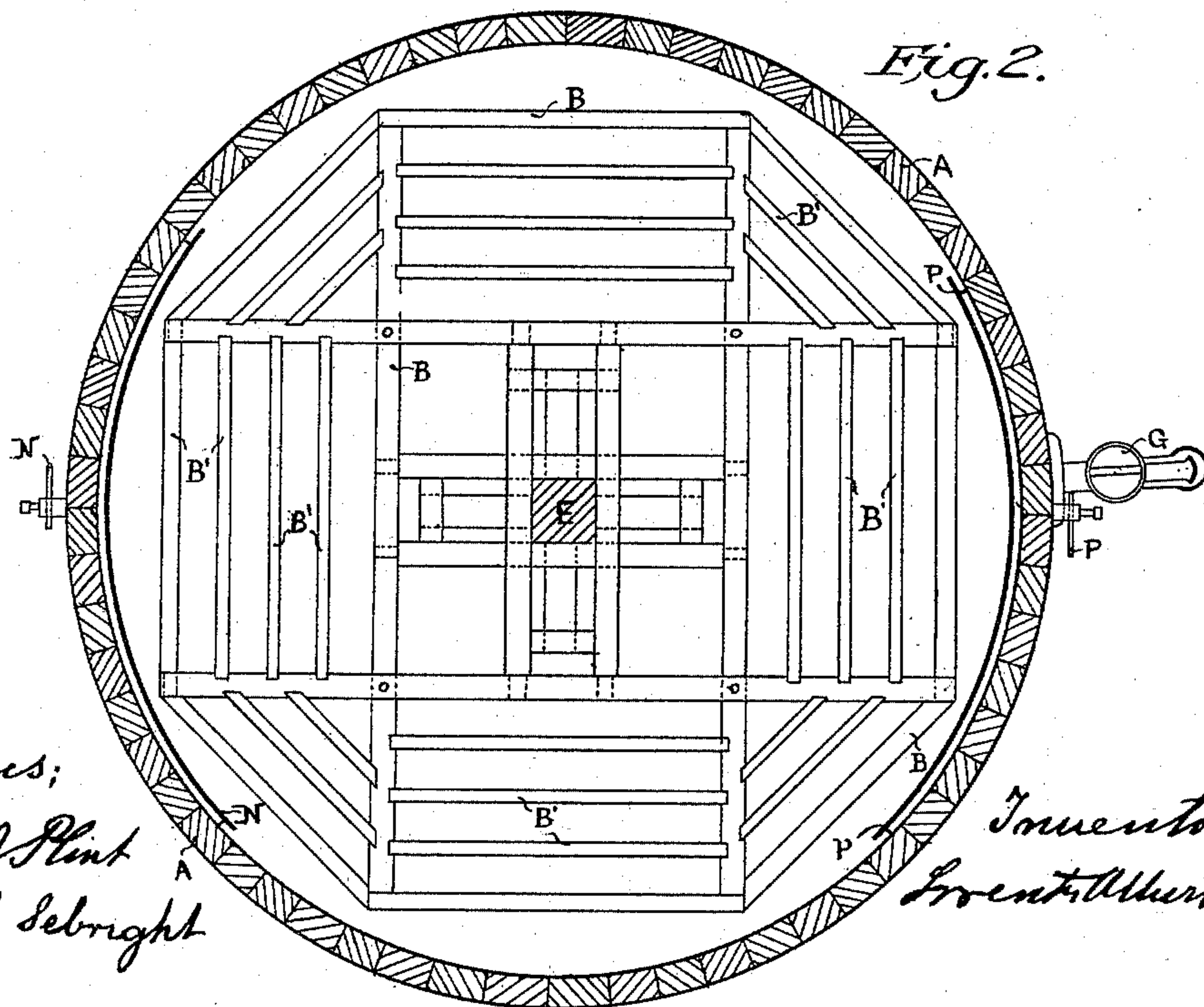
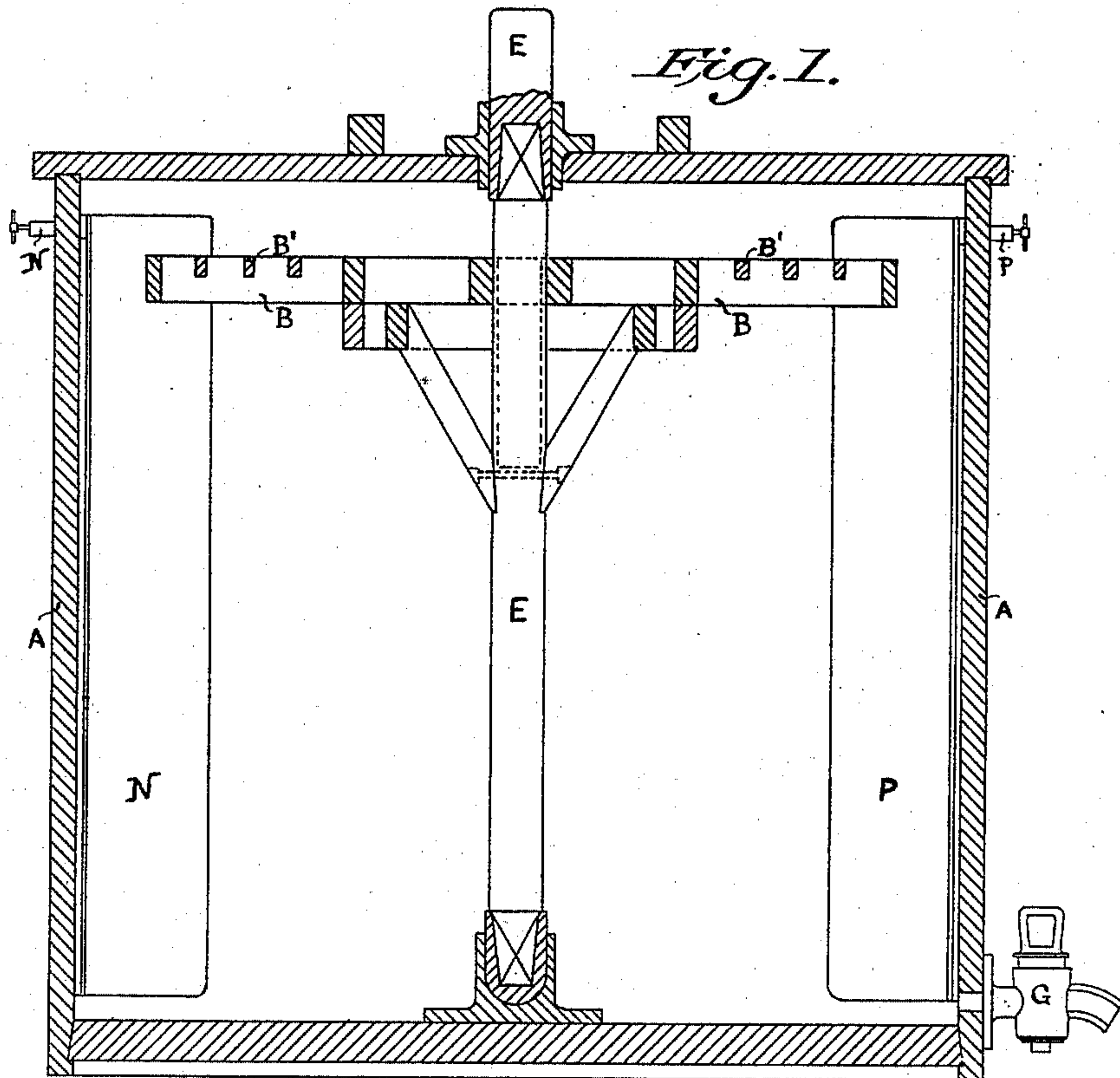


