UNITED STATES PATENT OFFICE.

JAMES R. PRINGLE, OF GLOUCESTER, MASSACHUSETTS.

PROCESS OF MAKING GLUE AND CHLORINE FROM SALTED FISH-SKINS.

SPECIFICATION forming part of Letters Patent No. 362,903, dated May 10, 1887.

Application filed January 6, 1887. Serial No. 223,528. (No specimens.)

To all whom it may concern:

Be it known that I, JAMES R. PRINGLE, a citizen of the United States, and a resident of Gloucester, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in a Process of Treating Fish-Skins, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a process of desalting fish-skins for making chlorine and glue, as hereinafter described and claimed.

The object of the invention is to desalt the fish-skins in such a manner as to make glue and chlorine at one time and in one operation.

The skins are first ground up fine in a grinder constructed for the purpose. Secondly, the skins are placed in a boiler containing a mixture of sulphuric acid, (H_2SO_4,) manganese dioxide, (MnO_2,) and water. This mixture is then heated to liberate the chlorine and other substances contained in the salt in great quantities, which may be collected by displacement, or a solution of the gas may be obtained. In about an hour the salt has been entirely dissolved into chlorine and other substances and has entirely passed away, so that not a trace of it remains if the process has been properly conducted. On the top of the boiler is an air-pump, and at this stage of the process the air is entirely exhausted and the contents of the boiler kept at a little above the boiling-point for over two and one-half hours. The water is then drawn off, after which the glue and solid portions remaining are passed between two rollers to press out the glue which may remain. In grinding the skins up fine the fiber is loosened and the salt comes out in fine crystals, thus rendering it easier to desalt the skins and produce the glue more quickly, and gives a larger yield than by any other known method.

By this method of desalting the skins both time and labor are saved, as both glue and chlorine are made at one operation, and every particle of salt is removed from the skins.

By the method heretofore practiced for desalting fish-skins, the whole skins were placed in a tank and allowed to remain in water about twenty-four hours, to dissolve as much of the salt as will dissolve in that space of time, and then make the glue. This does not remove all of the salt, as it is so incorporated with the fiber of the skin that the latter has to be broken up fine in order to remove all of the salt. Besides, I have found that the process of desalting fish-skins by allowing them to remain in water serves to drive the salt into the skins faster than before, as the salt dissolves in the water and makes a strong brine. By my process I accomplish in one-half hour more effectually than has been done that which has heretofore taken from twenty-four to thirty-six hours to perform.

The process of boiling the skins in a vacuum I find will extract the glue from the skins in much less time than by any other known operation, and from start to finish can be completed in less than five hours, other methods requiring from thirty-six to forty-eight hours.

Salt having a great affinity for water, if any salt is allowed to remain in the glue, as is the case when the glue is made by the old process, the glue is weakened, and articles put together with it drop to pieces in course of time.

Another advantage is the cleanliness and healthfulness of the operation of producing the glue. By the other and older methods manufacturers are compelled to locate far from all residences and far away from railroad facilities, &c., thus necessitating great expense in the matter of teaming supplies, skins, and other articles. Chlorine is a great disinfectant, and the operation of boiling in a vacuum allows no smell to escape. Therefore the works may be erected near the supply of skins and near railroad and freight facilities in a town.

Other methods require enormous quantities of water, much time and labor, and are very complicated. My method requires but a single machine, does the entire business better, more quickly, is clean, and produces a larger yield from the same quantity of skins than can be produced by the methods heretofore practiced.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

The herein-described process of making glue and chlorine from salted fish-skins, consisting in, first, grinding the salted fish-skins up fine in a grinder; secondly, placing the fish-skins thus prepared in an air-tight boiler containing

a mixture of sulphuric acid, (H_2SO_4,) manganese dioxide, (MnO_2,) and water; then heating the mixture to liberate the chlorine and other substances contained in the salt; next exhausting the air from the boiler by means of an air-pump; then maintaining the contents of the boiler at a temperature a little above the boiling-point for about two hours and a half, and then drawing the water off and removing and passing the glue and the solid portion remaining between two rollers to press out the glue, substantially as specified.

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

JAMES R. PRINGLE.

Witnesses:

CYRUS STORY,

ALEXANDER STEWART.