

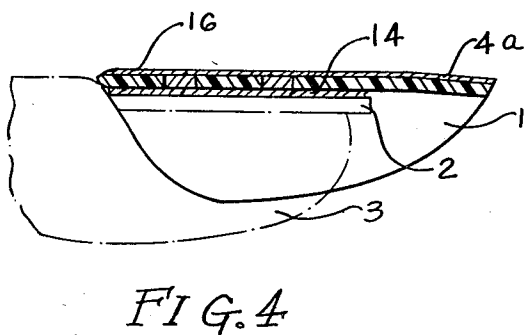
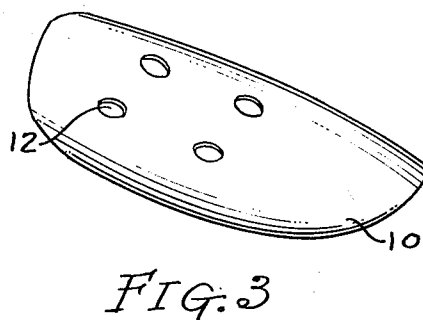
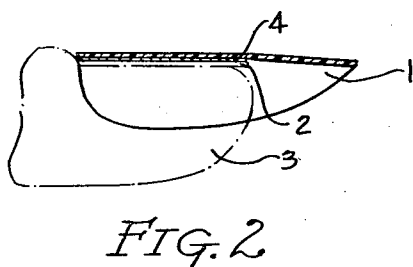
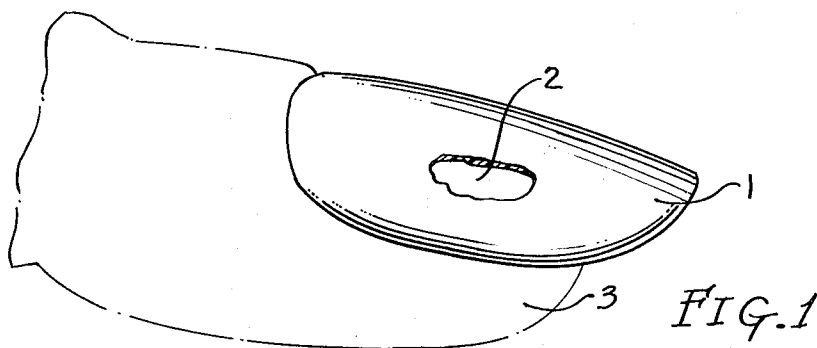
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ARTIFICIAL NAIL COVERING AND METHOD OF APPLYING SAME

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1

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ARTIFICIAL NAIL COVERING AND METHOD OF APPLYING SAME

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9 Claims. (Cl. 132—73)

This invention is addressed to artificial nails and to the method for applying the same. It relates more particularly to the construction and application of an artificial nail adapted to overlie one's toenail or fingernail to simulate the natural nail and enhance the appearance thereof and to protect the underlying nail from harm or destruction.

This invention was conceived and developed to meet the needs of those whose nails are subject to breakage or deterioration by reason of embrittlement of the natural nail as from the lack of sufficient moisture or deficiencies in the chemical makeup of the nail from the standpoint of certain components believed to be needed to make the nail tough and flexible. A very common complaint, especially amongst women, resides in the ease by which a nail becomes chipped or broken upon the slightest impact or encounter, even without external forces, where deficiencies exist in composition. This has presented a medical problem which, to the present, remains unsolved although some attempts have been made to increase the protein content of the nail by the use of gelatin pills or powders and the like compounds containing cysteine molecules.

Not having found medical or dietary means to overcome the deficiencies of the natural nail, it has become imperative to devise other means to protect the nail from impact, abrasion, or other physical forces which lead to the painful and often unsightly state occasioned by the cracking or chipping of the nail. Thus, it is an object of this invention to provide a means whereby the foregoing objectives can be achieved in a simple and efficient manner.

