H. SEGALL.

CELLULOID ARTICLE OF MANUFACTURE AND METHOD OF PRODUCING THE SAME.

APPLICATION FILED JAN. 18, 1918.

1,322,631. Patented Nov. 25, 1919.

Fig. 1.

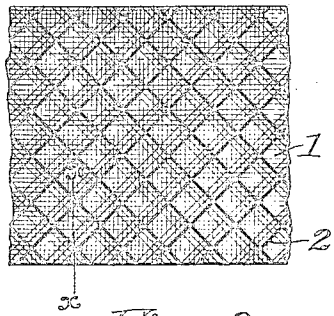


Fig. 2.

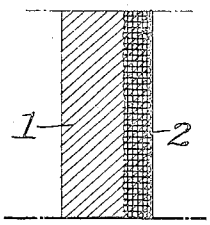


Fig. 3.

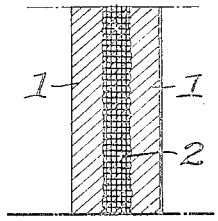


Fig. 8.

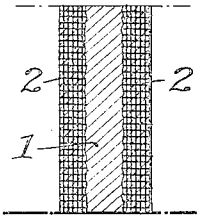


Fig. 4.

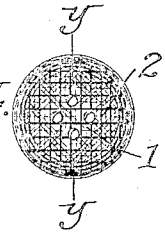


Fig. 5.

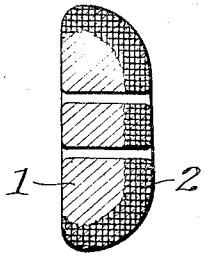


Fig. 6.

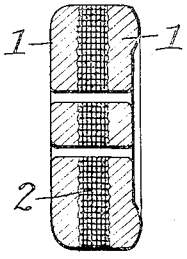
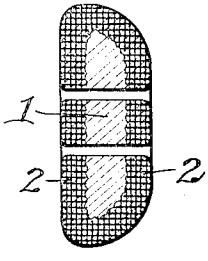


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CELLULOID ARTICLE OF MANUFACTURE AND METHOD OF PRODUCING THE SAME.

1,322,631. Specification of Letters Patent. Patented Nov. 25, 1919.

Application filed January 18, 1918. Serial No. 212,509.

To all whom it may concern:

Be it known that I, HENRY SEGALL, a citizen of the United States, and resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Celluloid Articles of Manufacture and Methods of Producing the Same, of which the following is a specification.

My invention relates to improvements in celluloid articles of manufacture, and it consists in an improved celluloid sheet or article manufactured of celluloid and in the method of producing the same, substantially as hereinafter set forth.

The subject-matter of my present application is mentioned in my co-pending application Serial No. 873,320, filed November 21, 1914, matured into Patent No. 1,259,787, March 19, 1918, the description therein referring to the adaptability of my present invention in its specific relation to a manufactured letter or symbol which constitutes the subject-matter and claims of my said co-pending application, but my present invention is not claimed therein, and the subject-matter thereof is continued in part from said co-pending application and is fully set forth and claimed in its general scope in this present application.

Sheets of celluloid as now manufactured and commerically employed are liable to stick together and to surface scratching or marring when packed in superposed sheets, and are also subject to conditions of high inflammability. It is furthermore difficult to impart a desired coloring or ornamental figured or colored effect to the celluloid sheets by mixing pigments with the composition of the celluloid. In the case of articles manufactured from celluloid or having a celluloid base, where it is desired to produce a surface ornamentation or coloring,—for instance, buttons having a celluloid body or base and designed to match the cloth of a garment—it has been necessary to cover the celluloid body with the desired cloth or figured material or to attach adhesively or by other securing means to the surface of the celluloid base a facing material having the desired color or figured effect.

The difficulties and disadvantages and increased expense in the manufacture and handling and use of celluloid articles, as heretofore experienced and well understood, are designed to be overcome by my invention and improvements, the objects of which are to avoid the interposition of intermediate friction sheets of soft material between packages of superposed celluloid sheets in order to prevent surface sticking or scratching or marring, to reduce inflammability, to enable the production of the celluloid sheet or article in any desired color or figured or ornamental design effect, to afford economy in manufacture of celluloid articles or of buttons or other articles having a celluloid body or base, to produce a celluloid article of enhanced durability and service, and to secure other advantages in point of convenience in handling or use, effectiveness, and general efficiency.

In the drawings—

Figure 1 is a face view of part of a celluloid sheet produced according to my invention.

Fig. 2 is a detail cross-section, on an enlarged or magnified scale, taken on the line 2—2, Fig. 1.

