Jan. 19, 1943. W. J. DEAN 2,308,649

METHOD OF AND APPARATUS FOR PRODUCING DRESS-SHIELD INNER LINERS

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Fig. 1.

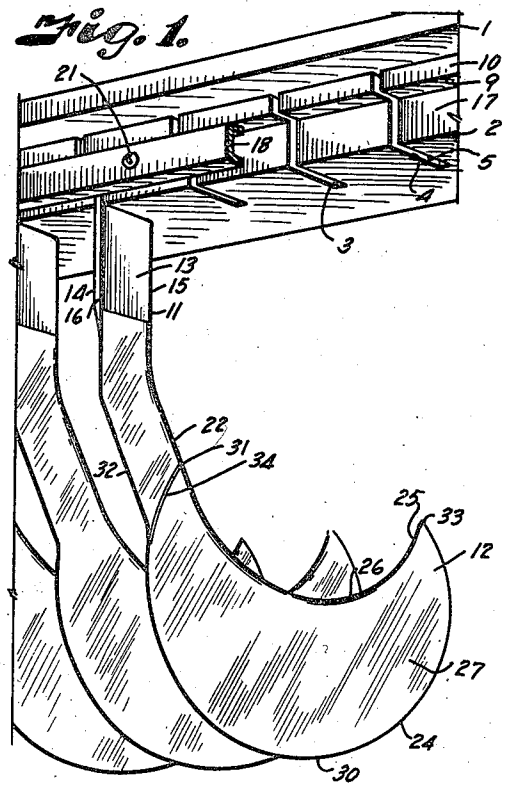


Fig. 2.

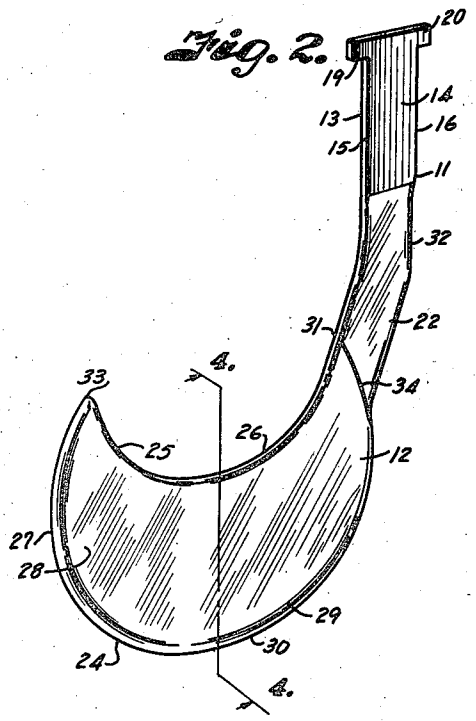


Fig. 3.

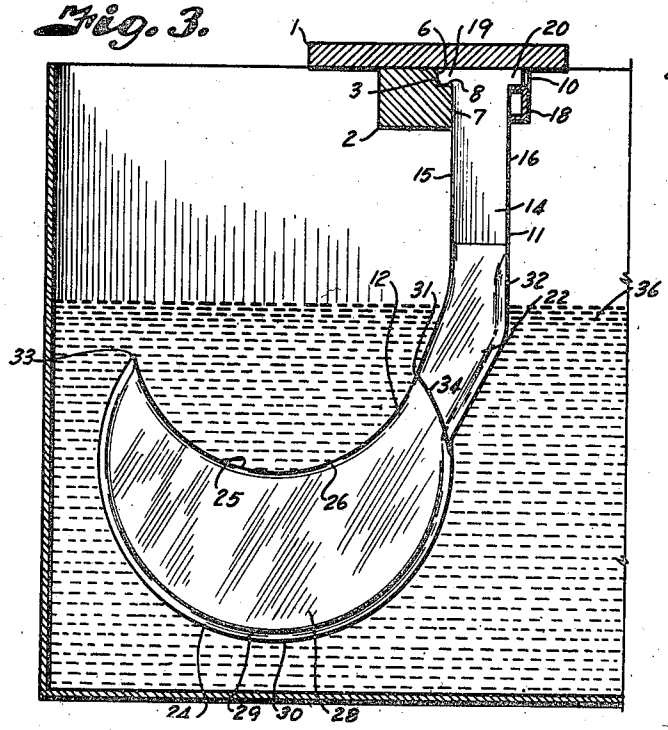


Fig. 4.