In addition to the medical reasons for the development of an artificial nail, there are various cosmetic reasons related to the attractiveness and appearance which it is desirable to embody in one's nail. For example, one very often desires to have an exposed nail such as one's fingernail, present a predetermined colored effect. While color can be applied by some by the use of a fingernail polish, others find that solvents and other ingredients in a fingernail polish are undesirable from the standpoint of effect on the nail or because of the dermatitis effects which the materials might have on the person. This is aside from the need for certain techniques for proper application of the polish to the nail and the time and effort expended in the application and removal of such polishes.

Further, one often desires to have nails which extend far beyond the ends of the fingers, yet finds it difficult to preserve the nail to this extent because of the tendency either to bite the nail or because the nail projects to such an extent that it becomes difficult to avoid impact or breakage, with the result that it becomes imperative subsequently to trim down all of the nails of the hand. In addition to the inability to maintain a desired dimension or shape, the natural nail is sometimes subject to certain defects or blemishes in its surface, which defects or blemishes often detract from the outer appearance thereof.

2

Thus it is another object of this invention to provide a material and means whereby an artificial nail can be applied to simulate the appearance of a natural nail and to embody desirable characteristics therein from the standpoint of color, shape and appearance while, at the same time, protecting the natural nail. It is a related object to provide a simple and efficient means for fixing one's nails to obviate deficiencies in the nail and to enable predetermined characteristics and appearance to be introduced while still maintaining the natural appearance of the nail.

These and other objects and advantages of this invention will hereinafter appear and for purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a perspective side view of an artificial nail embodying the features of this invention, superimposed upon a fingernail and with portions of the artificial nail cut away for disclosure of the elements on the underside thereof;

Figure 2 is a sectional elevational view taken lengthwise through the nail shown in Figure 1;

Figure 3 is a perspective view of a preferred modification in an artificial nail embodying the features of this invention; and

Figure 4 is a sectional elevational view taken lengthwise through the nail of Figure 3 in its assembled relation on the finger.

I have previously developed an artificial nail formed of a thin strip of synthetic resinous material molded to conform to the contour of the fingernail, as illustrated in Figs. 1 and 2 of the drawing, for adherence by an adhesive material onto the natural nail to become a part thereof. A number of difficulties have been encountered in the use of such element, amongst which there is included the difficulty of achieving a strong bonding relationship between the top surface of the natural nail and the artificial nail because the natural oils often present on the surfaces of the natural nail are subsequently released to the surface tend to decrease the bonding relationship. Similarly, it is difficult sometimes to develop a strong bonding relationship to the resinous material employed to formulate the synthetic fingernail, as represented by such polymeric materials as polyacrylic acid ester polymers, such as polymethylmethacrylate or such resinous polymers as polyethylene. As a result, separations sometimes occur between the artificial and natural nail with the result that replacement of the entire set is often required.

A further difficulty frequently encountered is the inability of elimination of all of the diluent employed in the adhesive material applied between the substantially solvent and vapor-impermeable synthetic resinous material forming the artificial nail and the natural nail. Under such circumstances, the desired bonding relationship is never developed and the continuous presence of organic solvents on the natural nail often leads to undesirable effects both to the nail and the adjacent skin. When set, the artificial nail can still be lifted quite easily from the natural nail to the extent that it can become lost by catching onto objects or by impact.

Still further, the application of a top coat onto the artificial nail for coating or concealing the normal outgrowth of the natural nail, which carries the artificial nail forwardly with it, becomes difficult and unproductive by reason of the inability to develop a strong and permanent bonding relationship between the relatively smooth and inert top surface of the artificial nail and the coating material. The same difficulties of chipping with respect to such coating are often encountered.

I have succeeded now in overcoming these deficiencies by the combination which, in its preferred application,

3

makes use of a nail 10 of synthetic resinous material having a plurality of small openings 12 extending there-through in a spaced-apart relation in the body portion, and an adhesive 14 in the form of a solventless varnish preferably formed of a monomer or of the combination of a polymer dissolved in the corresponding monomer to provide a material of fluid consistency which is capable of being evenly and thinly spread over the surfaces of the natural nail and which solidifies to a set stage without the necessity for releasing vapors of solvents or the like, thereby to enable a composite system to be formed which becomes strongly integrated to the surface of the natural nail. When the monomer of which the adhesive is formed corresponds to the monomer of which the synthetic resinous polymer of the nail is formed, a unitary assembly can be achieved upon setting which defies separation and in which the separately applied components become fully blended one into the other.

