L. E. BARTON AND H. A. GARDNER.

PLIABLE FILLED FABRIC GOODS.

APPLICATION FILED FEB. 21, 1917.

1,317,854. Patented Oct. 7, 1919.

Fig. 1.

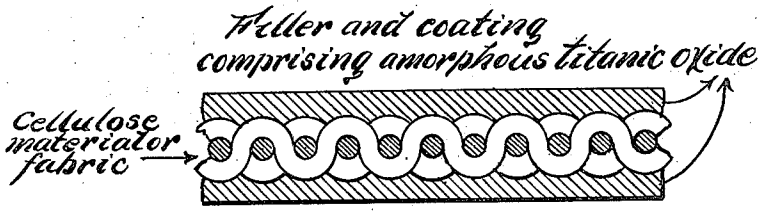
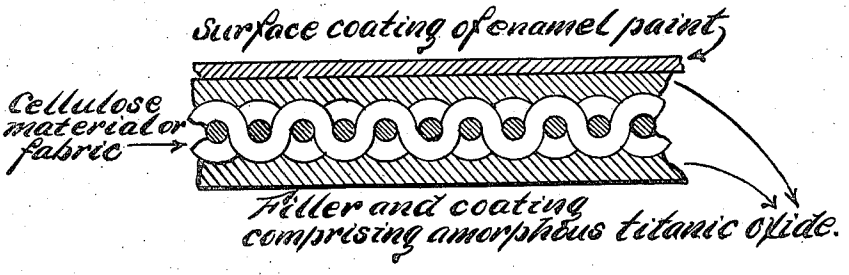


Fig. 2.



INVENTORS
Louis E. Barton
Henry A. Gardner
BY
Walter D. Edmonds
ATTORNEY

UNITED STATES PATENT OFFICE.

LOUIS E. BARTON, OF NIAGARA FALLS, NEW YORK, AND HENRY A. GARDNER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNORS TO THE TITANIUM ALLOY MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE.

PLIABLE FILLED FABRIC GOODS.

1,317,854. Specification of Letters Patent. Patented Oct. 7, 1919.

Application filed February 21, 1917. Serial No. 150,012.

To all whom it may concern:

Be it known that we, LOUIS E. BARTON, a resident of Niagara Falls, in the State of New York, and HENRY A. GARDNER, residing in the city of Washington and District of Columbia, and being both citizens of the United States, have jointly invented certain new and useful Improvements in Pliable Filled Fabric Goods, of which the following is a specification.

Our present invention relates to well known goods composed of sheets of fabric, usually a cellulose fabric such as cotton muslin, the interstices of which are filled by, and the fabric embedded, or incarcerated, in, a therewith thus incorporated, and thereby strengthened, pliable sheet of so-called "filler" and "coating" materials of such relatively coherent and unbrittle character that the resulting composite sheet is also universally pliable, *i. e.* so yielding and plastic as to be indefinitely, repeatedly, folded, or bent back and forth in opposite directions, or tightly rolled, without prohibitive impairment. Typical of such goods are what are known as "table oilcloths", "window shades", etc.

The objects of our invention comprise provision of means whereby, at reduced cost of manufacture, and with better effect, are imparted to such pliable-filled-fabric goods desirable characteristics and qualities such, for example, as attractiveness of appearance, flexibility, pliability, resistance to heat and to discoloring agents, durability, strength, and, particularly, opacity, or, when also desired, whiteness of coloration.

We attain these, and other desirable, objects by our present invention, which is based on our discovery that several titanic materials are, owing to their own peculiar properties, as well as to those of constituents of such goods, peculiarly adapted to, by incorporation therewith, improve them as regards some, or all, of the qualities and characteristics referred to.

Broadly speaking, our invention is practised by, in any convenient or usual manner, adding to, and as thoroughly and homogeneously as possible compounding, or incorporating, with the "filler" or "coating" constituents of the goods, at any preferred stage during manufacture of the latter, titanic oxid in amorphous form, and in such proportions, usually less than preponderating, as will readily be indicated to those skilled in the art by the special requirements and purposes of each manufacture and its product.