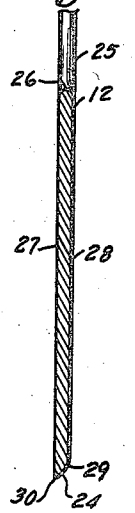
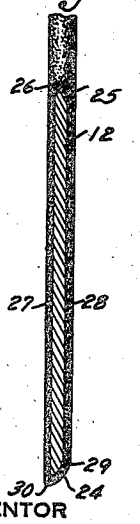


Fig. 5.



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Fig. 6.

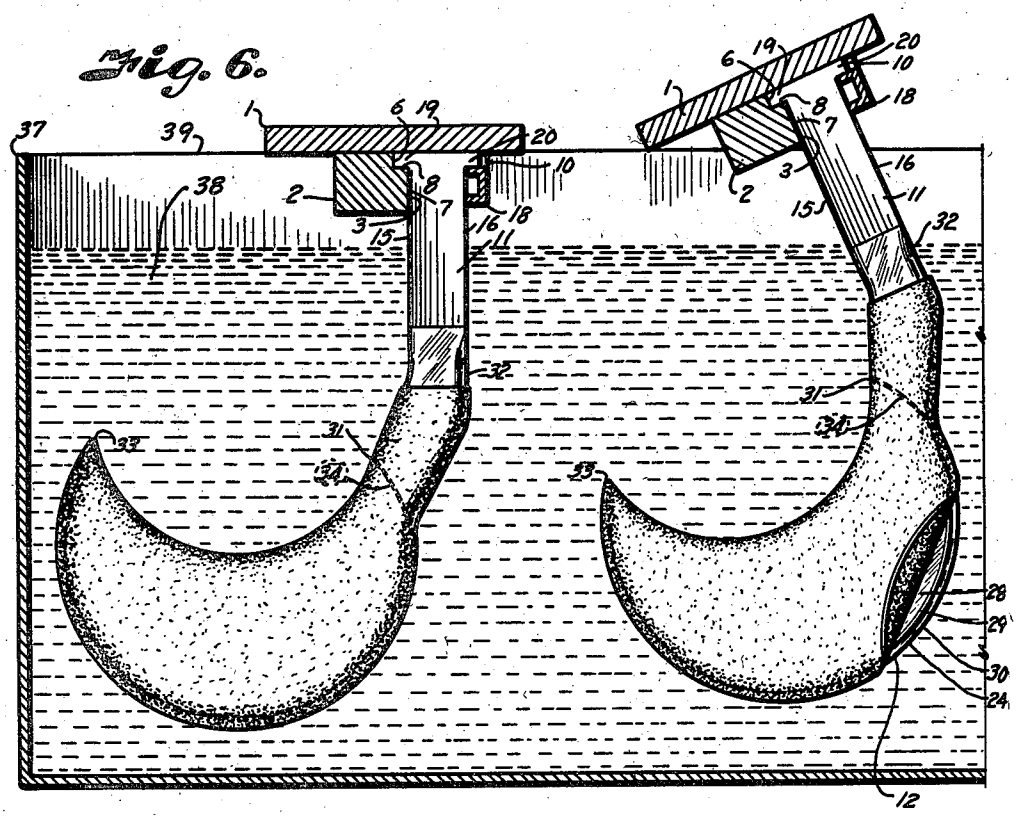


Fig. 7.

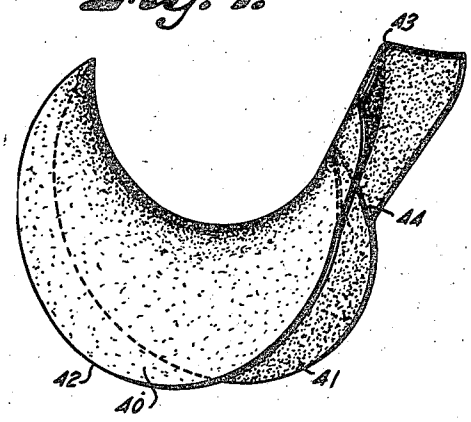
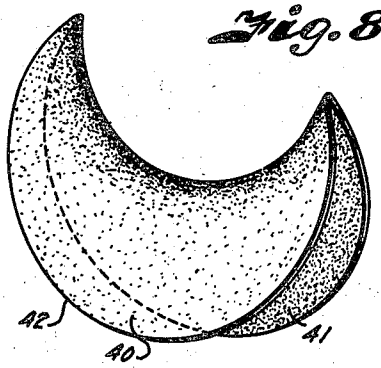


Fig. 8.