While use can be made of a monomer capable of addition polymerization through unsaturated ethylenic or acetylenic linkages, it is preferred to make use of a mixture of the monomer with some of the polymer dissolved therein preferably in an amount ranging from 1-60 percent by weight polymer to increase the viscosity of the adhesive and the ability to spread a layer of desirable thickness on the surface of the natural nail. As the monomer, use is preferably made of one of the acrylic acid ester polymers, such as polyethylmethacrylate, polymethylmethacrylate, polybutylmethacrylate and the like, or such polymeric materials as are formed of styrene, vinyl chloride, mixtures of vinyl chloride and vinyl acetate, ethylene, vinylidene chloride and the like. Instead of making use of a monomer corresponding to that of which the polymer of the nail is formed, use can be made of unrelated materials of fluid consistency capable of cure without the release of vapors or solvents, as represented by the materials often referred to as solventless varnishes or contact adhesives, as represented by the unsaturated polyesters, polyurethanes, or isocyanates and the like.

The openings 12 through the artificial nail 10 enable adhesive to be applied to the surfaces of the natural nail in excess of that required completely to fill any crevices in the adjacent surfaces of the natural and artificial nail to insure full and intimate contact throughout for maximizing the bonding relationship between the elements. The excess of the adhesive is capable of flow through the openings 12 to the top side of the artificial nail where it can be spread over the surfaces thereof to form a protective coating 16. This top layer 16 not only operates to build up the thickness of the artificial nail but, by reason of its being tied to the underlying layer 14 through the openings 12, the artificial nail 10 becomes encased between the applied layers to prevent separation therefrom.

Still further, the freshly applied layer thus spread over the top surface of the artificial nail provides a fresh surface to which colored coatings may be strongly bonded to enable color permanently to be applied. The top coating is also more receptive to over-coats of the same or related materials to enable the valleys formed between the applied artificial nail and the base of the natural nail upon natural outgrowth to be filled with coating material continuously to maintain the appearance without the need for replacement of artificial nails, thereby to make full and more adequate utilization of the applied nails.

The artificial nails can be molded to shape from various synthetic resinous materials such as the polymers formed of the monomers previously described for use as the adhesive material. The resinous material of which the artificial nail is molded can be clear, but it is preferred to incorporate a filler to provide an opaque appearance corresponding to that of the natural nail. Coloring pigments can also be formulated into the resin to provide permanence and uniformity of color throughout. Usually, it is preferred to avoid color in the artificial nail since

4

otherwise large inventories in nails would be required to satisfy the many desired shades. It would be more efficient to supply the artificial nails in a natural or light color and to make use of an over-coating with colored adhesives or coatings to provide the desired shade.

While the openings 12 in the artificial nail represent the preferred practice of this invention to enable flow of excess adhesive from the underside to the top surface of the artificial nail for spreading over the surface to integrate the nail between the composite connected layers, it will be apparent that some of these concepts can be employed to enable the use of an artificial nail of the type shown in Figs. 1 and 2 without the deficiencies heretofore encountered.

In accordance with the modified practice of this invention, an artificial nail of the type illustrated in Figs. 1 and 2, without openings through the body portion thereof, can be effectively and efficiently bonded to the top surface of the natural nail by the use of an adhesive of the type described since the adhesive material is capable of polymerization to become a part of the artificial nail, and it is capable of being advanced to such set stage without the release of solvents or other vapors. Thus the continuous nail can be bonded by a set adhesive to the artificial nail. Because of the ability of the adhesive to set without the release of solvents or vapors and because of the ability of the adhesive to become integrated as a part of the artificial nail, the adhesive, in the system described, can be considered to be a part of the nail to conform exactly with the contour of the top surface of the artificial nail which can thus act as a mold surface to integrate the previously formed nail onto the surface thereof. Thus, artificial nails can be formed of a desired contour and shape for use with fingernails which might be characterized by surface roughness or uneven contours or shapes but which become completely filled and integrated by the binder component which becomes a part of the artificial nail.