Fig. 3 is a detail cross-section corresponding to Fig. 2 and illustrating a modified type of construction.

Fig. 4 is a face view of a button having a celluloid base, as produced according to my invention.

Fig. 5 is a detail cross-section, on an enlarged or magnified scale, taken on the line 5—5, Fig. 4.

Fig. 6 is a detail cross-section similar to Fig. 5 and illustrating a modified type of construction.

Fig. 7 is a detail cross-section corresponding to Fig. 5 and illustrating a further modification.

Fig. 8 is a detail cross-section corresponding to Fig. 2 and illustrating a further modified type of celluloid sheet or body produced according to my invention.

Corresponding parts in all the figures are denoted by the same reference characters.

My invention primarily consists in a celluloid sheet or body and a textile fabric so combined therewith that the celluloid and fabric are united compositely to produce a body mass in which the fabric becomes a component part of the article. In the compound celluloid-textile article thus produced the fabric is sunk into and held in the celluloid and the celluloid enters into the mesh of the fabric and each of said elements becomes

a permanent component part of the body entity which is constituted by the amalgamation or composite uniting of the celluloid and textile fabric.

In the accompanying drawings, the celluloid mass is indicated at 1, and 2 designates the textile fabric element.

In carrying out my invention, the celluloid mass and textile fabric element are united by pressure and under subjection to heat. In one method of manufacture to produce the improved celluloid article according to my invention, a sheet of celluloid is subjected to a high degree of heat, to produce a condition of surface solubility, and the textile fabric is placed against the soluble celluloid and united therewith under subjection to high pressure. Under conditions of a lower degree of heat, the fabric may be first impregnated with a suitable chemical agent, for instance, a solution of acetone, to assist the solubility of the celluloid sheet, or a solvent may be otherwise employed. Or the union of the celluloid and the textile fabric can be produced while the celluloid is in a plastic condition, under the action of pressure and heat; for instance, the plastic celluloid and the textile fabric can be passed together through pressure rolls to produce composite celluloid-textile fabric sheets, or, in forming some articles of manufacture according to my invention, the plastic celluloid may be spread upon the textile fabric and the two elements then united under pressure.

The union of the celluloid and textile fabric elements may be in various relative positions. As shown in Fig. 1, the fabric, 2, is united with the celluloid, 1, at one side of the composite sheet, and in this relation the fabric side will effectively prevent scratching or marring of the celluloid face of the sheets or sticking together when the latter are assembled in superposed position in the usual commercial packages. A similar effective relative construction is shown in Fig. 8, in which the fabric, 2, is united with the celluloid, 1, at both sides of the composite sheet. In Fig. 3, a relative construction is shown in which the fabric, 2, is united with the celluloid, 1, at the central or interior portion of the composite sheet, in which relation the embedded fabric will be visible through the translucent mass of united celluloid at either side of the sheet and will thus impart to the manufactured article the desired colored or ornamental or cloth design effect. In the manufacture of other articles having a celluloid body or base, according to my invention, for instance, buttons, as herein shown, the union of the celluloid and textile fabric elements may be in various relative positions similar to those above described. The button shown in Fig. 5 has the fabric, 2, united with the celluloid, 1, at the front and edges of the composite body, and in the relative construction shown in Fig. 7 the fabric 2 is united with the celluloid 1 at all sides of the composite body, while in Fig. 6 the fabric 2 is shown united with the celluloid 1 at the central or interior portion of the composite body. Any other suitable and effective relation of the two elements may of course be employed in the union of the celluloid and textile fabric in the composite sheet, button, or other article.

It will be understood that in any relative positions of the two elements, in the composite union of the celluloid and textile fabric, the translucency of the celluloid will permit visibility of the fabric element, and thus impart to the composite article the desired effect of color, textile design, or cloth-matching.

An important feature of my invention is that designed to afford a desired color effect in the celluloid article and in carrying out this result, the color of any desired character is carried by the fabric, 2. Likewise, in the feature of imparting an ornamental or cloth design to the celluloid article, or in matching garment cloths in buttons or similar articles, the design or effect is produced by the texture and coloring of the fabric which is employed in union with the celluloid in producing the composite sheet or body. Thus a textile fabric of any suitable or desired character and having any desired color or combination of colors may be employed to impart or produce the color or design effect desired in the manufactured celluloid articles.

