

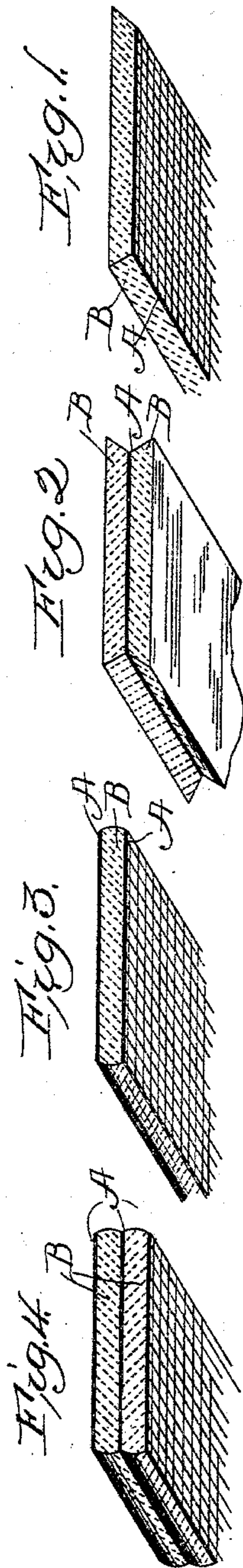
(No Model.)

P. MERCIER.

MATERIAL FOR PROTECTING VESSELS, RECEPTACLES, &c.

No. 561,905.

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Inventor:

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UNITED STATES PATENT OFFICE.

PIERRE MERCIER, OF LONDON, ENGLAND.

MATERIAL FOR PROTECTING VESSELS, RECEPTACLES, &c.

SPECIFICATION forming part of Letters Patent No. 561,905, dated June 9, 1896.

Application filed September 4, 1894. Serial No. 522,114. (No specimens.) Patented in France August 11, 1894, No. 240,688, and in England August 22, 1894, No. 16,001.

To all whom it may concern:

Be it known that I, PIERRE MERCIER, a citizen of the Republic of France, and a resident of 76 Chancery Lane, London, England, have
5 invented a certain new and useful Improvement in Materials for Protecting Vessels, Receptacles, Articles of Clothing, of Furniture, and the Like, (for which I have obtained patents in France, No. 240,688, dated August
10 11, 1894, and in Great Britain, No. 16,001, dated August 22, 1894,) of which the following is a specification.

My invention relates to a new or improved material for protecting vessels, receptacles,
15 articles of clothing, of furniture, and the like, which is applied in the form of a sheet or layer or sheets or layers of suitable shape and thickness and may be made of impermeable material, such as india-rubber. The
20 characteristic feature of this material is to expand into its normal position after it has been punctured, so as to close the opening formed as soon as the puncturing tool or implement is withdrawn from the opening,
25 and provided this tool has not removed too considerable a portion of the said material.

My invention is based upon the fact that some absorbents, such as india-rubber or gelatin, swell when imbibing absorbable substances, such as vaseline for india-rubber
30 and water for gelatin; and its object is to produce a new material capable of general application and of rendering vessels, receptacles, and objects of every kind impermeable
35 when applied upon their surface.

In carrying my invention into practice I use linen, canvas, or other suitable fabric made, preferably, with strong and but slightly-extensible threads of hemp, flax, cotton, silk,
40 or other suitable material capable of being woven at least in one direction with threads of different material either not extensible, such as wires, or more or less elastic, such as wool or even ordinary vulcanized india-rubber. I use by preference a fabric having
45 relatively loose meshes, so that they may be readily penetrated by the absorbent used and may firmly retain the latter. The absorbent I prefer is slightly-vulcanized india-rubber,
50 of which I spread a suitable layer upon the

fabric, and I cause it to penetrate well in its meshes.

Figures 1, 2, 3, and 4 in the accompanying drawings are sectional perspective views of portions of sheets or strips of material made
55 in accordance with my invention.

The letter A indicates the confining-webbing, and B the absorbent material incorporated with the webbing, so as to have its molecules put under compression when impreg-
60 nated with the oil or substance in liquid form.

I may, as shown in the accompanying drawings, apply this material on one side only of the linen, Fig. 1, or on both sides, Fig. 2, or place it between two or three layers of linen,
65 Figs. 3 and 4.