Referring now to the drawing, an artificial nail 1, as of polymethyl methacrylate, is superimposed upon the natural human nail of a human finger 3. Fig. 2 shows the artificial nail 1 bonded to the human nail 2 by means of a layer of adhesive 4 as of methyl methacrylate applied as a monomer having about 40 percent by weight of the corresponding polymer dissolved therein with about .1-1.0 percent by weight of benzoyl peroxide catalyst. The adhesive polymerizes rapidly upon standing to form a resinous material which blends to form a part of the artificial nail 1.

Fig. 3 shows the artificial nail 10 carrying a plurality of perforations 12, and Fig. 4 shows the artificial nail superimposed upon the human nail 2. It will be noted that the artificial nail covering is bonded to the human nail 2 by means of a layer of bonding material 14 and that this bonding material extends through the perforations 12 to form a part of, or else to become integrated with, the top layer 16 on the upper surface of the artificial nail 10.

The artificial nail 1 or 10, as shown in the drawing, is readily applied. As depicted in Figs. 1 and 2, a bonding material of the type heretofore described is applied to the natural human nail 2 in liquid form. This can be applied with the ordinary type of nail brush as is commonly employed in the application of a fingernail polish.

When applied with an artificial nail 10 of the type depicted in Figs. 3 and 4, the bonding material should be applied in a sufficient quantity not only to cause the artificial nail covering 10 to adhere to the natural nail 2 but also to permit an excess thereof to exude through the perforations 12. The excess quantity of bonding material which passes through the openings 12 to the top side of the artificial nail 10 can then be spread along the upper surface of the artificial nail to provide the layer 16. It will be readily seen that when the bonding

material sets, the layer of the bonding material between the natural nail and the artificial nail and the layer 16 of the bonding material on the surface of the artificial nail will be continuous and connected by means of the bonding material which extends through the openings 12. The artificial nail 10 thus forms, with the continuous layers 14 and 16, and integrated combination with the natural nail 2.

It will be understood that changes may be made in the details of construction and application without departing from the spirit of the invention, especially as defined in the following claims.

I claim:

1. A covering for a human nail including a thin plastic member shaped to conform to the contour on the top side of the natural nail and having a plurality of perforations extending continuously therethrough, a layer of the same resinous binder upon both surfaces of said plastic member, one of said layers bonding said plastic member to the natural nail, and both of said layers being connected by columns of said binder extending continuously through said perforations.

2. A covering as claimed in claim 1 in which the chemical binding material comprises a resinous monomer capable of polymerization without the release of vapors.

3. A covering as claimed in claim 1 in which the chemical bonding agent comprises the combination of a resinous polymer dissolved in the corresponding monomer of which the polymer is formed.

4. A covering as claimed in claim 2 in which the monomer corresponds to the polymer of which the plastic member is formed.

5. The process of covering a natural human nail comprising coating the natural human nail with a resinous adhesive in a fluid state, applying an artificial nail formed of a synthetic resinous material onto said adhesive layer

while still in a fluid state, said artificial nail being characterized by a shape conforming to the underlying natural nail and having a plurality of perforations extending continuously therethrough in spaced apart relation, permitting some of the fluid adhesive to migrate through the perforations of the artificial nail, and then spreading the adhesive extruding through the perforations of the artificial nail over the upper surface of said artificial nail to provide facing layers of the adhesive on opposite sides of the artificial nail and interconnected through the perforations with the underlying adhesive layer securing the artificial nail to the natural nail.

6. The method as claimed in claim 5 in which the resinous adhesive in a fluid state constitutes a solventless polymerizing resin-forming material.

7. The method as claimed in claim 5 in which the resinous adhesive is applied in a fluid state in excess of the amount required for the intermediate layer to bond the artificial nail to the natural nail whereby the excess passes upwardly through the perforations to provide material for spreading on the opposite side thereof.

8. The method as claimed in claim 5 in which the fluid adhesive comprises an acrylate monomer.

9. The method as claimed in claim 5 in which the fluid adhesive comprises an acrylate monomer having polymer dissolved therein.

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