

Oct. 3, 1950

J. P. BORDNER
ARTIFICIAL BREAST

2,524,028

Filed March 11, 1946

3 Sheets-Sheet 1

Fig. 1

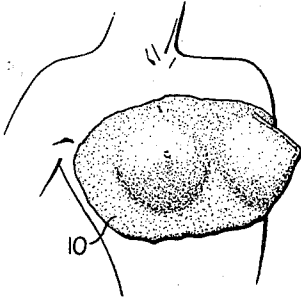


Fig. 2

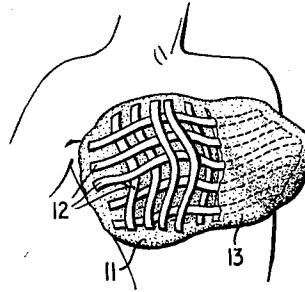


Fig. 3

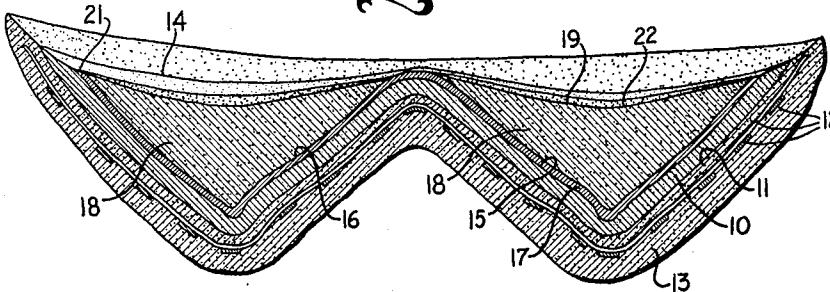


Fig. 4

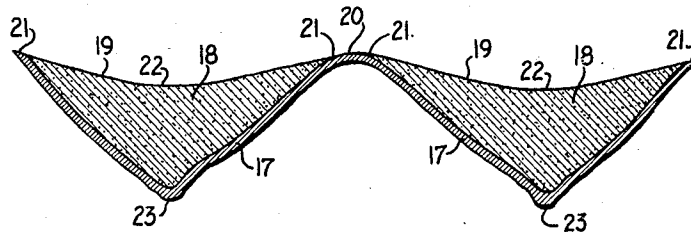
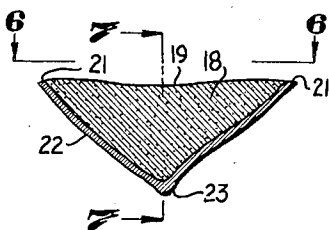


Fig. 5



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Fig. 6

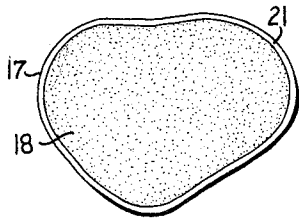


Fig. 7

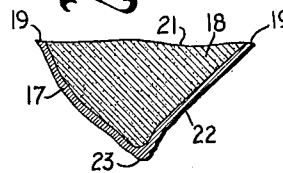


Fig. 8

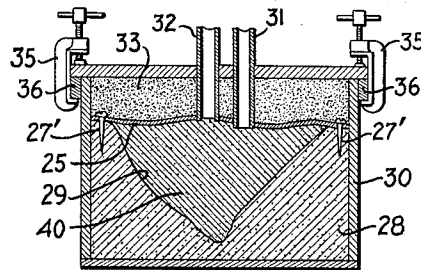
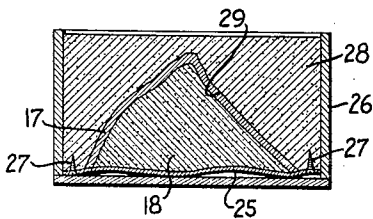