(No Model.)

L. A. GROTH.  
TANNING BY ELECTRICITY.

No. 442,115.

Patented Dec. 9, 1890.



Witnesses:  
Chas J Flint  
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# UNITED STATES PATENT OFFICE.

LORENTZ ALBERT GROTH, OF LONDON, ENGLAND.

## TANNING BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 442,115, dated December 9, 1890.

Application filed May 19, 1888. Serial No. 274,446. (No model.)

*To all whom it may concern:*

Be it known that I, LORENTZ ALBERT GROTH, civil engineer, a subject of the King of Sweden, residing at 3 Tokenhouse Buildings, in the city of London and Kingdom of Great Britain, have invented a certain Improved Process for Tanning Hides and Skins by the Aid of Electricity, of which the following is a specification.

It is well known that if a sufficiently powerful current of electricity be passed through the tanning-liquor in which hides or skins are being tanned the process of tanning is thereby hastened; but so far as I am aware all the means heretofore proposed for applying electricity practically to this purpose have been more or less unsuccessful. According to one arrangement that has been proposed the hides or skins are placed along with a suitable tanning-solution in a revolving drum provided with suitable means for passing a current of electricity through its liquid contents. In order to prevent the escape of liquid from this drum, the latter has to be hermetically closed during the operation, and as certain gases are evolved by the decomposition of the water in the liquid by the electric current or otherwise the accumulation of such gases in the said drum is liable to engender sufficient pressure to burst the same, whereby not only is material lost, but serious danger is occasioned to operatives and other persons employed in the manipulation of such apparatus.