In any instance the absorbent material and confining-webbing are incorporated in such manner that the absorbent material when properly impregnated with liquid has its
70 molecules held by the webbing in a state of compression, so as to instantly expand into and fill any opening which may be formed therethrough.

I subsequently subject the india-rubber to
75 a boiling process in the ordinary way or to any other treatment in order to obtain, by preference, a moderate vulcanization, as india-rubber which is not much vulcanized is more absorbent and remains more flexible
80 and more plastic after its final treatment according to my invention. The treatment to which I subsequently subject the sheets of india-rubber thus wrapped or incased in linen
85 consists in exposing the latter to the action of liquid or solid vaseline, paraffin, wax, or grease to that of any other suitable mixture of these substances alone or mixed with suitable
90 organic oils or fats. I use heat when needed to facilitate the operation, and I allow the substances to act on the india-rubber until the latter has absorbed a sufficient quantity thereof
95 and is sufficiently softened, distended, and swollen. Being held by the non-extensible linen, the india-rubber is compressed in all directions in such a manner that if the sheets
thus prepared are punctured the material returns forthwith to its original place, and thus
100 closes the opening formed. For the same reason, when the above-mentioned sheets are cut

by means of scissors or otherwise the edges assume in the different cases set forth the form shown in Figs. 1, 2, 3, and 4. When gelatin or other analogous substance, such as gums
 5 or lichenin, is used as an absorbent, I subject it to a similar treatment by causing it to absorb a suitable liquid—such as glycerin, water, and other suitable liquids—instead of using slightly-vulcanized india-rubber dis-
 10 tended and swollen by vaseline or other suitable substance. I may likewise apply distended or swollen india-rubber upon a fabric by any suitable means.

This new fabric may be advantageously
 15 used for the purpose of rendering various articles air and water proof and protecting them from ordinary exposure and accidents resulting from punctures or perforations—such as, for instance, boot-soles, carpets, &c.,
 20 floating bodies, boats, buoys, &c., and all kinds of receptacles, reservoirs, gas-holders—by applying in any suitable manner by means of adhesive or other means one or more sheets of the fabric thus prepared upon the surface
 25 required to be protected and preserved either inside, outside, or within the thickness of the said article or object.

When the above-described fabric is used for preserving from the effect of punctures
 30 elastic receptacles capable of increasing in size in a given direction—such as, for instance, the air-chambers of pneumatic tires, which are liable to become lengthened and to increase in diameter—I preferably cut the
 35 fabric in the direction of the linen threads if only one linen layer is used, Fig. 1, or in the direction of the threads of one of the linen strips if several are used, Figs. 2 and 4, and they are not all placed in the same direction.
 40 I thus obtain sheets or strips of my improved material which are not extensible in the direction of their length and breadth, and I cause these sheets or strips to adhere upon

that part of the air chamber or tube required to be preserved from perforations either in- 45
 side or outside or in the thickness of its walls and at any stage of its manufacture.

Should the sheets aforesaid be required to be non-extensible in one direction only, I use a compound fabric consisting of non-exten- 50
 sible threads in one direction and of more or less elastic threads in the other, such as wool or threads made of ordinary vulcanized india-rubber. I may also replace the canvas or fabric made of threads arranged at right 55
 angles to one another by any other fabric, and even by felt having fibers crossed in every direction, such as cotton-wool.

What I do claim as my invention, and desire to secure by Letters Patent, is— 60

1. As an improved article of manufacture an impregnated absorbent material substantially such as described formed into a self-healing fabric having non-elastic confining-threads incorporated in the impregnated por- 65
 tion, whereby the absorbent material is held under molecular compression; substantially as described.

2. As an improved article of manufacture an absorbent rubber fabric having non-elas- 70
 tic confining-threads incorporated therein and impregnated with oil throughout the portion containing the confining-threads whereby the rubber is held under molecular compression; substantially as described. 75

3. As an improved article of manufacture, a self-healing fabric consisting of slightly-vulcanized india-rubber impregnated with liquid vaseline in the presence of heat, and having non-elastic confining-threads incor- 80
 porated therein prior to impregnation; substantially as described.

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