Fig. 9

Fig. 11

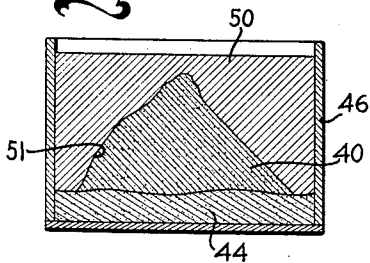


Fig. 10

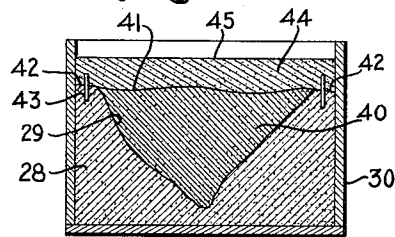


Fig. 12

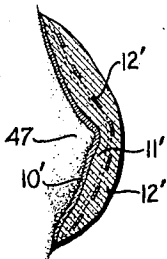
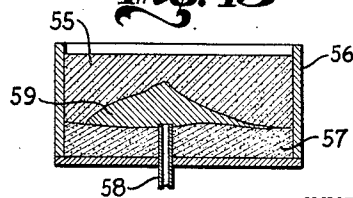


Fig. 13



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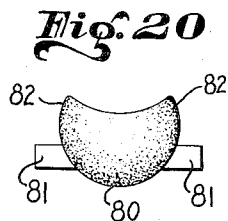
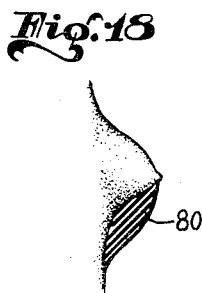
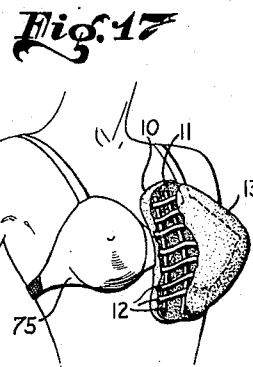
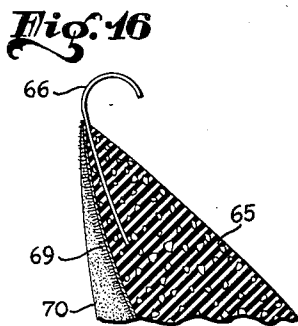
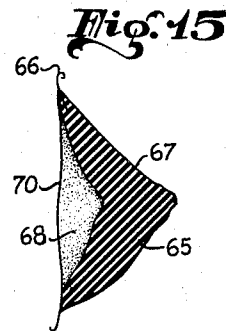
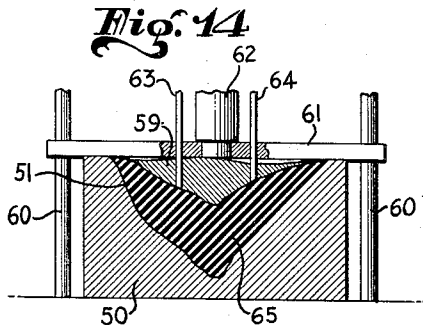
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2,524,028

ARTIFICIAL BREAST

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Application March 11, 1946, Serial No. 653,665

2 Claims. (Cl. 2—267)

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The invention relates to artificial breasts and breast pads designed to retain the full molded symmetry of a female breast and at the same time preserve a naturalness of texture and form so that the resultant effect will be realistic.

Although artificial breast fronts and bust pads have been in common use for a great many years and although they have been designed and manufactured in a form intended to simulate the form of a female breast, for the most part the form has been no more than an approximation designed to serve as a foundation over which garments might be draped to give the garment sufficient support to convey the impression of there being a breast of appropriate proportions therebeneath.

Furthermore, the various artificial breasts in common use are of such inner contour that instead of the pad conforming to the breast, the breast must conform to the pad. Consequently, when worn the pad presses against the nipple and flattens the nipple together with the aureole which is definitely unhygienic and harmful.

Insufficient attention has been given to the design and preparation of a breast foundation front representing a real breast with sufficient veracity so that it could be worn under very light-weight or abbreviated gowns. To be truly effective the breast foundation front must avoid the appearance, under these circumstances, of being an obvious false front or a built-up foundation.

It is, therefore, among the objects of the invention to provide a new and improved artificial breast front fitting, light in weight and of a sufficiently firm texture so as to give a realistic impression and at the same time to make the front capable of being worn with comfort.

Another object of the invention is to provide a breast foundation front adapted to fit the breast in the nature of a brassiere so that in addition to providing a built-up front the breast beneath it will be supported and strengthened to a desirable degree.