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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR PRODUCING DRESS-SHIELD INNER LINERS

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Application April 6, 1939, Serial No. 266,301

11 Claims. (Cl. 18—41)

This invention relates to a method of and apparatus for producing dress-shield inner liners from liquid latex, and has for its principal object to produce an article of this character which is regular in form and free from defects.

Other objects of the invention are to reduce the operations ordinarily required in producing a finished article; to provide a mold form and method of dipping thereof which facilitates smooth application of a latex coating thereon; to provide the mold form with a sharp or knife-like edge to effect severance and facilitate removal of the deposited latex; and to effect the cut and removal of deposited coating so that the edges of the finished article are free of tears and irregularities.

In accomplishing these and other objects of the invention, as hereinafter pointed out, I employ an improved apparatus illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a portion of a dipping board equipped with a plurality of mold forms, a number of which are removed to better illustrate mounting thereof on the board.

Fig. 2 is a perspective view of one of the mold forms removed from the dipping board.

Fig. 3 is a detail section through a vessel containing the body of latex showing the mold forms dipped therein preparatory to withdrawal thereof.

Fig. 4 is a section through the mold form on the line 4—4 of Fig. 2.

Fig. 5 is a similar section showing the latex coating deposited thereon.

Fig. 6 is a sectional view through a vessel wherein the mold forms carrying the latex coatings are soaked and the forms manipulated to effect removal of the coatings.

Fig. 7 is a detail perspective view of a coating after it has been removed.

Fig. 8 is a similar view of the finished article.

Referring more in detail to the drawings:

1 designates a dipping board having an attached strip 2 provided along one edge with a plurality of spaced slots or recesses 3. The side faces 4 and 5 of the slots are substantially parallel and the inner face is provided with offsets 6 and 7 to form a shoulder 8 lying in a plane registering with the face 9 of a projecting portion 10 of the strip 2.

Mounted in the slotted recesses are arms 11 carrying the mold forms 12. The arms 11 have side faces 13 and 14 closely engaging the side faces of the slotted recesses, and are of a width corresponding to the depth of the recesses so that the side edges 15 engage the offset face 7 and the side edge 16 projects sufficiently from the side face 17 of the strip to be grippingly engaged by a clamping bar 18. The arms 11 have laterally extending lugs 19 and 20 to respectively engage the shoulder 8 and the clamping strip 18 so that the arms are securely anchored to the dipping board. The strip 18 may be attached by fastening devices, such as screws 21. The arms 11 terminate in angular portions 22 carrying the mold forms 12. The mold forms 12 are of plate-like character and of substantially crescent shape having arcuate outer edges 24 conforming to the arcuate edge of a dress-shield to be produced thereon, and inner arcuate edges 25 conforming to the inner arcuate edge of a dress-shield. The edge 25 is rounded, as at 26, and merges into the flat faces 27 and 28 of the form. The outer arcuate edge 24 curves, as at 29, from the face 28 toward the face 27 so as to provide a knife-like cutting edge 30 substantially in the plane of the face 27.

The crescent portions of the forms are attached to the angular portions of the supporting arms in the plane of one of the tips of the crescent designated 31 as clearly shown in Fig. 2, the inner or concavely positioned arcuate edge 25 forming a continuation of the edge 15, and the opposite or convexly positioned edge 16 is provided with a knife portion 32 forming a continuation of the knife-like edge 30 which extends continuously to the opposite point of the crescent 33. The crescent shape is defined across the faces of the arms by shallow grooves or scores 34 which leave markings on the article whereon that portion of the coating covering the arm is trimmed, as later described.

The mold forms thus described may be constructed of any suitable material adapted to provide smooth molding surfaces which are preferably of polished character so that latex coatings produced thereon are readily removed.

