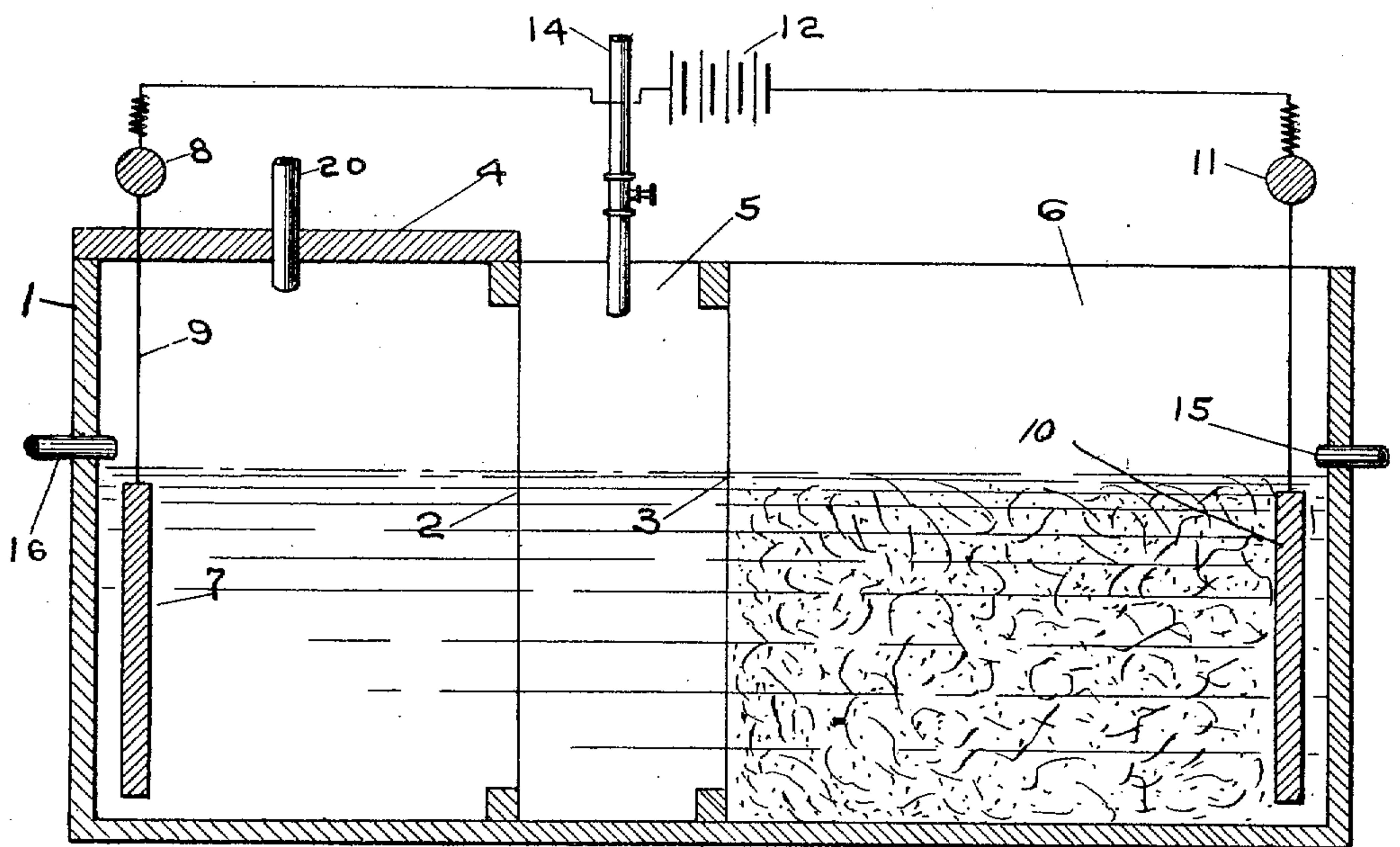
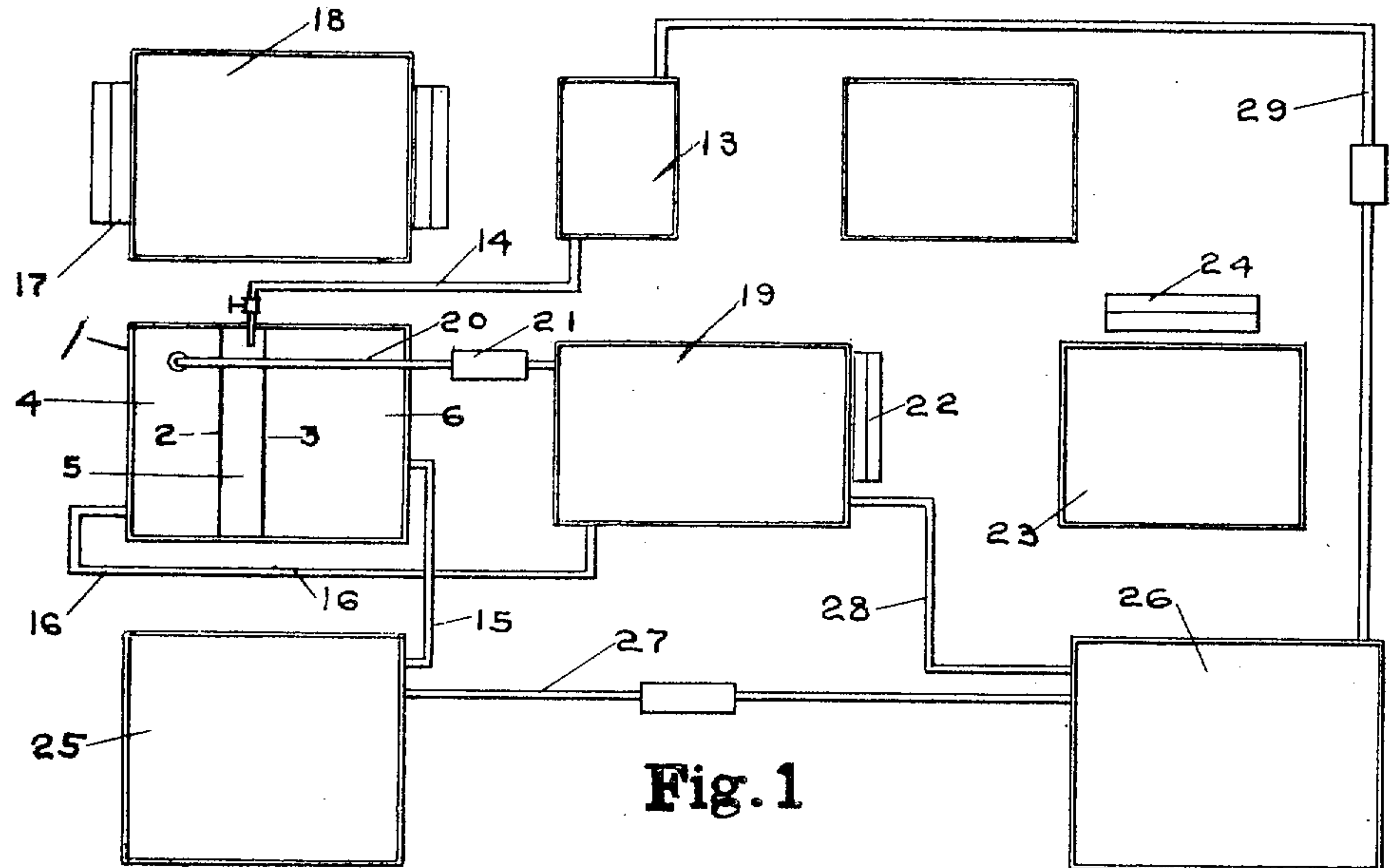