Still another object is to provide a new and improved breast front so fitted to the contour of the bust that the outline of the breast front will snugly fit the bust with the majority of pressure against the pectoral muscles upon which the breasts depend for support so that any movement in the ordinary course of wear will have the effect of massaging the pectoral muscles and thereby permit the user to enjoy a hygienic and beneficial effect.

Still another object is to provide an artificial breast foundation front which can be so arranged as to lift the breast and utilize a portion of the wearer's breast supplemented by the foundation to

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give the appearance of an up-lifted breast of more generous proportions and erect form than is actually present.

It will be apparent from the accompanying drawings and the following description that while many elements of the structure and the method herein described for producing the structure are familiar to the art of making foundation fronts, old elements and new have been marshalled together to produce a new and novel artificial front entirely distinct from anything heretofore used or produced, easy to fabricate and operate, more efficient than previous methods and products produced thereby, and having a usefulness which will continue indefinitely.

In the drawings which illustrate the steps of the method and the product produced thereby:

Figure 1 represents a perspective view showing the first step of the method where the original impression is made on a human model form.

Figure 2 represents a perspective view showing successive steps in the application of material to the human form.

Figure 3 is a cross-sectional view showing a composite structure resulting from further steps in the product of the front.

Figure 4 is a cross-sectional view of a molded reproduction of the breasts illustrated in Figure 1.

Figure 5 is a cross-sectional view of one of the breasts shown in Figure 4 broken away from the other.

Figure 6 is a rear view of the form shown in Figure 5 taken on the line 6—6.

Figure 7 is a longitudinal, sectional view of the form shown in Figure 5 taken on the line 7—7.

Figure 8 is a sectional view of the form in place in a mold box showing an intermediate step in the production of a master cavity mold.

Figure 9 is a sectional view of another mold box in which a casting core form has been poured.

Figure 10 is a sectional view of the mold box featuring another intermediate step in preparation of a master cavity mold.

Figure 11 is a sectional view of a mold box wherein material has been poured around the casting core to form the permanent cavity mold.

Figure 12 is a cross-sectional view showing the first steps in the production of a permanent male mold or form for use with the permanent cavity mold.

Figure 13 is a longitudinal, sectional view of a mold box illustrating the final step in the production of a permanent male mold for use with the permanent cavity mold.

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Figure 14 is a sectional view of the permanent cavity mold and male mold during the process of casting an article of the nature of a false breast front.

Figure 15 is a longitudinal, sectional view showing a resulting false breast front made by the process.

Figure 16 is a fragmentary, sectional view of the resulting product incorporating certain apertures.

Figure 17 is a front, perspective view partially broken away illustrating the first steps of the method modified in a specified degree.

Figure 18 is a profile view partially in section showing the application of a pad of modified form to the breast of a wearer.

Figure 19 is a perspective side view of a pad of modified form.

Figure 20 is a front elevational view of the pad shown in Figure 19.

There is a commonly accepted and wide-spread practice among women to use artificial breast fronts as a foundation in dressing so as to give the breasts a full fashioned roundness and up-lifted effect in order that clothes may hang properly and to generally enhance the figure. With changing modes of dress in which undergarments have been considerably abbreviated there is an increasing demand for realism of form so that if bust pads are to be used they must simulate to the closest possible extent the form, character and texture of real breasts. Inasmuch as the tendency is to enlarge the appearance of breasts to a degree more or less depending upon the form of the wearer, enlarged breast forms must be capable of application to the wearer in a manner which will permit them to be worn comfortably over relatively long periods of time, which will permit them to look real when in place on the bust, and which will, in addition, give to the wearer the help and support normally expected of a well-fitting brassiere.

Where possible, it is desirable to have the artificial breast fronts impart, in addition, a hygienic and beneficial effect, the value of which will continue to be enjoyed after the fronts have been removed. To satisfy these demands the fronts or forms must have the full molded symmetry of female breasts of generous proportions incorporating all the details of the natural physical form.

In order to build a pad of the desired form and proportions, a real-life model is selected having the form and proportions desired. To both nude breasts of the model is applied a material commonly known by the commercial designation as "mulage" or "moulage" which is a plastic material used to a considerable extent for making masks for various purposes, and which has the quality of adapting itself to the form which is to be modeled without sticking to the surface of the form, either in the moistened or hardened state, and without it being necessary to apply a lubricant to the surface to be copied.

