

UNITED STATES PATENT OFFICE.

ALEXANDER McLENNAN, OF LONDON, ENGLAND.

TREATMENT OF LEATHER WITH INDIA-RUBBER.

970,734.

Specification of Letters Patent. Patented Sept. 20, 1910.

No Drawing.

Application filed September 28, 1909. Serial No. 519,981.

To all whom it may concern:

Be it known that I, ALEXANDER McLENNAN, a subject of the King of Great Britain, residing in London, England, have invented certain new and useful improvements in the Treatment of Leather with India-Rubber, of which the following is a specification.

This invention relates to an improved process for the treatment of leather with rubber.

In carrying the invention into effect the leather is first subjected to any well known fat liquoring process which has the effect of not only softening it so that it can be more conveniently handled or worked, but at the same time should the leather be dry causes the pores of the leather, which have contracted to expand. The hides after the liquoring treatment are secured to the drying frames from which they are removed when dry and buffed upon the flesh side in order to raise the fiber. After the latter treatment the hides are, treated with a solution, designed to kill the fats or oils in the leather and hereinafter referred to as a clarifying solution, in which they may be immersed, or which solution may be sprayed or otherwise applied to them, and after the application of the solution they are placed in a hermetically closed vessel in which they remain for a suitable period according to the weight and character of the hide, which period with hides of average weight will be about 48 hours. The clarifying solution to which the hide is first subjected may be composed of the following ingredients in about the proportions specified, the said proportions and ingredients however being modified to suit the quantity or character of the hides. The proportions given below are however such as I have found to be suitable for chrome tanned hides of average weight and would be sufficient in quantity to treat from 15 to 20 of such hides:—powdered sulfur, 1 lb., carbon bisulfid 4 lbs. The mixture is allowed to stand for a period of 48 hours with occasional agitation, at the end of which period it is strained, and to the liquid residue is added a second mixture adapted to precipitate the undissolved sulfur and also "kill" or dissolve out fats. The following mixture is one which I have found very suitable for this purpose, but I do not confine myself to its use. Sulfuric ether

10 oz., petroleum benzin 6 oz., kerosene 4 oz., rectified spirit of turpentine 4 oz. These quantities are those suitable for addition to 5 lbs. of the carbon bi-sulfid solution for the treatment of average hides. When lighter hides such as rabbit skins are being treated I may omit the kerosene and turpentine. Two or three pints of the above combined mixture is taken and to it is added 5 gallons of benzin the liquid thus formed being employed to treat the hides in the manner before stated. As it is advisable that only the smallest particles of sulfur be held in suspension in the liquid so that the pores of the hide shall not become choked up, the liquid may be again subjected to the straining operation. After this treatment the hides are removed and dried by heat, and when dry and while still warm are treated with a solution containing rubber.

While the preparation of the aforesaid rubber solutions may be effected in any convenient manner I find in practice that it is convenient to prepare a stock solution of the rubber which may be prepared by dissolving 1 lb. of Para rubber in from 1 gal. to 2 or more gals. of naphtha according to the condition or purity of the rubber. Obviously other rubber than Para rubber may be employed but when such other rubber is used it may be necessary to increase either the proportion of the rubber or of the naphtha. Instead of naphtha any other suitable rubber solvent may be used, such for example, as carbon bisulfid or benzol.

In preparing the first bath from the stock solution I ordinarily take equal parts of the rubber solution and benzin, the hide being treated therewith as aforesaid; the proportions of the rubber and benzin will, however, depend upon the condition of the stock solution.

The hides while in the rubber solution are heated and with this object the vessel may be jacketed so that steam, water, or other means may be employed and the temperature of the said vessel regulated. The temperature may range from 80° to 100° Fahr. and the period of treatment may extend from 2 to 5 days in each bath. It will, however, be evident that the weight, nature and origin of the hides must in all cases be considered and the treatment modified accordingly.

The hides during the foregoing treatment

should be removed from time to time and worked by hand, or the liquor in the vessel may be mechanically agitated, or the hides kept moving in the vessel or any other means employed so that the hand working may be dispensed with.

The leather is next subjected to a second treatment with rubber, in combination with a sulfur solution. The second rubber solution should be of a somewhat more viscid nature, that is to say, it should contain a greater quantity of rubber. For the second bath I again dissolve one part of powdered sulfur in about four parts of carbon bisulfid and allow it to stand as before. To this there is again added a mixture adapted to precipitate the undissolved sulfur and there is further added chlorid of sulfur. The following gives what I have found to be a very suitable mixture. 1 part powdered sulfur dissolved in 4 parts carbon, bisulfid 5 lbs., sulfuric ether 12 oz., benzol 10-12 oz., coal tar naphtha 10 oz., petroleum benzin 6 oz., chlorid of sulfur 10 oz. About 1½ gallons of this are added to every 50 gallons of a rubber solution which should contain more rubber than the first bath, a suitable composition of such rubber solution being 4 parts of benzin to 5 parts of the stock rubber solution.

