

# UNITED STATES PATENT OFFICE.

EMIL POLLAK, OF VIENNA, AUSTRIA-HUNGARY.

## PROCESS OF THE MANUFACTURE OF ARTIFICIAL LEATHER.

SPECIFICATION forming part of Letters Patent No. 270,475, dated January 9, 1883.

Application filed November 29, 1882. (No specimens.) Patented in Germany November 15, 1881, No. 18,662; in France December 5, 1881, No. 146,202; in Italy December 21, 1881, 13,649/186, and in Austria-Hungary May 28, 1882, No. 9,192 and No. 21,245, and June 1, 1882, No. 9,193 and No. 21,244.

*To all whom it may concern:*

Be it known that I, EMIL POLLAK, of the city of Vienna, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Process of the Manufacture of Artificial Leather, (for which Letters Patent have been granted to me by the governments of the following countries, viz: Germany, numbered 18,662, dated November 15, 1881; France, numbered 146,202, dated December 5, 1881; Austria-Hungary, numbered 9,192 and 21,245, and 9,193 and 21,244, dated May 28, 1882, and June 1, 1882, respectively; and Italy, numbered 13,649/186, dated December 21, 1881,) of which the following is a specification.

Leather scraps have been used heretofore in the manufacture of imitation leather, but without great success, as the product obtained was not capable of resisting the influences of moisture, and had therefore only a limited application.

The object of this invention is to furnish an improved process for making artificial leather from leather scraps and waste, by which the leather becomes impervious to moisture and insoluble, so that it can be employed in the manufacture of boots and shoes as sole, heel, or welt leather; and the invention consists, first, in treating the leather waste or scraps with alkalies and alkaline salts, so as to produce the saponification of the oil or fat contained therein, then mixing the same with a suitable paste composed of starch, gum, and alum, and then working the mass into sheets, which are then soaked in a solution of soda soap and exposed to hydraulic pressure.

In carrying my invention into practice, the leather scraps and waste which are to be used in the manufacture of my improved artificial leather are first assorted, and those which had been dressed or treated with oil or grease separated from those not dressed with oil. The former are placed into a bath composed of ninety-five parts of water and five parts of soluble glass (potash or soda glass) of 35° Baumé, or into a bath containing a proportionate quantity of soluble glass of 50° Baumé, as desired. The leather scraps or waste are allowed to re-

main in this bath, which may be cold or lukewarm, from one-quarter to half an hour, according to the quantity of grease or oil contained in the scraps. The scraps are then drained off and placed into a solution of five parts of sulphate of zinc in five hundred parts of water. In this solution they are soaked for about half an hour. They are then pressed dry and ready for further treatment. In place of the soluble glass, any of the alkalies or any of the salts with alkaline reaction may be employed, and in place of sulphate of zinc, any salt the base of which forms an insoluble combination with acids may be used. The so-prepared leather scraps or waste are now mixed with a paste that is formed by a thin solution of starch, to which solution, while in a boiling state, a small quantity of gum-arabic is added, and also to about twenty parts of the starch solution one part of a solution of alum consisting of five parts of water to one part of alum. The leather scraps are put into the starch and alum solution until they are thoroughly saturated. They are then, piece after piece, covered with a concentrated paste solution and placed into flat molds in layers, one on top of the other, and beaten with hammers into sheets. The sheets thus formed are placed into a vessel containing a solution of soda soap, in the proportion of about one part of soda soap to two parts of water, and after having been well soaked therein they are subjected to hydraulic pressure, and finally dried, after which the sheets are ready for use.

By the process above described the oil and grease contained in the leather scraps are saponified and the soluble soap transformed into an insoluble one, which dispenses with the removal of the grease from the scraps and produces the utilization of the grease in the formation of the insoluble soap, by which the leather is rendered water-proof.

The following chemical process takes place in the process before described: The sulphuric acid of the alum combines with the soda of the soap, while the stearic and oleic acids, ( $\frac{C_{18}H_{36}O_2, \text{ stearic acid}}{C_{18}H_{34}O_2, \text{ oleic acid}}$ ) which were combined

in the soap with the soda, become free to enter a new combination with the argillaceous earths of the alum, the hydraulic pressure favoring the most direct mechanical combination of the two salts. Consequently the leather becomes thoroughly impregnated with sebate of alumina, by which it is protected against moisture so as to be perfectly water-proof.

When leather scraps which contain no grease or oil are employed the saponification of the grease is dispensed with, and the scraps are mixed directly with the thin paste of starch and alum, and are then worked up with thick paste into sheets and treated in the same manner as the oil-dressed scraps, and finally exposed to hydraulic pressure, forming a tough and water-proof leather that can be used extensively in the arts.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The herein-described process of making artificial leather from leather scraps and waste,

which consists in saponifying the grease or oil contained therein by means of alkalies and alkaline salts, then mixing them with a starch and alum paste and forming the mass into sheets, then treating the sheets with alkaline soap and exposing them to hydraulic pressure, substantially as set forth.

2. The process herein described of making artificial leather from leather scraps and waste by mixing the scraps with a starch and alum paste, next working the mass into sheets, then treating the sheets with alkaline soap, and exposing them finally to hydraulic pressure, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 23d day of October, 1882.

EMIL POLLAK.

Witnesses:

ROBT. B. JENTZSCH,  
WILLIAM HÜNING.