H. G. HALLORAN.
 PROCESS OF FORMING GLUE FROM LEATHER.
 APPLICATION FILED DEC. 27, 1909.

967,762.

Patented Aug. 16, 1910.



WITNESSES
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Fig. 2

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UNITED STATES PATENT OFFICE.

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PROCESS OF FORMING GLUE FROM LEATHER.

967,762.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed December 27, 1909. Serial No. 534,994.

To all whom it may concern:

Be it known that I, HENRY G. HALLORAN, a citizen of the United States, residing at Brighton, in the county of Suffolk and State

of Massachusetts, have invented certain new and useful Improvements in Processes of Forming Glue from Leather, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a new and improved process of forming glue from leather, and has for its object to provide a simple, inexpensive and rapid method of de-tanning mineral or chrome tanned leather by the application of electricity thereto for the purpose of producing glue therefrom.

In carrying out my improved process I first deposit the leather, which is preferably in a finely divided state, such as leather scraps, skivings, waste or scrapings, into a tank containing a solution of sodium chlorid (NaCl) to which is applied a current of electricity causing the sodium chlorid to separate into chlorin (Cl) and caustic soda (NaOH), the latter acting upon the leather to soften and swell the same, open the fibers and put it in a condition to facilitate the subsequent removal of the tanning agent therefrom. The scraps are then removed from this tank, the excess of alkali squeezed out and the leather subjected to a thorough washing in clear water to remove the remaining caustic soda. It is found in practice that when leather is thus subjected to electrolytic action that such action upon the leather hastens the chemical action on the same, and also that one thorough washing is sufficient to remove all the caustic soda, thus rendering unnecessary the use of neutralizing agents. The leather is then subjected to the action of chlorin water or chlorin gas, or a combination of both, to dissolve the tanning agent, after which it is again squeezed and washed, when it is in condition to be converted into glue by the usual method of boiling. By this process the leather may be de-tanned in a few hours while by other methods several days are required.

