

UNITED STATES PATENT OFFICE.

STEPHEN M. ALLEN, OF WOBURN, MASSACHUSETTS.

IMPROVED LEATHER-PAPER.

Specification forming part of Letters Patent No. 39,371, dated August 4, 1863.

To all whom it may concern:

Be it known that I, STEPHEN M. ALLEN, of Woburn, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Method of Making Leather-Paper; and I hereby declare the following to be a clear, full, and exact description of the same.

All attempts previous to this my invention at making leather-paper which would answer the purposes intended seem to have failed for the want of a proper mechanical and chemical combination or union of the elements entering into the composition and necessary to make a factitious leather which would be water proof, and yet offer that degree of elasticity, tenacity, and hardness as will adapt it to a substitute for leather. Thus the solution of tannin in its action on the gelatinous matter in the leather of which scraps are used for the purpose of producing leather-paper did not only affect the chemical composition of the hide, but destroyed its physical properties to an extent that its fiber could no more be made to unite or combine with ordinary vegetable fiber, hence a want of tenacity which rendered it unfit to be used for inside soling and heel-ing purposes. By my process of making leather-paper I have overcome these difficulties and produced an article more elastic, tough, and less soluble than any heretofore made; and my said process is as follows:

I take ordinary leather scraps from the tannery, or old leather scraps of any kind—that is to say, such as shall have been used and become a waste—and I subject it, after being properly cut up, first to a steep in warm water not exceeding 160° in a proper retort or receiver, and allow it to remain in water for two hours, more or less, according to circumstances, after which the water is drawn off and the leather scraps are duly rinsed. I then steep the same in a weak solution of caustic soda, or any other solution producing like result—*i. e.*, the neutralization in part of the effects of the tannin and the restoration to the animal fiber of some of its original softness and elasticity. I then prepare a proper quantity of vegetable fiber—such as flax, hemp, or other long-stapled fibrous substances—by breaking and cleaning the straw of the same with an ordinary flax or hemp break before the fiber has been rotted, and without the albuminous and glutinous matter being extracted. I then draw it down or tear it up into proper lengths most suitable for the mixture with the leather scraps before prepared. I then grind the animal and

vegetable fiber together until the same is properly pulped, when it is ready to be converted, in the ordinary way of making paper or paste or straw board, into a leather-paper, which I denominate “fibrilia leather.” It is then fit to be used in many ways as a substitute for the ordinary sole-leather. The effect of the steeping of the animal fiber in warm water is to dissolve some of the soluble elements, which cannot be removed after application of an alkaline solution or other like chemical agent, but which, unless extracted, would be coagulated and retained in the leather, while the effects of the alkaline steeping or its equivalent treatment is to eliminate from the leather certain other substances that could not be dissolved by pure water, but which it is also necessary to remove preparatory to and for the purpose of effecting the union with the vegetable fiber.

The object I have in view in using the fiber of flax, hemp, or any other fiber of like nature unrotted is to preserve in the fiber precisely that element which is present in the animal fiber of the leather, and which is needed to make it unite in paper when put through the proper process, and to secure its solidity, tenacity, and flexibility, as well as a proper degree of insolubility in water. The tearing of the fiber longitudinally has for its object to separate the same, so that the ends of the reduced fiber shall be stranded, whereby they will more readily unite with the animal fiber. By proceeding in the manner described a factitious leather sheet is obtained which is more like the original skin of animals when tanned than can be done in any other way.

Having thus described my process, I claim—

1. As a new article of manufacture, a factitious leather or a leather-paper, which I denominate “fibrilia leather,” consisting of leather scraps and vegetable fiber combined, substantially in the manner hereinbefore set forth.

2. Combining leather scraps steeped in warm water previous to being immersed in alkaline solutions with the unrotted and reduced fiber of flax, hemp, or other like vegetable fiber, substantially as hereinbefore described, and for the purposes set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

STEPHEN M. ALLEN.

Witnesses:

JAMES S. SAVAGE,
L. BURNETT.