Mulage is commonly known to incorporate the ingredients of agar-granular, sodium benzoate, U. S. P. glycerine and water pre-mixed in proportions which produce a material having the unusual faculty of absorbing and retaining moisture and of jelling rapidly and firmly. It is of such a harmless character that it may be eaten or poured on the most delicate membrane without any harmful effect. It will not adhere to any article and may even be poured on the human

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hair and removed therefrom without sticking or pulling.

Over the mulage a layer 11 of plaster of Paris is applied and permitted to stiffen a slight amount. Before the plaster of Paris has set, strips 12 of plaster of Paris impregnated fabric are laid in transverse directions so that they follow to a relatively close degree the contours of the form which is being copied. Over the strips a second layer 13 of plaster of Paris is applied, the second layer being preferably built up to a substantial thickness so that the resulting composite structure will have a sufficient amount of physical strength when removed to avoid being easily broken.

It is important to note that during the foregoing steps in the process the mulage will be pressed snugly about the model form, particularly along the line of demarcation or junction of the breast contours with the bust or chest, and that the line and contour at the junction will be preserved, reinforced and stiffened by the application of plaster of Paris to the mulage over these areas. The effect will be to produce a rim designated by the character 14 which follows the line of junction of the breast with the surface of the chest or bust. The line of junction will have not only the outline of the line of junction or demarcation but will also conform to the variations of the body formation.

After the plaster of Paris has hardened, the composite structure is removed from the model form. The structure will then have preserved therein a pair of cavities or recesses 15, 16 which will be the complement of the original model form in all of its details. To the walls of the cavity will be applied a layer of wax 17 over the entire area. The wax layer should preferably be of substantial depth. In practice a satisfactory depth has been found to be in the neighborhood of $\frac{3}{4}$ of an inch, but this may be varied an amount either way depending upon particular conditions which may be experienced in the building up of the structure, these being in part the result of variations in the types of material used or the wetness of the ingredients. In any event, the area of contact between the wax and the mulage will correspond in location, form and contour to the skin surface of the model.

After the wax has been applied and permitted to harden, the cavity or recess defined by the wax will be filled with a mass or core 18 of plaster of Paris of a suitable texture, care being taken to form the upper surface 19 of the plaster of Paris core with a depression 22 at the center of each side so that the surface 19 over all of its area lies below the rim 14. After the plaster of Paris core has hardened, the core will cling to the wax, and the core together with the wax may be separated from the composite structure defined jointly by the layer of mulage and on the exterior by the plaster of Paris layer 13. Since it is the character of mulage not to adhere to any adjacent surface, it will remain free from the layer of wax which is painted over it and thus permit ready removal.

Upon removal, the plaster core 18 bearing the wax surface 17 will have a form in cross-section as illustrated in Figure 4, being joined together at the area 20. It is then preferable to break the sections apart at the area 20 and treat with each section individually to make a separate mold for each. It should be noted in this connection that the core together with the wax surface will have a rim or edge 21 which will follow the form of

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the rim 14 in line and depth and that the rim 21 will present a somewhat wavy appearance as evident particularly in Figure 5. The rim 21 can be made to take this form by smoothing out the edge of the wax and the plaster of Paris core 18 around and adjacent the rim 14 when the wax and plaster of Paris are applied to the mold cavities, as shown particularly in Figure 3.

The form shown in Figures 5, 6 and 7 will represent the precise form of the model so that not only will a general breast area 22 and nipple 23 be reproduced but also the true line of junction defined by the rim 21 between the breast and the bust, the outline of which is particularly apparent in Figure 6.

The form comprising the core 18 and wax layer 17 constitutes a master form of permanent character. It is next necessary to prepare from this master form a mold cavity from which a duplicate working mold can be cast. To this end a sheet 25 of some material such as sheet lead will be pressed against the rear face of the master form and in particular pressed against the rim 21 so that the lead will follow the contour and shape of the rim. The lead and the master form will then be placed on the bottom of a mold box 26, as shown in Figure 8, and screws or pegs 27 inserted through the sheet lead so that they will eventually key the sheet lead to a mass 28 of plaster material which may then be poured into the box. The mass 28 of material may again be plaster of Paris since this material in particular has the capacity of closely following the surface being molded without substantial variation. The mass 28 of plaster of Paris may then be removed from the box 26, the screws or pegs 27 removed so as to permit removal of the sheet lead, and then the master form comprising the core 18 and wax layer 17 may be removed.

