

# UNITED STATES PATENT OFFICE.

MAXIMILIAN ZINGLER, OF BELSIZE PARK, COUNTY OF MIDDLESEX,  
ENGLAND.

## SUBSTITUTE FOR LEATHER.

SPECIFICATION forming part of Letters Patent No. 362,139, dated May 3, 1887.

Application filed July 12, 1886. Serial No. 207,788. (No specimens.) Patented in Belgium October 18, 1884, No. 66,634, and December 14, 1885, No. 71,213; in France October 23, 1884, No. 164,956; in England July 25, 1885, No. 8,963; in Germany December 22, 1885, No. 37,821, and in Austria-Hungary May 16, 1886, No. 931.

*To all whom it may concern:*

Be it known that I, MAXIMILIAN ZINGLER, of No. 19 Buckland Crescent, Belsize Park, in the county of Middlesex, England, fellow of the chemical society, have invented an Improvement in Substitutes for Leather, of which the following is a specification.

My invention has for its object a substitute for leather applicable for driving-belts, and other purposes for which leather is used.

I take canvas or like woven fabric and boil it for, say, three hours under steam-pressure at a temperature of 250° Fahrenheit in a solution of tungstate of soda—say one pound to six gallons of water. I afterward boil the fabric in like manner in a solution of acetate of lead—say one pound to eight gallons of water. Then I drain dry and stretch the fabric, and subsequently coat it with the following compound: india-rubber, eleven pounds; sulphuret of antimony, five pounds seven ounces; peroxide of iron, three pounds fourteen and one-quarter ounces; lime, four pounds seven ounces; asbestos, two pounds eight and three-quarter ounces; carbonate of magnesia, two pounds eight ounces. These ingredients are thoroughly ground together, and the compound is thinned with naphtha to a consistency suitable for application to the fabric. A spreading-machine of any ordinary sort is employed in applying the coating, and the machine should be heated. This compound is also applicable for other purposes without the canvas—such as soles of boots and shoes—in fact where leather is used. The fabric may thus receive ten, twelve, or more coatings at intervals such that the previous coating becomes dry before applying another. In this way a thickness of compound, from one-six-

teenth to one fourth of an inch, may be accumulated onto the fabric.

Belts are produced by folding the coated fabric to the width required, and two, three, and up to ten, or even more thicknesses or plies, are employed, according to the strength necessary. The belts thus formed are vulcanized at a temperature of 250° to 285° Fahrenheit, and the heat and pressure are maintained from half an hour to one hour and a half, or more according to the thickness and other conditions.

The use of magnesia in the proportions herein set forth is of importance. It renders the composition less liable to change or to be affected by grease, and it has a neutralizing action on the sulphur products.

I claim—

The process of preparing a substitute for leather, which consists, first, in boiling a woven fabric—such as canvas—in solution of tungstate of soda; second, in subsequently boiling the fabric so treated in a solution of acetate of lead; third, in draining, drying, and stretching the fabric so treated, and, fourth, in coating the so-treated fabric with a compound formed of india-rubber, sulphuret of antimony, peroxide of iron, lime, asbestos, and carbonate of magnesia, substantially as described.

In witness whereof I have hereunto set my hand, in the presence of two subscribing witnesses, this 28th day of June, 1886.

MAXIMILIAN ZINGLER.

Witnesses:

THOMAS LAKE,  
HERBERT E. DALE.

Both of 17 Gracechurch St., London, E. C.