A feature of my improved process is that the tanning agent is subsequently recovered by mixing the caustic soda and chlorin water to neutralize each other, the latter containing the chrome in solution, thereby precipitating the chrome which may then be

collected and put in condition to be again used for tanning or other purposes. The remaining liquid being a mixture of sodium chlorid and sodium hypo-chlorite solution NaClO may be used over again in my de-tanning process.

The invention is fully set forth in this specification and more particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is a diagrammatic view illustrating the apparatus necessary for carrying out the several steps in this process. Fig. 2— is a sectional end elevation of the tank in which the electrical current is applied to the leather.

Referring to the drawings, 1 designates the electrolyzing tank which may be constructed of any suitable size or material, the same being fitted with two diaphragms 2 and 3 respectively, located a short distance apart and extending the length of the tank, dividing the same into three separate compartments 4, 5 and 6, said diaphragms being preferably constructed of asbestos cloth. An electrode of suitable size, shape or material, representing the anode 7 is suspended in the compartment 4 from the bus bar 8 by means of wires 9, or suitable connections. A similar electrode 10 representing the cathode is suspended from the bus bar 11 in the compartment 6, said bus bars being electrically connected to a suitable generator 12.

A solution of sodium chlorid is admitted from a storage tank 13, see Fig. 1, or other convenient source, between the diaphragms 2 and 3, through the pipe 14, filling all of the compartments up to the overflow pipes 15 and 16. The leather, skivings or waste is then deposited in the chamber 6 and the current turned on. The action of the electricity upon the sodium chlorid is to decompose the latter forming sodium hydrate in chamber 6 and chlorin in chamber 4. This sodium hydrate then acts upon the leather under the influence of the electrical currents to soften and swell the same and open up its pores, thereby quickly placing it in condition to be subsequently acted upon with the maximum effect by its bath in chlorin water to remove the tanning agent. After subjecting the leather to this bath for a suitable length of time until the pores are sufficiently opened the same is then removed by suitable means and passed through the squeeze rolls 17 into the tank 18 where it is thoroughly

washed in clean water and freed from all traces of the caustic soda. The leather is then removed to the tank 19 where it is subjected to a bath of chlorin water drawn from the overflow 16 from the compartment 4 of tank 1. Chlorin gas is also forced into this water from the covered compartment 4 through the pipe 20 by means of a pump 21, or other suitable means, where it is left until the leather is found by examination to be entirely freed from the tanning agent, after which the mass is removed by suitable means and squeezed in rolls 22 and deposited in tank 23 where it is again thoroughly washed, removing all traces of any remaining chrome or tanning material, after which it is squeezed in the rolls 24 where it is ready to be made into glue by boiling according to the usual methods. By this process no neutralizing acids are required.

A feature of importance in my improved process of making glue from leather is that by this method I always produce a clear, colorless glue due to the well known action of chlorin as a bleaching agent, which action takes place in tank 19 in this process, without in any way affecting the strength and adhesive qualities of the glue.

Another important feature of this process is that the overflow of caustic soda from chamber 6 through pipe 15 is conducted to a storage tank 25 and subsequently pumped as desired into tank 26 through pipe 27, also the chlorin water from tank 19 containing the chrome salt in solution is conducted through pipe 28 into said tank 26, where it mixes with the caustic soda, the result being immediate precipitation of the chrome or tanning agent, thereby leaving in the tank the mixed sodium hypo-chlorite and chlorid of sodium solution which is pumped back through pipe 29 into storage tank 13 to be conducted as desired through supply pipe 14 and used over again. It will therefore be seen that by my improved process of de-tanning leather that the chrome or tanning agent is recovered to be used over again for tanning or other purposes and also that the chlorid of sodium is converted

back into substantially its original state suitable to be used over again. Therefore by this method I not only avoid any material waste of raw material or of de-tanning agents, but during the process I obtain as a by-product the tanning agent or chrome, which is of considerable commercial value.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An improved process of treating leather for the manufacture of glue and gelatin, consisting in treating the leather in a solution of sodium chlorid by electrolysis, then washing and treating the mass to a bath of chlorin and again washing the leather and treating it in the known manner.

2. An improved process for treating leather for the manufacture of glue and gelatin consisting in treating the leather to a bath of sodium chlorid and causing an electric current to pass through said bath, then washing and treating the leather to a bath of chlorin fluid and again washing the mass and treating in the manner known.

3. An improved process for de-tanning leather consisting in treating the leather in a bath of sodium chlorid by electrolysis thereby decomposing the solution into caustic soda and chlorin, said leather being subjected to the action of the caustic soda thus formed, then washing the leather and treating the same to a bath of chlorin, again washing the leather to be subsequently treated in any manner desired, then mixing the caustic soda drawn from the electrolyzing bath with this chlorin fluid containing the chrome or tanning agent in solution, thereby causing the precipitation of said tanning agent and forming sodium hypo-chlorite, NaClO , and sodium chlorid, NaCl , to be used over again as a de-tanning agent.

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

HENRY G. HALLORAN.

Witnesses:

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