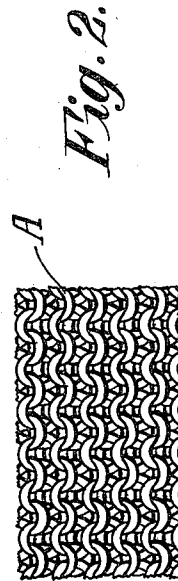
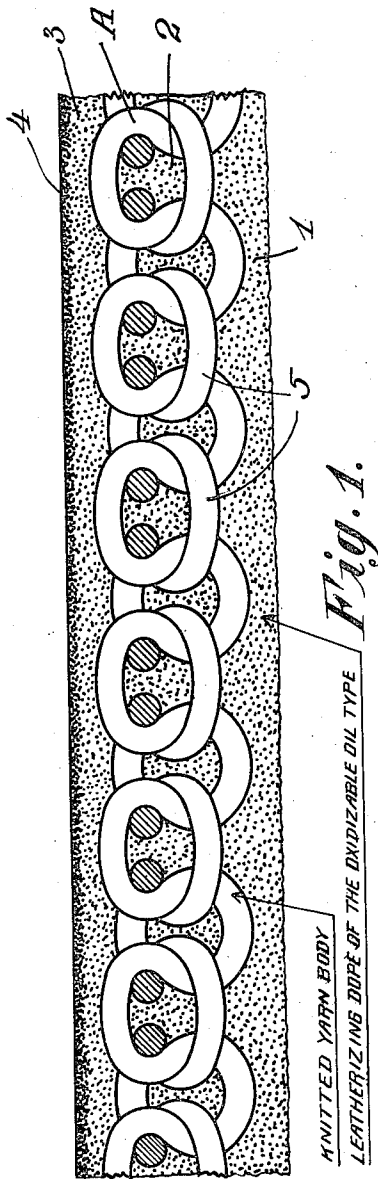


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MULTISTRETCHABLE LEATHER SUBSTITUTE.
APPLICATION FILED FEB. 8, 1917.

1,242,622.

Patented Oct. 9, 1917.



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MULTISTRETCHABLE LEATHER SUBSTITUTE.

1,242,622.

Specification of Letters Patent.

Patented Oct. 9, 1917.

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To all whom it may concern:

Be it known that I, EMIL WEINHEIM, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Multistretchable Leather Substitutes, set forth in the following specification.

Heretofore it has been customary to make artificial substitutes for leather by the employment of a woven textile fabric, the body of which has been more or less completely impregnated with a leatherizing dope of various compositions, and the surface of which has been treated to give the appearance of finished leather. Many attempts, especially recently, have been made to use this leather substitute, characterized by the rectangular lie of the yarn from which the body fabric is woven, to make shoe-uppers and vamps. This old substitute leather, on account of the woven nature of its body fabric, has proven absolutely unsatisfactory for such articles as shoe-uppers and vamps because of the fact that it will not stretch in the true sense of the word. The woven fabric has no strength against a diagonal shear or what may be described as a distortion on the bias. Geometrically, a woven fabric is little more than an interconnected network of squares which are structurally incapable of resisting shear when one side of a square is subjected to a force tending to make it slip relatively to the opposite side. On the other hand, such a fabric is inherently substantially unyielding either in the direction of the warp or in the direction of the weft. The type of leather employed for such articles as shoe-uppers, vamps and gloves must be and is pliable and slightly stretchable substantially uniformly in all directions.

The object of this invention is to provide an artificial substitute for leather of the type suitable for making shoe-uppers, vamps, and working gloves, in fact, for all articles requiring a leather slightly stretchable substantially uniformly in all directions. In carrying out the object of the invention the all-important feature is the employment of a body fabric which itself is stretchable a substantial amount in all directions and, at the same time, has sufficient strength in all directions, and also is capable of holding a coating of suitable leatherizing dope. Such a body fabric I have discovered to be

a knitted fabric, preferably a closely knitted fabric having a multiple, complex stitch.

