

UNITED STATES PATENT OFFICE.

ETIENNE RODOLPHE VERDIER AND SYLVAIN GUTMACHER, OF PARIS,
FRANCE.

PROCESS OF MANUFACTURING UNBREAKABLE DOLLS AND MORE PARTICULARLY DOLLS' HEADS.

SPECIFICATION forming part of Letters Patent No. 652,497, dated June 26, 1900.

Application filed February 26, 1898. Serial No. 671,849. (No specimens.)

To all whom it may concern:

Be it known that we, ETIENNE RODOLPHE VERDIER and SYLVAIN GUTMACHER, manufacturers, citizens of the French Republic, residing at 120 Boulevard Richard Lenoir, Paris, in the Republic of France, have invented certain new and useful Improvements in Processes of Manufacturing Unbreakable Dolls and More Particularly Dolls' Heads, (for which we have obtained patents in France, No. 269,564, dated August 12, 1897; in Germany, No. 100,771, dated September 5, 1897, and in England, No. 22,691, dated October 4, 1897;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a method for manufacturing heads and other accessories of dolls with a view to providing a substitute for porcelain dolls' heads, which are both fragile and comparatively heavy.

The invention contemplates the employment of textile substance composed of several superposed layers of cloth material, the number of layers depending upon the size of the doll. The material consists of linen and jaconet and of a very fine fabric, the whole being secured together with starch or fecula and compressed in order to produce a thick and tight compound fabric. When this fabric is dry, it is cut into pieces of the required size, which are slightly moistened by being placed two by two, preferably, between cloths previously dipped in water and subsequently well wrung out. The material is then pressed into the shape of half a hollow body through the instrumentality of stamps and matrices, as usual, the pressing-form being heated after the insertion of the cloth. On an average the pressing requires only three minutes. After that the cuts for the mouth, eyes, &c., are made and are clipped at the edges, leaving only a margin of not quite half an inch when they are placed together for forming the complete element—for instance, a doll's head. The body or head is now placed in a pressing-form, which for receiving the protruding edges is provided with grooves. The

two pieces when withdrawn from the stamping-press have flanges or edges perpendicular to the head. To join these two parts, the two flanges are fixed together by paste or glue or other adhesive substance while pressing them strongly one against the other by means of two hollow pieces having the shape of the head and tightened by means of screws. Strips are then glued at the jointed parts inside the head to impart more strength thereto. The head being thus formed and dried, the bur is cut off with a sharp instrument.

There is another mode of gluing the two parts of the head, which is carried on as follows: As soon as the two shells are stamped the same are pared by means of a cutting-tool, so as to obtain a head having no outer edge or flange. The two parts of the head are then detached and placed in a metal mold having exactly the shape of the head, so that the two parts may fit exactly one against the other, when we proceed with the pasting or gluing, inside the same, of linen strips, as above set forth. The head is then prepared to receive the coloring or paint in the following manner: Sulfate of baryta and gelatin are mixed in equal quantities, the whole being well heated. To this mixture we may impart a flesh tint, the whole surface of the head being then coated with this mixture. Instead of sulfate of baryta we may use whitening, chalk of various kinds, zinc-white, kaolin, petuntze, or casein diluted in an equal proportion of water, while modifying slightly the proportion of glue according to the substance used. The sulfate of baryta in the form of a paste has been selected by preference, as when treated with an acid it forms a smooth paste without granulation; but should any be left it may be removed with very fine emery-paper. The sizing is effected with a brush, two coats being applied. The first should be allowed to dry thoroughly before applying the second coating. The sizing may also be obtained by immersion, and in such case the mixture should be more fluid; but this process, however, has the defect of softening the fabric too much.

The head is painted in the usual manner by means of waterproof paints. To impart a

slightly-brilliant shade to the head, the latter is partly varnished by dipping the same into a gelatinous bath of the following composition—*i. e.*, gelatin, dried, one part, and water, 5 nine parts. These proportions may vary according to the quality of the gelatinous material used. This brilliancy gives the head the appearance of being made of biscuit or vitrified porcelain. To obtain the appear- 10 ance of enameled porcelain, the proportions of gelatin should be increased according to the brilliancy desired. To preserve either the dull or brilliant shades, the gelatinated head is rendered insoluble by immersing it 15 promptly in a mixture of formic aldehyde and water (six per cent.) or chrome-alum, (twelve per cent.) The head is allowed to dry preferably in the open air, where it may be subjected to various washing operations, even with 20 boiling water, without being affected thereby.

The other parts of the doll are produced in exactly the same manner as has been described with reference to the head.

Having thus fully described our improved process, we declare that what we claim is— 25

An improved manufacture of non-breakable dolls, which consists in preparing a stiff material from one or more superposed layers of fabric by providing said layers with an ag- 30 glutinant and uniting them by compression; allowing the fabric to dry, dampening, cutting and stamping the same to form the desired elements, providing said elements with flanged edges to facilitate uniting the same; fitting and gluing the parts together; apply- 35 ing a smooth surface finish, and covering the same with a suitable flesh tint in the manner herein described.

In testimony whereof we affix our signatures in presence of two witnesses.

ETIENNE RODOLPHE VERDIER.
SYLVAIN GUTMACHER.

Witnesses:

EDWARD P. MACLEAN,
SAUL NADKARDT.