After the core and wax layer have been removed, the sheet lead will be replaced by use of larger screws 27', and the mass 28 of plaster of Paris comprising a cavity mold will then incorporate a mold cavity 29 which will have the true shape of the master form which in turn embodies the shape of the original model. The mass 28 of plaster of Paris will then be inverted within a mold box 30, the sides of which are higher than the sides of the plaster of Paris material. Apertures are then made in the sheet lead into one of which is inserted a pouring tube 31 and into the other a vent tube 32. Following this the space between the top surface of the sheet lead 25 and the top of the side walls of the mold box 30 may be filled with sand 33 and a lid 34 applied to the top of the box to hold and press the sand into place. As shown in Figure 9, clamps 35 may be used engaging the lid and blocks 36 on the box walls to fasten the lid.

After these parts have been assembled, a casting material such, for example, as the commonly known hydrocal, is poured through the tube 31 until it fills the cavity 29, air being meanwhile vented through the tube 32. As a result there is formed a mold core 40 or duplicate mold which will set up hard and be of such property that it may be placed in contact with material of the character of molten metal and still retain its original shape and form. Although hydrocal has been suggested, other molding materials of a similar composition commonly known to the art may be employed.

After the mold core 40 has set, the lid 34 is removed, the sand 33 is poured out, and the lead sheet removed by release of the screws or pegs 27'.

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Removal will expose an upper surface 41 of the mold core 40 and also an upper surface 42 of the plaster of Paris mass 28. It will be apparent that the line and contour of the surface 42 will be the same as the line and contour desired of the breast front which will eventually be formed from the mold inasmuch as this surface will have been made to form to the original line and contour of the model.

To facilitate subsequent use of the mold, pins 43 may be applied to the holes left by the screws 27', the surfaces 41 and 42 painted with a lubricant or investment, and then a layer 44 of hydrocal, or similar material, poured and finished off with a smooth, flat surface 45.

The several masses of material will then be removed from the box 30. The mass 28 of plaster of Paris will be broken away from the mold core 40, and the mold core together with the layer 44 of similar material will be inverted and placed in the bottom of a box mold 46 of proportions similar to the box 30. The last described box, however, must be of a material into which molten metal may be poured without resulting damage. After the cavity mold 28 and layer 44 have been fixed within the box mold 46, as shown in Figure 11, a mass of molten metal, or other plastic material capable of forming a permanent, lasting mold, will be poured into place surrounding the core and permitted to set. When the metal has finally set and cooled, it can be removed from the box 46 and the layer 44 and mold core 29 removed. The metal will then provide a permanent female mold portion 50 or cavity mold having a mold cavity 51 which is the complement of the exterior surface of the original model.

By the foregoing process there is defined one-half of a set of permanent molds from which the artificial breast can be cast. The next step is to provide a second mold part for use with the first which will provide a breast pocket in the breast front in order that the front may be fitted to a wearer.

The second mold part will be male form and presumably made to substantially the size of the breast of the prospective wearer. It is anticipated, however, that a certain predetermined variety of sizes may be provided since it is not essential to have a tailored fit in each case. To this end a model breast 47 is selected of a size and shape relatively smaller than the original model illustrated in Figure 7.

A temporary mold is made of the breast following the same procedure described in connection with Figures 1 and 2, utilizing a layer 10' of mulage, a layer 11' of plaster of Paris, strips 12' and an outer plaster of Paris layer 13'. The succeeding described steps will also be followed in the same sequence until there has been formed a temporary mold similar to the wax coated core illustrated in Figure 7. Since it is desired to produce a metal or permanent mold having precisely the same shape and size as the wax coated core, the next step incorporates the application of a sheet of lead to the core of smaller size in the same manner as previously described and then insertion of the smaller core together with the lead sheet in a box mold. The box will have the same general shape and size illustrated in Figure 8 or slightly smaller.

On this occasion, however, instead of pouring a material such as plaster of Paris into the box mold around the core, a material such as the previously described hydrocal is used making a cavity mold 55.