The titanic oxid thus employed by us is in such amorphous, substantially pure, fine, smooth, powdered forms as are obtainable by the aid of such procedures as are described in Letters Patent granted to Auguste J. Rossi and Louis E. Barton Nos. 1,106,406, 1,106,407, 1,106,408, 1,106,409, 1,106,410, dated August 11, 1914, No. 1,166,547, dated January 4, 1916, No. 1,171,542, dated February 15, 1916, and Nos. 1,196,029, 1,196,030, and 1,196,031, dated August 29, 1916; also, to Louis E. Barton No. 1,189,229, dated July 4, 1916, No. 1,201,541, dated October 17, 1916, and Nos. 1,206,796, 1,206,797 and 1,206,798, dated December 5, 1916.

We also find it in many cases peculiarly advantageous and preferable to use the said titantic oxid in the form of very minute particles thereof in coalesced combination with, and adherent to, carrier particles of some other substance, usually a sulfate, and preferably calcium sulfate, such, for example, as produced by precipitation of the said oxid upon such a substance while suspended in an acid solution, preferably a sulfuric acid solution, as per the procedures described in Letters Patent granted to Louis E. Barton, No. 1,155,462, dated October 5, 1915, or No. 1,205,144, dated November 21, 1916.

The procedures usually practised in the manufacture of the pliable-filled-fabric goods referred to, are believed to be already too well known to justify extended rehearsal of them here. Generally speaking, rolls of fabric usually in the form of cotton muslin, or equivalent cellulose material, are run through a tank containing the filler composition, composed of an organic binder admixed with pigment suitable for the particular product desired. The fabric thus impregnated and more or less covered by the therein incorporated and thereto adherent "filler", may then be dry-calendered, or otherwise finished as desired. When the product is to be used for table oilcloth, there is subsequently uniformly applied to the entire surface of the resulting sheet a coating of the pigment material mixed with oil,

which is thereupon dried as in a suitable oven. A second similar coating is then, usually, applied, and dried, after which, the fabric being at this stage sufficiently filled and suitably covered, a final coating of more or less glossy enamel paint may be applied to produce a more opaque, or attractive, finish.

Our titanic filler is, owing to its aforesaid composition and application, peculiarly well adapted to the reception, retention and preservation of such a final coating when the latter is so employed.

Our addition and incorporation of the referred to titanic substances, compounds, or composites, is made, as aforesaid, in any, or, preferably, all, of the above stages of the manufacture, *i. e.* the titanic material is mixed with the filler ingredients dry, or in the tank, or with the coating materials, or, preferably, with each and all of these.

By our invention, thus practised, there is impartible, to even the thinner sheets of the class of goods referred to, (for example window shades) such opacity as desired, and also very desirable light-resistance, and whiteness, and this is at a considerably less expenditure of filler and coating materials than was formerly required to produce less opacity.

Such occurrence of these desirable characteristics, and properties, notwithstanding reduction in the aggregate of the filler and coating materials, we believe to be largely attributable to the fact that the indices of refraction of the titanic compounds, added by us as aforesaid, are greater than those of any other substances known to us as being suitable for industrial employment as "fillers" and "coatings" of goods.

The comparative unsusceptibility to discoloration, as by gases, acids, etc., greater durability, pliability, and other superiorities above referred to, imparted to the said goods embodying our invention, we believe to be more or less attributable to the peculiar properties of their titanic contents, such, for example, as the exceptional refractoriness and stability of such titanic compounds, and the extreme smoothness, softness and minuteness of subdivision of those employed by us as aforesaid.

It will be understood that any desired tints, or colorations, other than the white produceable by our said additions of titanic substances, may be imparted to the goods by the usual additions of such tinting materials as may be indicated.

