

# UNITED STATES PATENT OFFICE.

HIRAM L. HALL, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO JAMES C. STIMPSON.

## IMPROVEMENT IN PROCESSES FOR MAKING JAPANED LEATHER.

Specification forming part of Letters Patent No. **12,226**, dated January 9, 1855.

### *To all whom it may concern:*

Be it known that I, HIRAM L. HALL, of Beverly, in the county of Essex and State of Massachusetts, have discovered certain new and useful Improvements in the Process of Manufacturing Japaned Leather, by which improvements an article of manufacture much superior to anything heretofore produced is secured; and I do hereby declare that the following description is a full and exact specification of the said process, wherein I have set forth the distinguishing features of my said improvements, together with such parts as I claim and desire to have secured to me by Letters Patent.

In the preparation of japaned leather by any of the modes hitherto practiced it has been the custom to apply the varnish to the leather as it comes from the hands of the tanner, and then subject the leather and the several coats of varnish, as they are successively applied, to as high a degree of heat as they will bear. The heat, applied without any previous preparation of the leather save that of tanning, has had the effect to rot or injuriously affect the fiber of the leather, and in order to measurably guard against the rotting effect the degree of heat applied has almost always been kept within 160° Fahrenheit, which does not sufficiently indurate the varnish to make it stand every variety of climate.

My improvements have mainly for their object the preparation of the leather after it has been tanned, so that it can be toughened to endure a much greater degree of heat than 160° in the process of japaning, even that of 230° and upward, which enables the varnish applied to endure every possible climate, while the fiber of the leather is not injuriously qualified. I effect this desideratum of protecting the fiber of the leather from the effects of the heat during the process of manufacture by applying to the leather a composition composed of the following ingredients: two ounces sulphur, freed from its acid, or, as a substitute for sulphur, two ounces of sulphate of potash; one-half ounce alum; one-half ounce borax. These substances are dissolved in one quart of water.

The leather is then thoroughly saturated with the liquid thus obtained, by immersion or otherwise—if by immersion, to remain in the liquid from one to two hours, the time varying with the thickness of the leather to be saturated. The leather is then dried in any convenient manner. The method of drying which I have found the most successful is to place the leather in a revolving cylinder constructed of fine wire meshes. The revolutions of this cylinder and the centrifugal force obtained thereby drive out the water, work over the leather, and have the same effect to make the leather pliable as would be obtained in passing it through a common boarding-machine, such as is used by manufacturers of japaned leather. When the leather is nearly dry it is stretched, as in the usual process of manufacturing such leather, and is then ready to receive the varnishes which are usually applied, and which do not require description, as they are well known to manufacturers of patent-leather. After the leather has been sufficiently coated it is placed in an oven stretched upon suitable frames or suspended in the same. This oven is arranged so that the heat can be regulated at pleasure, and should be gradually heated from a low degree to a temperature of 230° or 250° Fahrenheit. The leather is kept in the oven from six to ten hours, until the composition is completely matured and the surface perfectly dry.

In the above-described composition for preparing the fiber of the leather the borax may be dispensed with, as it is not absolutely necessary for producing the effect, but as it prevents the recrystallization of the sulphur and alum I have found it most advantageous to use it.

The ingredients of the composition for protecting the fiber of the leather from the effects of the heat are such as we have found to be the best adapted to the purpose; but any substances which have the same chemical properties as those above stated may be substituted without varying the essential principles of my discovery.

Having thus described my improvements, I shall state my claims as follows:

What I claim as my discovery or invention, and desire to have secured to me by Letters Patent, is—

The improvement in the process of manufacturing patent or japanned leather which consists in applying to the leather the composition hereinabove described, (prepared either with or without borax,) and then submitting it, with

the varnish coatings thereon, to a high degree of heat, whereby the surface of the leather is so matured as not to be affected by any temperature or change of climate.

HIRAM L. HALL.

Witnesses:

SAMUEL ADAMS,  
HENRY B. CLARK.