

UNITED STATES PATENT OFFICE.

HENRY W. ADAMS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TREATING LEATHER.

Specification forming part of Letters Patent No. **171,753**, dated January 4, 1876; application filed September 27, 1875.

To all whom it may concern:

Be it known that I, HENRY W. ADAMS, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Process of Treating Leather, which is fully set forth in the following specification; the object of which is to increase its weight, its firmness, and durability, with special reference to a lighter class of leather, but adapted to improve leather of all grades and weights.

The object of my invention is to improve the quality of leather by giving weight, firmness, toughness, and durability to skins and hides of animals by means of a new and improved process of manufacturing and tanning the same.

Leather is a combination of tannic acid, or any other substance which is capable of precipitating gelatine, with the gelatine of the tissues of skins and hides of animals. I, therefore, first thoroughly tan the skins and hides in any of the ordinary ways now known and practiced. I then soak them, when dry or partially so, in a solution of gelatine, and retan them in any tanning-liquor which is capable of precipitating the same. This produces a new leathery compound in the pores of skins and hides, and unites it firmly to the already tanned tissues, by which means the whole body of the leather becomes greatly improved in thickness, firmness, strength, and durability. The skins of small animals, such as deer-skins, goat-skins, sheep-skins, and calf-skins, are thus rendered more valuable and suitable for new and important uses. Sole-leather is also rendered heavier, thicker, and more durable by this method of tannage; besides, the thin and elastic parts of the skins and hides of all animals are capable of being thickened up into leather as solid and firm as the better portions of the same. Sheep-skins, especially, may be made to possess a solidity, and smoothness, and firmness of surface so nearly approximating to calves' skins as not to be easily distinguished from them.

Skins and hides may first be tanned in alum and salt, or other astringents, and then filled with a solution of gelatine and retanned in the same tanning-liquors, or in those stronger and better. By this means the skins and hides are tanned quick, and the pores are opened to receive the gelatinous solution; then

the stronger bark liquors more readily saturate the same and precipitate the liquid gelatine soaked into them, and the new leathery compound is firmly and permanently united into one homogeneous body. My preference is to tan goat-skins, sheep-skins, and calf-skins, in the first instance, with sumac, and then partially dry them, and soak them in gelatine, and retan them with oak-bark liquor at the common temperature, without the aid of any chemicals. The gelatine which I employ for this purpose I make from the ordinary sources of glue. I prefer to take, however, the legs, and pates, and trimmings of skins and hides, and boil them into a tolerably thick solution. This solution I keep liquid in a manner not necessary to mention in this specification. When the tanned or partially-tanned skins and hides are immersed in it, it should be only milk-warm. It should be a thick solution, in order that the dry or partially dry skins and hides may soak up a considerable quantity. As soon as they are thoroughly saturated, they should be immediately put into a strong solution of tanning-liquor, at the common temperature, without chemicals, and thoroughly tanned in the usual way. Oak-bark liquor in strong solution I greatly prefer for this purpose. If one treatment is not sufficient, a second or even a third saturation and tannage of the same skins and hides may be made. It is possible in this way to make leather of any required thickness and strength.

I am aware that gelatine has been employed in the process of tanning raw skins and hides, but only concurrently with the said tanning process; but this use of gelatine I believe retards the tanning process, by coating the untanned tissues with the same, and thus interposing a foreign body between the tannic acid and the gelatine of the said tissues. This prevents contact of the said acid and tissues, and hinders the tanning of the same; besides this, a great loss of tannic acid and gelatine results from this use of gelatine during the process of tanning raw skins and hides. This leathery compound, thus prematurely made, will not adhere to the untanned tissues and make firm leather. My process is contradistinguished from this use of gelatine in this respect. I first tan in a thorough manner, and

by any of the known processes, my raw skins and hides. I then take these thoroughly-tanned skins and hides, which now constitute marketable leather, and soak them full of gelatine in a fluid condition, and, when saturated and partially dried, immerse them in a bath of tannic acid, and thus fill the pores of the said leather with a leathery compound, which unites with the already tanned tissues, and produces one homogeneous body. This process may be repeated as many times as may be desirable, to give any degree of thickness, weight, firmness, and durability to the leather. Thin leather is thus rendered more impervious to water, and sheep-skins saturated with gelatine manufactured from the refuse of tougher and firmer skins and hides are greatly improved. I add great weight and value to sole-leather in a short time by this process.

The refuse portions of skins and hides may thus be converted into good leather, and added to the already tanned parts. I can treat leather by my process which has been tanned by others and put into the market for sale.

Having thus explained the nature and operation of my invention, what I claim, and desire to secure by Letters Patent, is—

The improved process of treating leather, consisting of saturating tanned skins and hides with a gelatinous solution, and then immersing them in a bath of tannic acid, all substantially as and for the purpose set forth.

HENRY W. ADAMS.

Witnesses:

S. S. BROOKS,
ROBERT WATKIN.