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MULTICOLORED MOLDED PRODUCT AND METHOD OF MAKING THE SAME

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The invention relates to molded products such as buttons, bottle stoppers and similar articles having surface decoration in two or more colors, and to the process of making such products. More particularly, the invention relates to a method of producing such articles by a single stage thermosetting operation in which the plastic or composition material of which the article is fabricated is formed by molding so as to constitute the body of the article of one color, such material being cured or set by one impression of the mold elements so as to give the material sufficient hardness to withstand the pressure of a second molding operation without losing its original shape, in which second operation a layer of plastic or composition material of a second color is superimposed upon the body first formed. The material of the body and the superimposed layer are then brought by heat and pressure to a final stage by the same mold elements, in which stage the plastic or composition material is both insoluble and infusible.

In accordance with my invention, the article thus formed is then removed from the mold and subjected to an operation such as grinding, cutting or polishing, to remove a portion of the surface layer, thereby producing a surface upon the article having two colors.

In articles of the type to which the present invention relates, a surface decorated in two or more colors has heretofore been made only by a two stage thermosetting process in which the articles were made in two or more separate pieces, each piece with its individual coloring, the piece of one color being superimposed upon the other and joined together by an adhesive. The process of the present invention is distinguished from such prior art process in that the article is produced by a single thermosetting operation, the button, bottle stopper, or similar article being produced in a single mold in which a quantity of synthetic resin of one color is first partially cured, a second layer of synthetic resin of a different color being thereafter placed over the first layer, the heated mold members being brought together so as to cure or set completely the synthetic resin of both layers by heat and pressure. After such composite material has been set, the portion of the superimposed layer which extends above the plane constituting the upper surface of the first body of material may then be removed in any suitable manner so as to expose the resin with its different color constituting the body portion of the article, and

impart, to the article, a duo-colored surface decoration.

My novel product may be formed of any suitable material, for instance, any of the well-known synthetic resins, including phenol formaldehyde resin, urea resin, or any other composition material. My invention is likewise applicable to the fabrication of molded products having any number of different colors constituting the surface decoration for the article and in any design or configuration of such surface decoration.

In the accompanying drawings, I have illustrated one particular form of mold structure capable of utilization in carrying out my invention. In such drawings also, I have illustrated two specific embodiments of my invention as applied to the fabrication of a button having a surface decoration of two contrasting colors and also a button having a surface decoration of three contrasting colors. It is to be understood, of course, that my invention is not limited to the specific embodiments illustrated and described and that I have shown specific illustrations of decorative surfaces, such showing being by way of illustration rather than by way of limitation.

In such drawings, Fig. 1 illustrates, in cross-section, the upper and lower platens and mold elements of a press adapted for utilization in the fabrication of a molded article in accordance with my invention; Fig. 2 shows, in section, the upper die of the press for the particular design of article illustrated; Fig. 3 is a plan view, looking upward, of the upper die; Fig. 4 shows in section the position of the die in making the first impression with the synthetic resin of the basic color; Fig. 5 is a similar view showing the second impression with the synthetic resin of a second and contrasting color being molded on top of the resin of basic color; Fig. 6 is a section through the button after the step of molding the resin of the first or basic color; Fig. 7 is a section through the button with the resin of the second color molded thereon; Fig. 8 is a section through the button after the removal of part of the resin of second color along the line shown in Fig. 7; Fig. 9 is a plan view of the finished button showing the duo-colored surface decoration thereof; Fig. 10 is a section through the upper die used to obtain a three color effect or surface decoration in a circular pattern; Fig. 11 is a plan view of the upper die of Fig. 10; Fig. 12 shows the position of the mold elements after the first impression of resin of one color; Fig. 13 shows the