

A. L. CLAPP.
CORK AND LEATHER SUBSTITUTE AND PROCESS OF MAKING THE SAME.
APPLICATION FILED JULY 16, 1914.

1,218,982.

Patented Mar. 13, 1917.

Fig. 1.

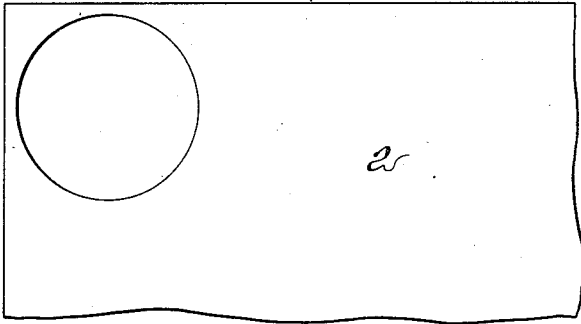


Fig. 2.

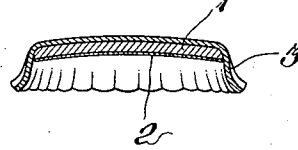


Fig. 3.

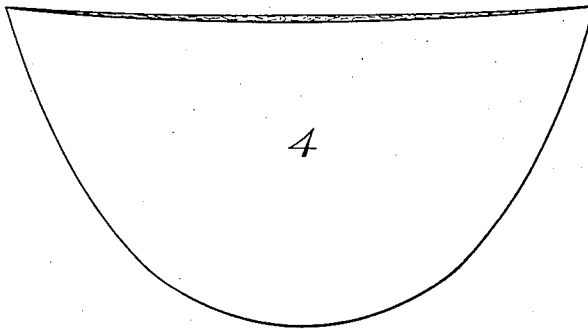


Fig. 4.

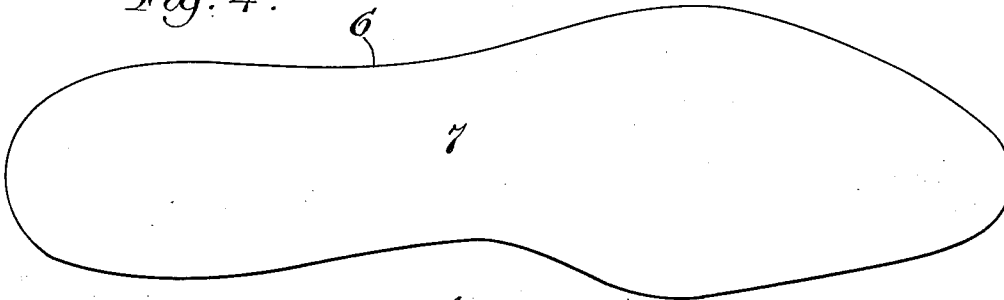


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALBERT L. CLAPP, OF BRAINTREE, MASSACHUSETTS.

CORK AND LEATHER SUBSTITUTE AND PROCESS OF MAKING THE SAME.

1,218,982.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT L. CLAPP, a citizen of the United States, and resident of Braintree, county of Norfolk, State of Massachusetts, have invented an Improvement in Cork and Leather Substitutes and Processes of Making the Same, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

In my present invention I am able to produce an artificial article which may be advantageously utilized as a substitute for cork, leather, or the like. It is also a particular and important object of the present invention to provide such a substitute for cork, leather, or the like, which will be waterproofed upon one surface or side. It is a further object to so manufacture this cork or leather substitute and to make the same waterproof so that it may be employed with foods and articles of food, without danger or damage thereto and in compliance with the present requirements of pure food laws, hygienic regulations and the demands of commerce. This feature is of particular importance in enabling my present novel product to be advantageously used in bottling food products of all kinds, whether in dry or liquid form, thus enabling me to use my article as a substitute for the cork covering in the wellknown "crown seals" and the like, for bottles, etc. As I am enabled to produce this improved article and to provide same with a non-injurious water-proofing, at relatively slight expense and in any desired dimensions as to either length, breadth, or thickness, it will be appreciated that the advantages incident to using my article as a cork substitute for these seals, or the like, are of very great importance.

I may also use the article made by my present invention as a leather substitute, particularly in the manufacture of boots and shoes, as a substitute for insoles, box toes, etc., further securing the advantages of a waterproof article, which is light, strong, durable and always yielding and elastic in even a higher degree than ordinary insole leather, and which is extremely cheap in manufacture.

With the above and other objects in view, I make my present cork and leather sub-

stitute of wood fiber, first making same into a pulp, kraft, sulfite-pulp, or other forms of cellulose fibers, taking the same in sheets and first treating them by immersing the same in a strong solution of caustic soda (NaOH). Saturating the sheet of pulp in this manner, I then dry the same and the chemical action resulting produces what I have termed a "paper-pulp" or puffed paper as fully explained and set forth in my prior Patent 1,038,086 issued September 10, 1912. With the sheet of paper-felt made as set forth in my said patent, I treat the same to provide the waterproofing characteristic, either by a solution impregnating the fibers of the paper-felt or coating one side or surface thereof, where it is desired to have only one surface waterproof.