Another objection to the employment of hermetically-closed drums is that the fermentation of the tanning-liquor, and consequently of the hides or skins, is hastened to an injurious extent by the excessive heat developed.

The object of my invention is to obviate these defects, and for this purpose I employ a process in which the hides or skins are moved through the tanning-liquor without being hermetically inclosed and the tanning-liquor is allowed to remain stationary.

Apparatus suitable for carrying my process into effect is illustrated in the drawings hereto annexed, in which—

Figures 1 and 2 are respectively a vertical section and a plan.

A is a tank or other suitable vessel containing the tanning-solution.

B is a frame-work connected to and revolving with a vertical central shaft E and provided with bars B', furnished with pegs, pins, or hooks, to which the hides or skins are suspended so as to hang down in the tanning-liquid; or, if preferred, a second frame-work, similar to B B', may be applied at the lower end of the shaft E, the lower ends of the skins being attached to such frame-work, so as to hold the said skins stretched between the two frames.

N and P are electrodes connected with a dynamo or other suitable source of electricity for the purpose of passing a current of electricity through the liquid in the tank A, while the frame-work B B' rotates with the hides or skins thereon.

Instead of a special tank A, as above described, an ordinary tan-pit may be used to receive the revolving framing, and it will be understood that the necessary rotary or other motion may be imparted to such framing by worm-gearing, toothed wheel-work, or other suitable gearing, or direct by belting or otherwise, as may be most convenient.

It is obvious that the framing may be made to rotate continuously in one direction or alternately in opposite directions; or the frames or bars on which the hides or skins are hung may be caused to reciprocate in a rectilinear or other direction, so as to move the hides or skins to and fro in the tanning-liquid while the electric current is acting thereon.

The apparatus is employed as follows: A number of hides or skins having been placed on the frame-work B B', as above described, tanning-liquor is admitted to the tank A until the hides or skins are immersed in such liquor. The framing B B', and consequently the hides or skins, is set in motion in the tanning-liquor and the electrodes N P are connected to the source of electricity, so that a current of electricity is passed through the liquid. The motion of the framing and of the hides or skins is continued for about four days, more or less, according to circumstances, the current of electricity being maintained during that time or during a part thereof only according to circumstances and as may be necessary for the materials under treatment. At the end of that period the tanning of the hides or skins will be completed. The



motion of the apparatus is then arrested, the current of electricity stopped, if it has not been previously stopped, the tanning-liquor drawn off from the tank A by the tap G or otherwise, and the tanned hides or skins removed. Fresh hides or skins are then put on the framing B B' and the cycle of operations repeated, and so on continuously.

With the apparatus above described I am enabled to effect the tanning of hides or skins by the aid of electricity much more rapidly than can be effected by the ordinary process of tanning and without the danger of explosion to which closed revolving drums are, as above mentioned, liable, while the apparatus containing or carrying the hides or skins not requiring to be water-tight as it revolves or otherwise moves in the tanning-liquid is much easier and more cheaply constructed, does not require to be so strong and heavy, requires less power to operate it, and is simpler to manipulate than the aforesaid closed-drum arrangement.

The framing and bars are preferably made of timber; but other suitable material which will not act injuriously on the tanning materials may be employed.

In the action of the electric current different results take place at the positive and negative electrodes, respectively, and it will be seen that by moving the hides relatively to the said electrodes according to my invention and as herein specified the whole of the surfaces of the same are subjected to a uniform as distinguished from a partial or unequal electrolytic action.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I would have it understood that I do not claim, broadly, the use of electricity in tanning, or broadly apparatus for keeping the hides or skins in motion in the tanning-liquid; but

I declare that what I do claim is—

1. The herein-described method of tanning, which consists in placing the hides and tanning-liquid in a stationary or fixed tank, passing a current of electricity through said liquid and the hides, and moving the hides during the passage of said current in planes transverse to and alternately toward and from the positive and negative electrodes.

2. The herein-described method of tanning, which consists in placing the tanning-liquid in a stationary or fixed tank having positive and negative electrodes, placing the hides in said liquid between the electrodes, passing a current of electricity through the liquid and hides, and moving and rotating the hides relatively to the tank and electrodes in planes transverse to the electrodes, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

LORENTZ ALBERT GROTH.

Witnesses:

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CHAS. JAS. PLINT.