I may in some cases dispense with one or more of the above specified precipitants but in this case the quantity of the remaining precipitant or precipitants would be proportionately varied. I find however as aforesaid that the above combination gives the best results.

After the treatment last referred to the hide is drummed or otherwise mechanically treated with a final rubber solution in order to "stuff" the hide and according to the weight of the hide the stuffing process occupies from 12 to 24 hours.

In the case of the final drumming, or other treatment as aforesaid, I employ a rubber solution composed of 1 part stock solution to 2 parts benzin, and to every 10 gallons of said rubber solution I add 4 pints of the chlorid of sulfur solution just above described. As aforesaid, however, the quantities of the various ingredients, may be altered as may be found necessary to suit the particular requirements of each case so far as the finished product is concerned and having regard to the weight and character of the hides being treated. The hides when taken away from the drum should be placed upon a suitable surface and "slicked" or scraped to remove the surface rubber, the surplus rubber being finally removed by rubbing with a cloth dipped in benzin. The hide after the removal of surplus rubber is hung up and when partly dry is rolled completing the treatment.

Having now particularly described and

ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A process for the treatment of tanned leather consisting in treating the softened and dried leather with a clarifying solution containing powdered sulfur dissolved in carbon bisulfid, to the liquid residue of which, after standing, is added a mixture adapted to precipitate any undissolved sulfur and dissolve any fats; then after drying treating them with a heated solution containing india-rubber dissolved in a suitable solvent, the hides being worked during the treatment; afterward subjecting to a second heated bath also containing rubber in solution together with a solution of powdered sulfur, carbon bisulfid, chlorid of sulfur together with sulfur precipitating substances, the hides being worked during the treatment; and finally drumming or agitating the hides in a third solution containing rubber in solution together with powdered sulfur, carbon bisulfid, chlorid of sulfur and sulfur precipitating substances; the surplus rubber adhering to the hide being then slickered off and the hide finished with a cloth dipped in a rubber solvent; the treatment being finally completed by rolling the partially dried hide.

2. A process for the treatment of tanned leather consisting in treating the softened and dried leather with a clarifying solution containing powdered sulfur dissolved in carbon bisulfid, to the liquid residue of which, after straining, is added sulfuric ether, benzol, naphtha benzin, kerosene, rectified spirit of turpentine; then after drying, treating them in a sealed vessel with a heated solution containing india-rubber in a suitable solvent, the hides being worked during the treatment; afterward subjecting to a second heated bath also containing rubber in solution together with a solution of powdered sulfur, carbon bisulfid, chlorid of sulfur together with sulfur precipitating substances, the hides being again worked during the treatment; and finally drumming or agitating the hides in a third solution containing rubber in solution together with powdered sulfur, carbon bisulfid, chlorid of sulfur and sulfur precipitating substances; the surplus rubber adhering to the hide being then slickered off and the hide finally finished with a cloth dipped in a rubber solvent; the treatment being finally finished by rolling the partially dried hide.

3. A process for the treatment of tanned leather consisting in treating the softened and dried leather with a clarifying solution containing powdered sulfur dissolved in carbon bisulfid, to the liquid residue of which, after straining, is added sulfuric ether, benzol, naphtha, benzin, kerosene, rectified spirit of turpentine; then after drying,

treating them in a sealed vessel with a heated rubber solution; the hides being worked during the treatment; afterward in a sealed vessel with a heated solution containing india-rubber in a solvent, together with powdered sulfur and bisulfid of carbon, to the liquid residue of which, is added, sulfuric ether, benzol, naphtha, benzin and chlorid of sulfur, the hides being again worked during the treatment; and finally being drummed or agitated in a solution containing india-rubber in a suitable solvent together with carbon bisulfid and a chlorid of sulfur solution containing sulfur precipitating substances; the surplus rubber adhering to the hide being then slickered off and the hide finished with a cloth dipped in a rubber solvent; the treatment being finally completed by rolling the partially dried hide.

4. A process for the treatment of tanned leather consisting in treating the softened and dried leather with a clarifying solution containing powdered sulfur dissolved in carbon bisulfid, to the liquid residue of which, after straining, is added sulfuric ether, benzol, naphtha, benzin, kerosene, recti-

fied spirit of turpentine; then after drying, treating them in a sealed vessel with a heated rubber solution the hides being worked during the treatment; then treating them in a sealed vessel with a heated solution containing india-rubber in a solvent, together with powdered sulfur and bisulfid of carbon, to the liquid residue of which is added sulfuric ether, benzol, naphtha, benzin and chlorid of sulfur, the hides again being worked during the treatment and finally being treated with agitation in a solution containing india-rubber in a solvent, powdered sulfur and carbon bisulfid, the liquid residue of which after straining having added to it, sulfuric ether, benzol, naphtha, benzin, and chlorid of sulfur; the surplus rubber adhering to the hide being then slickered off and the hide finished with a cloth dipped in a rubber solvent; the treatment being finally completed by rolling the partially dried hide.

ALEXANDER McLENNAN.

Witnesses:

JOHN H. JACK,
REGINALD T. GODFREY.