The above may better be understood by reference to the accompanying claims and the following specification which sets forth an illustrative embodiment of the invention in connection with a diagrammatic showing in the accompanying drawings, which form a part hereof, and in which like characters designate corresponding parts in the figures, of which Figure 1 is a cross-section in diagram of a piece of the finished substitute, but showing the woven body fabric in simplified diagram designating a knit fabric of single, simple stitch, rather than the close, complex stitch which is preferable for the invention; and Fig. 2 is a plan view of a knitted body fabric.

I preferably employ closely knitted fabrics of high-grade cotton yarn or woolen yarn, or of a yarn combining both cotton and wool. It is preferable that the stitch employed be such as to impart as nearly as practicable uniform stretchability in all directions.

This knitted body fabric, diagrammatically indicated in the drawings by A is then treated with a suitable leatherizing dope which may be applied efficiently and conveniently by the process described in my co-pending application entitled "Method of completely impregnating textile fabric with filling material", Ser. No. 130,930, filed Nov. 11, 1916, or by the employment of only a part, preferably the latter part of the process described in the said application. The leatherizing dope may be caused completely to permeate the body fabric A, as indicated in Fig. 1, so that it forms a wrong side covering 1 for the fabric A, a complete body filling 2, a right side covering 3, and finished surface 4 and, at the same time, completely permeating the threads or yarn 5 of the body fabric A; or merely the finished surface 4, the covering 3 and a greater or less body filling partially permeating the fabric A from the finished side inward may alone be employed. The preferred form is that in which the filling completely embeds the body fabric and completely permeates the same.

I have found that substantially any of the leatherizing dopes, many of which are known to the art, may be employed with success, provided merely that the body fabric be a knitted textile fabric. However, I

prefer the employment of a leatherizing
dope for the body filling of my substitute
formed from an emulsion of oxidizable oils
such as linseed oil which has been partially
5 oxidized and thickened by the application
of heat and air, with the desired coloring
pigments and fillers. The emulsion prefer-
ably contains a small percentage of castor-
oil and may be thinned for application with
10 alcohol which is readily removed after it has
served the purpose as a carrying vehicle by
evaporation. The surface finish may be
made directly upon the filling and coating of
this emulsion of oxidizable oils with pig-
15 ments and fillers, but I prefer to employ, in
addition to this filling, a surface coating
on the finished side of a soft, pyroxylin
compound which likewise may be thinned
with alcohol and should contain some castor-
20 oil. In fact the entire body filling and coat-
ing may be the soft pyroxylin compound, if
desired.

In view of the fact that it is practically
impossible adequately to illustrate and de-
25 scribe the product which is the subject of
my invention, I have embodied as a part of
this application two samples, one of a suit-
able knitted textile fabric, and the other a
piece of the same fabric leatherized in ac-

cordance with my invention. The samples 30
are so attached hereto that a ready test of
the stretchability of a substantial amount in
all directions may be made by the exam-
iner.

What I claim and what I desire to secure 35
by United States Letters Patent is:

1. An artificial substitute for leather of
the type suitable for such articles as shoe-
uppers, vamps and working gloves compris-
ing a body-fabric of knitted yarn carrying 40
a surface coating and filling of leatherizing
dope of the oxidizable oil type whereby the
finished artificial substitute is stretchable a
substantial amount in all directions.

2. An artificial substitute for leather of 45
the type suitable for such articles as shoe-
uppers, vamps and working gloves compris-
ing a body-fabric of knitted yarn carrying
a surface coating and body-filling of leather-
izing dope of the oxidizable oil type com- 50
pletely permeating the entire thickness of
said body-fabric whereby the finished arti-
ficial substitute is stretchable a substantial
amount in all directions.

In testimony whereof I have signed my 55
name to this specification, this 7th day of
February, 1917.

EMIL WEINHEIM.