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In preparing the cavity mold 55 for the next step, illustrated in Figure 13, the procedure described in connection with Figure 9 may be followed to a certain degree. That is to say, the cavity mold 55 may be placed in a suitable box mold 56 initially with the cavity uppermost and the core still in place. On this occasion, however, it may be advisable to immediately fill the remaining upper portion of the box with a layer 57 of hydrocal. To prevent the layer 57 of hydrocal sticking to the core and the cavity mold 55, exposed surfaces may be painted with a lubricant or investment such as, for example, turpentine, which forms a definite separating line which will permit the layer 57 when set to be lifted from its position over the core and cavity mold 55.

In performing the next step the layer 57 will in fact be removed temporarily, the wax coated core will also be removed, and the layer 57 replaced. A preferred practice, however, is to remove the cavity mold 55 also from the mold box, place the cavity mold and layer 57 together, invert them, and place them within the box mold 56 in the positions illustrated in Figure 13.

Molten metal may then be introduced into the cavity within the cavity mold 55 through a suitable tube 58. In this instance, since the pouring tube extends upwardly into the pouring cavity, molten metal will need to be introduced under pressure. Likewise in this instance, vents not shown but familiar to those skilled in the art of casting materials, may be employed.

After the metal has set, the mold may be broken apart and a permanent, metal, male mold part 59 removed.

The mold parts are now ready for assembly in the manner illustrated in Figure 14. As there shown, the cavity mold part 50 will be placed in position with the cavity uppermost within a frame defined by upright elements 60 and a cross-piece or platen 61. It will be desirable to have the male, permanent, mold part 59 attached in proper position to the underside of the platen 61, the platen being in turn attached to a piston rod 62 for moving it up and down. The mold parts will then be adjusted to the positions shown in Figure 14, and foam rubber or sponge plastic material of a suitable formula or mix passed through a feeder tube 63 into the space formed between the two mold parts. A vent tube 64 is provided for the ready escape of air which may be present in the space between the two mold parts.

The foam rubber or plastic material will be forced into the space until a mass of the material completely fills out all portions of the space. After the mass has been cured or permitted to coagulate and solidify to a desired amount so that it will all adhere together as an integral mass, the molded parts are separated, and a full molded, artificial breast member 65 will be removed. This may be a left breast or a right breast member depending upon which of the two parts have been molded. To conform with the realistic effect desired, both left and right breasts will be molded separately so that they may be matched as a pair and conform more closely to the original model.

To further the use and application of the false breasts, fabric tabs 66 extending into the member may be molded in place during the molding operation. As a result, these tabs will be firmly implanted in the material of the resulting product and will facilitate sewing the false breast members to the inside of a brassiere, bathing suit or other garment. It will be apparent

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that the false breast has an exterior surface 67 which truly and correctly resembles and simulates the exterior surface of the original model. The false breast will likewise have a breast pocket 68 which corresponds in shape and size to the breast of the prospective wearer. To increase ease and comfort while wearing the false breasts, the breast pocket 68 may have applied thereto a flocculent material 69 which may be applied by spraying or blowing it against a coating of liquid latex or other suitable adhesive. It is important, also, to note that the false breast will have a rim 70 which, because of the molding process just described, will have the outline and depth of configuration of the bust or chest of the wearer at the line of junction with the breast, or sufficiently so to permit the rim to rest snugly upon the pectoral muscles which surround each breast. Application of the rim lightly, but firmly, to these muscles will effect a massaging action whenever the false breasts move about in the ordinary course of wear.

It is, of course, highly advantageous to give the artificial breast members a proper tint or color. Depending on circumstances, the tinting may be of one of a variety of different flesh colors, or, if desired, the color may be light or dark to blend with a garment which may be worn over the members.

On some occasions where an original model of the precise style and size cannot be procured or where a different size or type of false breast may be desired, the model may be supplied with a form-fitting brassiere 75 which will uplift and shape the model's breasts. After this has been done, the same sequence of steps originally described in connection with Figures 1 through 11 may be again followed as may also the steps describing the making of a male mold part corresponding to the breasts of the prospective wearer. The mulage may be applied directly over the brassiere, and after the modeling has been completed, the brassiere may be readily removed from its contact with the mulage.