In carrying out the process of making such cork and leather substitute, I prefer to take sheets of paper-felt made as above, and treat the same with a solution of rubber and naphtha, preferably utilizing the cheaper rubbers, such as gutta percha, pontianac, gambia, or nitro-cellulose, and the like. This treatment effectually waterproofs the paper-felt without injuring, detracting from or affecting the resiliency of the paper-felt, but tends to increase the individual strength of the fibers, imparting longer life to the springy characteristics of the paper-felt of my prior patent. I have also discovered that the treated paper-felt thus waterproofed possesses a peculiarly inherent resiliency, the waterproofing treatment while filling the fibers of the paper-felt either at one surface or entirely impregnating the paper-felt, preserves and increases the resiliency and the life of the fibers. I find also that this waterproofed paper-felt is still absorbent of shellac, box toe gums, and cements, etc., thus rendering it useful in shoe manufacture for insoles, counters, boxes and the like. Furthermore the waterproofed article contains no injurious substances so that it is proper to use the same as a seal or sealing layer in place of cork, wherever the latter is now employed. Instead of treating the entire paper-felt with such a solution, I may simply coat one side with the water-proofing material, as will be hereafter explained. A similar process for treating the paper-felt to constitute a substitute for leather will also be followed, such completed article be-

ing of suitable thickness for insoles of shoes, taps, box toes, etc., as well as being useful as a backing for thin upper leather.

Referring to the drawings, I have illustrated several forms in which my present article may be utilized.

Figure 1 is a plan view of a sheet of my cork or leather substitute with a section for a bottle seat cut therefrom;

Fig. 2 illustrating the employment of such section as a cork substitute within the wellknown "crown" seal for bottles;

Fig. 3 is a plan view of my article as a leather substitute for box toes in boot and shoe work; and

Figs. 4 and 5 are plan and side views respectively of an insole formed of my leather substitute.

In treating sheets of paper-felt to give the same a waterproof coating, the paper-felt 1 made in accordance with my prior patent, is given a coating 2 of a sufficiently thick solution of gutta percha and naphtha to effectually close the pores of the side or surface of the paper-felt 1 to which it is applied, so as to constitute an effective waterproofing of this surface. While I have illustrated in Fig. 2 the coating as applied separately to the paper-felt, it will be understood that this waterproof coating impregnates the fibers in the surface of the paper-felt, being chemically incorporated therewith, to unite and solidify the surface and also to preferably constitute a thin film entirely over the whole surface, as shown in Fig. 2. This coating, however, is greatly exaggerated in the drawings, and in actual practice it makes a waterproof skin out of the surface layers of the paper-felt, without in any way detracting from the springy and resilient characteristics of the main body of the paper-felt, or of the surface itself, the coating being also a springy and resilient substance of gutta percha or similar well-known equivalent substances.

As these sheets, fragments being illustrated in Fig. 1, can be of any suitable thickness and dimensions for the particular work in hand, a number of articles differing in size and form as may be desired, may be cut therefrom, and used as substitutes for cork in sealing bottle receptacles, bottles, or the like. As illustrated in Fig. 1, a section has been cut therefrom and utilized as a cork substitute in the top of a "crown" metallic seal 3, in place of the usual cork layer therein. In applying my improved article to such a seal 3, the waterproofed surface 2 is left outermost, in order to bear directly upon the top rim of the bottle to which the seal is applied, and thus it acts as an effectual waterproofed cork therefor, being pressed tightly upon the bottle by the application of the "crown" seal. It will be appreciated that if the paper-felt was treat-

ed so that its entire thickness were permeated with the water-proofing solution, it would also be applicable as such a seal, but in this work it is only necessary to provide the outer surface as the waterproofed substance, and I therefore prefer to use this form of my invention for such work.

In Fig. 3 I have illustrated a box toe-piece 4 as a substitute for leather in the manufacture of shoes where a box toe is employed. I have discovered that utilizing the water-proofed paper-felt as a leather substitute in this work gives a very effective and cheap box toe which may be treated with box toe gum, shellac, or the like, so that it will harden and set in the lasting of the shoe. In Figs. 4 and 5 I have shown an insole 6, with its upper surface 7 coated with the waterproofing solution, or, of course, the entire thickness of the paper-felt 6 may be so treated. In using my leather substitute as an insole in shoes, it may be desirable to employ same in connection with a thin layer of leather 8, to provide the appearance and feeling of leather on the inside of the shoe, and to give added strength thereto, such leather being simply cemented on to one side of my article. Or it may be desirable to use the leather substitute for "Gem" insoles, attaching by cement, sewing or the like, a canvas strip of similar contour to the insole, which canvas will receive the inseam stitching in making welt shoes.

Various other uses as cork and leather substitutes will occur to those skilled in their respective arts, and for which my present article of manufacture is peculiarly adapted, in addition to those already mentioned, but the scope of my invention is to be understood to apply to all articles for such uses when made of waterproofed paper-felt.

While the treatment with a waterproofing solution as above explained is the important feature, I may also incorporate a color with said solution to impart a colored surface to the cork and leather substitute, giving any appearance thereto which it may be desired to impart. It will also be understood that while I have particularly mentioned the waterproofing as preferably comprising a solution of rubber, or its substitutes, and naphtha, I have discovered that the treatment of my paper-felt with wax, such as a solution of beeswax, or carnauba wax, may also be applied without detracting from the resiliency of the completed article, and therefore I wish to claim, broadly, my present cork and leather substitute as a waterproofed paper-felt.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. As an article of manufacture, a paper-felt sheet comprising associated wood fibers, puffed or increased in diameter with a sur-

face texture resembling felt, waterproofed by a solution of rubber-like substance, whereby the resiliency of the paper-felt and waterproofing is maintained, producing a substance for cork, leather and the like.

2. The process of treating paper-felt material composed of associated wood fibers puffed or increased in diameter and having a surface texture resembling felt, which consists in waterproofing said fibers by the application of rubber-like solution capable of

uniting with said fibers to render same substantially waterproof while acting as a preservative and maintaining the former resiliency of said paper-felt.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALBERT L. CLAPP.

Witnesses:

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R. J. HERSEY.