Another important feature of my invention is the reduction of the inflammable character of celluloid sheets or articles, especially in circumstances where they are stored in packages or the sheets are packed in superposed position, and this is effectively accomplished by impregnating or treating the textile fabric element with any suitable non-combustible chemicals, similar to the manner of producing fireproof cloths or fabrics. The textile element is thus treated before it is united with the celluloid element, according to my invention, and thereafter in its composite relation to the celluloid in the completed composite article will resist and retard the inflammability of the celluloid element with which it united.

My improvements in celluloid articles of manufacture, and the method of producing the same, have a wide range of adaptability to all celluloid articles of general use and personal wear as now generally employed. For instance, in producing celluloid collars, cuffs, and analogous articles, according to my invention, the important advantages of a color or design effect or of the match-

ing of shirt fabrics can be effectively attained, and also the inflammable character of the article will be limited.

It will be understood that the term celluloid in the specification and claims is used to indicate any composition having the character of the compound commercially known as celluloid or analogous thereto.

Having thus described my invention, I claim and desire to secure by Letters Patent:

1. A celluloid article of manufacture consisting of a celluloid body and a textile fabric so combined therewith that the celluloid and fabric are fused or amalgamated together in a complete union, to produce a body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

2. A celluloid article of manufacture consisting of a celluloid body having its face formed of a textile fabric, the celluloid and fabric being so combined that they are fused or amalgamated together in a composite union, to produce a body mass in which the fabric becomes an integral part of the face of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

3. A celluloid article of manufacture consisting of a celluloid body and a textile fabric embedded therein and visible through any part of the translucent celluloid, the celluloid and fabric being so combined that they are fused or amalgamated in a composite union, to produce a body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

4. A celluloid article of manufacture consisting of a celluloid body and a textile fabric woven in or carrying an ornamental or figured design, the celluloid and fabric being so combined that they are fused or amalgamated together in a composite union, to produce a body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body to which the fabric imparts an ornamental or textile-figured design effect, substantially as and for the purpose set forth.

5. A celluloid article of manufacture consisting of a celluloid body and a textile fabric carrying a desired color or pigment, the celluloid and fabric being so combined that they are fused or amalgamated together in a composite union, to produce a body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body to which the fabric imparts a colored effect, substantially as and for the purpose set forth.

6. A celluloid article of manufacture consisting of a celluloid body and a textile fabric carrying a non-combustible chemical, the celluloid and fabric being so combined that they are fused or amalgamated together in a composite union, to produce a body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body in which the fabric element resists and retards the inflammability of the celluloid element with which it is compositely united, substantially as and for the purpose set forth.

7. The method of producing celluloid articles of manufacture, which consists in subjecting a celluloid body to the action of heat and combining therewith a textile fabric under pressure to fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

8. The method of producing celluloid articles of manufacture, which consists in reducing a celluloid body to a condition of surface solubility and placing against the soluble celluloid a textile fabric in the presence of heat and under a degree of pressure which will fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

9. The method of producing celluloid articles of manufacture, which consists in combining with a celluloid body a textile fabric carrying a chemical agent to induce solubility of the celluloid and subjecting the combined body to a degree of pressure which will fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

10. The method of producing celluloid articles of manufacture, which consists in subjecting a celluloid body to the action of heat and combining therewith a textile fab-

ric carrying a chemical agent to enhance solubility of the celluloid, and subjecting the combined body to a degree of pressure which will fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

11. The method of producing celluloid articles of manufacture, which consists in combining with a celluloid body in a plastic state and in the presence of heat a textile fabric and subjecting the combined body to a degree of pressure which will fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

12. The method of producing celluloid articles of manufacture, which consists in subjecting a plastic celluloid body and a textile fabric combined therewith to the action of pressure rolls in the presence of heat and under a degree of pressure which will fuse or amalgamate the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

13. The method of producing celluloid articles of manufacture, which consists in combining a soluble celluloid body and a textile fabric under pressure which fuses or amalgamates the celluloid and fabric together in a composite union and body mass in which the fabric becomes an integral part of the celluloid mass and the composite union of the two elements produces a compound celluloid-textile body, substantially as and for the purpose set forth.

In testimony whereof I have signed the foregoing specification.

HENRY SEGALL.

Correction in Letters Patent No. 1,322,631.

It is hereby certified that in Letters Patent No. 1,322,631, granted November 25, 1919, upon the application of Henry Segall, of New York, N. Y., for an improvement in "Celluloid Articles of Manufacture and Methods of Producing the Same," an error appears in the printed specification requiring correction as follows: Page 3, line 16, claim 1, for the word "complete" read *composite;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of March, A. D., 1920.

[SEAL.]

M. H. COULSTON,

Acting Commissioner of Patents.

Cl. 154—2.