UNITED STATES PATENT OFFICE.

BRUNO TRENCKMANN, OF BERLIN, GERMANY.

LEATHER.

SPECIFICATION forming part of Letters Patent No. 653,829, dated July 17, 1900.

Application filed November 10, 1899. Serial No. 736,531. (Specimens.)

To all whom it may concern:

Be it known that I, BRUNO TRENCKMANN, merchant, a subject of the German Emperor, residing at Burgstrasse 1d, in the city of Berlin, Germany, have invented a new and useful Improvement in Leather, of which the following is a specification.

The present invention relates to the manufacture of leather, its object being to produce a leather which shall be much thinner and less bulky than leather heretofore manufactured and adaptable to purposes for which the latter was not applicable on account of its thickness, weight, stiffness, and permeability.

With these objects in view my invention involves the employment as the raw material of the external or peritoneal membrane or coating which envelops the intestines and preferably the peritoneal outer coating of the cæcum or blind gut of neat cattle and other animals of the bovine species. I obtain the best result with the outer peritoneal or serous membrane, which envelops or covers the cæcum of the ox, bull, or bullock, which membrane in an untanned and untawed condition is used and known as "gold-beaters' skin." This membrane, after being stripped from the intestine which it covers and while in a fresh condition, is cleaned of its fatty substances and adhering foreign matters or impurities by any known or desired method, such as dipping in a weak potash solution and scraping with a blunt knife. It is then converted into leather by tanning or tawing, for example, in the following way: I dissolve two hundred grams of alum and twenty-five grams of salt in one liter of hot water. I then mix five hundred grams of wheat-flour with two liters of warm water in such a manner as to prevent the formation of lumps, as will be understood. I then add the latter to an alum solution (or vice versa) gradually while stirring energetically, so as to obtain a smooth somewhat-thick liquid bath. One hundred of the membranes are then laid into the bath thus prepared and left therein for about ten hours, being stirred or tumbled from time to time, as is well understood. The tanning-bath should be kept warm (about 27° centigrade) during the tanning operation. Thereupon the skins are removed and hung up loosely to dry, whereupon they are curried or smoothed with suitable tools—such, for example, as a curved blunt knife, over whose edge they are drawn back and forth all over the surface until smooth.

It will be advantageous and lead to better results to add to the above bath one hundred grams of yolk of eggs.

The above process, which is well known for the tanning or tawing of hides, is cited only as an illustration of the many methods of tanning or tawing which may be employed for carrying out the process leading to the new product embodying my invention. I have found it to lead to good results.

While it is by far preferable to clean the membrane after it is stripped, a tanned or tawed membrane may be obtained even if such cleaning is not resorted to; but such product will be inferior in quality.

The leather from the intestinal membrane or coat produced as above after being bleached has the appearance of ordinary tawed glove-leather or kid. It is, however, essentially distinguished from such glove-leather by the absence of pores, whereby it is rendered impervious to moisture and gases and by its extreme thinness, coupled with great toughness or strength of fiber. Unlike gold-beaters' skin, it may be sewed, the same being firm and the leather closing tightly around the thread. It is, moreover, distinguished from gold-beaters' skin by its extreme pliability and softness.

The properties above stated render this leather peculiarly suited for the manufacture of gloves for those whose occupations render it necessary to effectively protect the hands against infectious matter and poisonous solutions or baths, the extreme pliability and softness of the same permitting a free movement of the fingers and its thinness giving the sense of touch full play. Unlike the gold-beaters' skin this new leather may be boiled without injury, so that a surgeon's glove made from the same may be dipped into a formaldehyde solution and then boiled for the purpose of cleaning, disinfecting, and sterilizing the same. This is a matter of the utmost importance.

This new leather is applicable to a great variety of purposes in the useful and fine

arts. Thus, for example, it is exceedingly well adapted for ink-ribbons. As a covering for balloons for signaling, military, and other purposes it has been found superior to the ordinary prepared silk covering by virtue of its greater lightness, less bulk, extreme pliability and softness, and its imperviousness. It is admirably adapted to being dyed in various colors, and I have obtained beautiful and brilliant color effects. Such dyed leather on account of its thinness may be advantageously used in the place of ornamental papers.

While I am aware that it has already been proposed to tan the intestines of animals, it is not known to me that any membrane covering the intestines, and in particular the membrane I refer to, has ever been tanned or tawed. Indeed, before my discovery and invention it was always believed that such a membrane, on account of its extreme thinness and delicacy, could not undergo the process of tanning or tawing. The above process of mineral tanning is cited only as an example, since I have found that any known process of tanning or tawing would result in a conversion of the said membrane into leather, it being understood, of course, that the amount of the ingredients of the bath must be changed in proportion to the decreased weight of the membrane as compared with the weight of a hide. While good results may be obtained with vegetable tanning, the best results thus far have been attained only with mineral tanning.

While I have herein described a process of subjecting the membrane described to mineral tanning in order to fully explain my invention, I do not claim such process in this application, since it is covered in my copending application, Serial No. 21,231, filed June 22, 1900.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. As an article of manufacture, leather made from the outer peritoneal intestinal coating, substantially as described.

2. As an article of manufacture the mineral-tanned outer peritoneal membrane of the cæcum or blind gut, substantially as described.

3. As an article of manufacture, the mineral-tanned outer peritoneal membrane of the bovine blind gut, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BRUNO TRENCKMANN.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.