On other occasions it may be desired to reform the contour of the breast of the wearer and to supplement it with a pad or uplift which does not entirely cover the breast. One means of accomplishing this is to make a cavity mold similar to the mold 50 and then a male, permanent mold similar to the mold 59 but under circumstances wherein the breast of the prospective wearer forming the original of the male, permanent mold has been adjusted by some suitable means to a position which it is designed to occupy similar to that illustrated in Figure 18. This is the uplifted position the breast will have when the uplift or pad is being worn.

The cavity mold and male mold may then be applied together in a manner similar to that shown in Figure 14, but on this occasion the male mold part will be shifted into contact with one side of the mold cavity. On this occasion, also, it will be appreciated that the mold cavity will be substantially the same depth as the male mold part so that the nipple portion of the male mold will coincide with the nipple portion of the mold cavity. Consequently, there will remain a space on the side of the mold cavity opposite the side of contact of the mold parts which is somewhat arcuate in shape and which excludes any means for molding a nipple. A bust pad 80 formed by this process will have a shape similar to that shown in Figure 18, and when attached by means of a suitable strip 81 to a brassiere may be worn

as an uplift in the manner shown. Other and simpler means, however, may be employed to fabricate the last described style of uplift pad.

In the last described form the line and contour of the portion of the pad 80 where it comes into contact with the line of junction between the bust and breast of the prospective wearer will have the same pectoral muscle-engaging effect when worn, in addition to providing a suitable support and enhancing the appearance of the original portion of the breast which can be permitted to be exposed above the pad. Ends 82 will extend around and conform to the sides of the breast and provide contact support at all areas.

Among outstanding applications of the method and product described is the reproduction of an artificial breast to take the place of an amputated member. From the remaining breast, for example, an exterior pattern may be made in reverse to form the exterior or the cavity of a mold. The chest at the amputated portion forms a model for the interior or male part of the mold, and the artificial breast cast therefrom will neatly fit upon the chest and balance the breast on the other side. A built-up exterior, of course, may be provided if desired.

By the provision in the manner described of false breasts which have the realistic appearance of an original breast of shapely and generous proportions there has been provided a false breast front of such design and manufacture that it can be quickly and inexpensively made, worn with comfort, and will provide beneficial effects for the wearer whenever worn. The false breasts are of such realistic appearance that they will satisfy both the visual and sensory perceptions of even the most discriminating.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures, methods and operations.

The invention having been herein described, what is claimed and sought to be secured by Letters Patent is:

1. A breast foundation front constructed in one of a number of conventional rated breast sizes adapted for application to the chest structure of a female form and to extend over the breast comprising a body of substantially resilient consistency, said body comprising exterior and interior surface portions each having initially the same full shape for the corresponding side of the form as exhibited when in use, said exterior surface portion including a simulated nipple at the mid-portion and a rim, said interior surface portion having the shape of a breast pocket and having an irregular rim, said exterior and interior surface portions being matched with respect to each other so that the body portion between them is thicker near the deepest portion of

the pocket and has a progressively diminishing thickness toward the rims and forming thereby a tapered junction between said surface portions at said rims having a shape and depth of contour corresponding to the shape and depth of contour of a line of demarcation between the breast and the chest of the female form, said body on the interior side of the junction comprising a substantially flat area adapted in use to lie flat against the chest in a position surrounding the breast.

2. A breast foundation front constructed in one of a number of conventional rated breast sizes adapted for application to the chest structure of a female form and to extend over the breast comprising a body of substantially homogeneous light spongy resilient consistency, said body comprising exterior and interior surface portions of skin-like texture each having initially the same full shape for a corresponding side of the form as exhibited when in use, said exterior surface portion including a simulated nipple at the mid-portion and a rim of irregular configuration having a shape and depth of contour corresponding to the natural shape and depth of contour at a line of demarcation between the breast and the chest of the female form on the corresponding side of the form, said interior surface portion having the shape of a pocket not smaller in size and proportions than the rated breast size of the front and having an irregular rim, said pocket having a nipple recess at the deepest portion thereof in axial alignment with said simulated nipple, said exterior and interior surface portions being matched with respect to each other so that the body portion between them is thicker near the deepest portion of the pocket and has a progressively diminishing thickness on all sides toward the rims and forming thereby a tapered junction between said surface portions at said rims, said body on the interior side of the junction comprising a substantially flat area adapted in use to lie flat against the chest in a position surrounding the breast.

JAMES P. BORDNER.

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