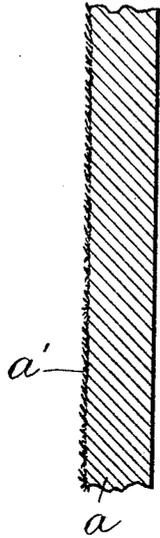
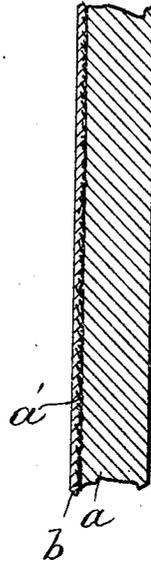


J. J. STEINHARTER.  
LEATHER AND RUBBER SHEET OR STRIP.  
APPLICATION FILED NOV. 28, 1904.

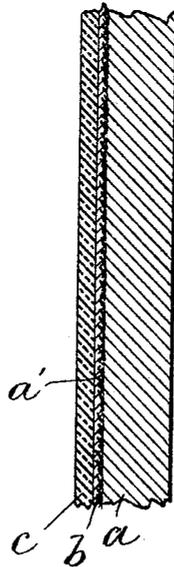
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

JOSEPH J. STEINHARTER, OF PHILADELPHIA, PENNSYLVANIA,

## LEATHER AND RUBBER SHEET OR STRIP.

SPECIFICATION forming part of Letters Patent No. 795,075, dated July 18, 1905.

Application filed November 28, 1904. Serial No. 234,486.

*To all whom it may concern:*

Be it known that I, JOSEPH J. STEINHARTER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Leather and Rubber Sheets or Strips, of which the following is a specification.

This invention has for its object to provide as an article of manufacture a flexible sheet or strip comprising a layer of leather and a layer of vulcanized rubber firmly and inseparably united to the leather, the two layers being practically integral with each other so far as the possibility of separating one from the other is concerned.

The improved product is intended for various purposes for which either leather or sheet-rubber is intended to be used, the said product being useful, for example, as a material for carriage-tops, inner soles of boots and shoes, &c.

My invention consists in the improved product consisting of inseparably-united layers of leather and rubber and in the improved method of producing said product, all as hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of a sheet of leather as prepared in accordance with my invention. Fig. 2 represents a view similar to Fig. 1, showing the inner coating of rubber applied to the leather sheet. Fig. 3 represents a view similar to Fig. 2, showing the outer coating of rubber applied to the inner coating and to the leather fibers embedded in the inner coating.

The same reference characters indicate the same parts in all the figures.

In carrying out my invention I take a sheet *a* of leather which is preferably devoid of oil or grease and from one side or face of which the fibers of the leather project to form a nap *a'*, as shown in Fig. 1, the said fibers being integral with the body of the sheet. Fibers of suitable length to form a nap for the purposes of my invention may be produced by splitting a sheet of leather by a splitting-knife having a somewhat roughened or serrated edge. The leather employed should

be flexible and free from oil or grease and should possess the highest attainable degree of tensile strength not only as to the body of the sheet, but as to the individual fibers forming the nap. I have found that chrome-tanned leather answers the above-mentioned requirements to a greater extent than bark-tanned leather or any other leather of which I am aware, and I therefore consider chrome-tanned leather as the best material for my improved product. I next saturate the nap *a'* with a liquid filling containing unvulcanized rubber, this filling being, for example, a suitable quality of rubber cement. I prefer to artificially raise the fibers of the nap to cause them to stand out from the body of the sheet in such manner that the filling composition will effectively envelop and surround the fibers, the latter being therefore firmly embedded in the inner coating, which coating is indicated at *b* in Fig. 2. I next apply to the coating *b* and to such portions of the fibers of the leather as may project through the said coating an outer coating *c* of unvulcanized rubber applied in a plastic condition. The sheet *a*, with the coatings *b* and *c* thereon, is next placed in a vulcanizing oven or chamber, in which the coatings *b* and *c* are subjected to a vulcanizing heat, which permanently unites said coatings so that they collectively form a layer of vulcanized rubber in which the fibers of the leather are firmly embedded. This intimate union between the two rubber layers and the incorporation of the fibers of the leather into the inner layer of the rubber, together with the toughness of the fibers, inherent to chrome-tanned leather and the tensile strength of the leather and its fibers, confer upon the product a very desirable degree of strength and toughness, the product being liquid-proof and adapted to resist high fluid pressures. Another advantage of chrome-tanned leather for the purpose described is due to the fact that a chrome-tanned skin of natural thickness can be split into a plurality of sheets each of which will have sufficient strength and toughness to enable it to serve as one of the layers or members of my improved flexible sheet. Chrome-tanned

leather is, moreover, adapted to resist the action of heat to a greater extent than bark-tanned leather, so that the leather is not injured to any appreciable extent by the vulcanizing process nor by the heat that is employed during the operation of securing the rubber layers to the leather, it being desirable to heat the leather sheet prior to the application of the inner coating to it, the said inner coating, as well as the outer coating, being applied in a heated condition. During the vulcanizing operation the outer or uncoated side of the leather may be in a measure protected from the heat of the vulcanizing-oven by means well known to those skilled in the art of vulcanizing rubber.

While I regard chrome-tanned leather as the best material for the purpose above described of which I am aware, I do not wish to be understood as limiting myself to this particular kind of leather, as leather tanned by any other process which may be found suitable for this purpose may be substituted for chrome-tanned leather without departing from the spirit of my invention.

The described product is adapted to be used in connection with automobile-tires and emergency-clasps.

I am aware that it has been proposed to nap boot and shoe soles for the purpose of roughing and raising the fibers thereof preparatory to uniting such roughened surfaces to other parts of the boots and shoes by means of rubber cement, the same being referred to in United States Letters Patent No. 207,636 to F. Winslow and No. 250,002 to J. W. Rogers. I therefore do not claim a

sheet or article of leather having its fibers raised and rubber cement applied thereto for the purpose of simply cementing such sheet or article of leather to another part of a boot or shoe.

I claim—

1. A flexible sheet or strip composed of a layer of leather having on one side a fibrous nap and a layer of vulcanized rubber in which the fibers of the nap are embedded.

2. The improved method hereinbefore described, of uniting layers of leather and rubber to form a flexible sheet or strip, the same consisting in raising fibers on a piece of leather to form a nap, saturating said nap with a liquid filling containing unvulcanized rubber, depositing on the filled nap a coating of unvulcanized rubber, and then vulcanizing the said filling and coating, and thus uniting the same in a permanent rubber layer in which the fibers of the leather nap are embedded.

3. A flexible sheet or strip composed of a layer of chrome-tanned leather having a fibrous nap and a layer of vulcanized rubber adhering thereto, the said rubber layer being composed of an inner coating applied in liquid form, directly to the leather, while the outer coating is composed of rubber applied in a plastic form to the inner coating, said coatings being vulcanized together.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOSEPH J. STEINHARTER.

Witnesses:

H. G. VAN COURT,

CLARENCE L. GOLDENBERG.