We believe our present invention to be distinguishable from, and not inclusive of, anything disclosed or claimed in Letters Patent No. 1,236,367 granted to us Aug. 7, 1917, nor do we herein claim anything therein disclosed. Our titaniferous linoleum of that patent so differs in composition, conformation and properties from "pliable filled fabric goods" as to constitute the latter patentably distinguishable articles of manufacture. Linoleum consists preponderatingly of a relatively thick (not less than one-sixteenth of an inch and usually more) relatively hard and rigid sheet composed of a nonhomogeneous, more or less coherent, mixture consisting preponderatingly of more or less interdetached particles of ground wood (cork) held as in a matrix of linoxyn (oxidized oil) and containing also, but in comparatively small proportions, other usual ingredients of linoleum such as rosin, castor oil and a suitable pigment substance. The fabric constituent, *i. e.* the thereto adherent backing, of the linoleum article constitutes but a comparatively small fraction of its total bulk. The resulting and essential properties of linoleum, attained through its aforesaid peculiar composition, include desired hardness, non-abrasiveness and rigidity fitting it to resist the strains and wear incident to its only hitherto practised use, *i. e.* in floor coverings. Although linoleum may be pliable to the limited extent of being, without prohibitory breakage, rollable loosely *i. e.* on a relatively large radius, increasing with the thickness of the sheet; yet it is not utilizable for any purposes involving the folding thereof, nor any tight rollings thereof, nor any rollings thereof in opposite directions, and it is not, therefore, properly designatable as belonging to that class of goods which is distinguished as "pliable."

In contradistinction, this class of goods, to which our present invention applies, are truly and usefully "pliable" because equally readily, and indefinitely repeatedly, completely foldable, or rollable as tightly as desired, without prohibitory injury, and this is an infinity of, including directly opposite, directions; these properties thereof being due to the numerous particulars of conformation and composition in which they differ from linoleum *e. g.* the relatively predominant fraction of their aggregate bulk represented by their content of cellulose fabric, their comparatively great thinness, *i. e.* never exceeding one-thirtieth of an inch and more frequently less, and also, and particularly the circumstance that their coating, or film, which is combined interstitially with, and adherent to, their said fabric content, consists preponderatingly of a homogeneous coherent mixture of substantially uniform particles of a suitable pigment with merely an organic binder, our invention, in this instance, comprising the impartation of a titaniferous character to such pigment with the novel and beneficial results above referred to.

In the accompanying drawing, forming part of this specification, Figures 1 and 2

each show, on enlarged scale, respectively a cross-section of a fragment of the fabric embodying a form of our invention as above described, the materials as employed in said embodiments respectively being described on the drawing.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is the following, viz:

1. Filled fabric goods comprising a sheet of cellulose material having therewith interstitially combined a film, or coating, comprising amorphous titanic oxid.

2. Filled fabric goods comprising a sheet of cellulose material having therewith interstitially combined a film, or coating, comprising amorphous titanic oxid, and also a final, or surface, coating of enamel paint.

3. Filled fabric goods completely pliable equally in opposite directions, and consisting of a sheet of cellulose fabric having therewith interstitially combined a film or coating consisting preponderatingly of a homogeneous, cohesive mixture of an organic binder with a pigment containing titanic oxid in the form of minute particles in coalesced combination with and adherent to particles of a carrier material.

4. Filled fabric goods comprising a sheet of cellulose material having therewith interstitially combined a film, or coating, containing titanic oxid in the form of minute particles adherent to particles of a carrier material.

5. Filled fabric goods comprising a sheet of cellulose material having therewith interstitially combined a film, or coating, containing amorphous titanic oxid in the form of minute particles adherent to sulfate particles.

6. Filled fabric goods comprising a sheet of cellulose material having therewith interstitially combined a film, or coating, containing titanic oxid in the form of minute particles adherent to particles of a carrier material, and having also a final, or surface, coating of enamel paint.

7. The method of producing filled fabric goods which comprises mixing amorphous titanic oxid as a pigment with an organic binder, applying the resulting composition to a sheet of cellulose material, and drying and finishing the composite product.

LOUIS E. BARTON.
HENRY A GARDNER.

Witnesses as to Mr. Barton:
TOM C. GRAHAM,
CARL P. REISIG.
Witnesses as to Mr. Gardner:
H. B. MALLORY,
W. GILBERT DENT.