35 designates a vessel containing a body of latex 36 into which the forms are dipped as shown in Fig. 3 and slowly withdrawn so that a coating of latex is deposited thereon. The apparatus also includes a vessel 37 for containing a solution such as water, designated 38. The vessel 37 may be of any suitable form but the upper, opposite edges 39 thereof are arranged to rest the ends of the dipping boards when the forms are immersed in the water and to provide support for rocking the boards when the coatings are to be removed from the mold forms, as now to be described.

In using the apparatus, a dipping board equipped with the mold forms as above described

is suspended over the body of latex and lowered into position so that the crescents are completely immersed in the body of latex with the points uppermost. The forms are then slowly withdrawn so that latex coatings are deposited on the sides thereof and which congeals progressively with withdrawal.

Since the forms are withdrawn with the points of the crescent uppermost, the coating closely adheres to the forms and there is no pulling away of the coating incidental to the rubbery contact thereof or the surface tension of the latex. In fact, these characteristics of the latex tend to draw the coating more firmly over the rounded edges 26. The coated forms are then soaked in water for a time after which they are removed and reimmersed in the body of latex to produce a second coat over the first. These steps are repeated alternately until a coating of desired thickness is built up on the forms. Usually from three to five dippings are sufficient. The dipping boards carrying the forms are then placed in a rack and the coatings allowed to cure and dry thereon. When dried, the dipping boards carrying the forms are placed in the vessel 37 with the coatings submerged in the water and the ends of the dipping board resting on the edges 39 of the tank as shown in Fig. 6. The coatings are again allowed to soak so that they will loosen readily from the mold forms. When the coatings have soaked for the desired length of time the form boards are rocked upon the edges of the tank to cause the coated forms to swing back and forth through the water. This movement of the forms pushes the water ahead of the knife-like edges so that the impact or pressure of the water is sufficient to cause cutting through of the latex along the entire length of the edge. Further swishing of the forms causes the water to enter between the edges and the side faces of the forms so that the coatings are floated to the surface of the water. The forms are then removed and the coatings gathered from the surface of the water. The coatings then form the articles as illustrated in Fig. 7 which include interconnected crescent-shaped flaps 40 and 41 having smooth, outer, arcuate edges 42 entirely free of tears and similar blemishes. The portions 43 of the coating which clung to the supporting arms remains attached to the crescent-shaped flaps 40 and 41 as shown in Fig. 7. These portions, however, are readily removed by cutting thereof on the demarcation lines 44 to produce the completely finished liner as illustrated in Fig. 8.

These liners are then incorporated in the construction of dress-shields as in conventional practice.

From the foregoing it is obvious that I have provided a method of forming dress-shield liners which, when removed from the forms, require no further preparation other than removing the appendages 43. It is also obvious that the connecting portions of the flaps 40 and 41 are of smoothly rounding curvature and of the same uniform thickness as the side flaps 40 and 41. The finished articles are entirely free of tears and other imperfections which would ordinarily require further processing.

What I claim and desire to secure by Letters Patent is:

1. The method of producing articles from latex including, dipping a form having a knife-like edge into a body of latex, withdrawing the form to effect deposit of the coating thereon, immersing the form in a liquid to soak said coating, and moving the form through said liquid in the direction of said knife-like edge to effect severance of the coating and removal thereof from the form.

2. The method of producing articles from latex including, dipping a form having a knife-like edge into a body of latex, withdrawing the form to effect deposit of the coating thereon, immersing the form in a liquid to soak said coating, and oscillating the form in said liquid in the direction of said knife-like edge to effect severance of the coating and removal therefrom from the form.

3. The method of producing dress-shield liners from latex including, dipping a crescent-shaped form in a body of latex with points of the crescent uppermost, withdrawing the form to deposit a coating thereon, drying the coating, immersing the form carrying the coating in a wash liquid, severing the coating by effecting impact of the wash liquid against the crescent-shaped edge of the form, and removing the coating from the form while contained in said liquid.

4. The method of producing dress-shield liners from latex including, dipping a crescent-shaped form in a body of latex with points of the crescent uppermost, withdrawing the form to deposit a coating thereon, drying the coating on the form, immersing the form carrying the coating in a wash liquid, severing the coating by pressure of the wash liquid against an edge of the form by oscillation of the form in said liquid in the direction of said edge to effect removal of the coating.

5. The method of removing a latex coating from a form having a cutting edge covered by the coating including immersing the form carrying the coating in a liquid, and severing the coating through pressure by said liquid effected through relative movement of the form and liquid in the direction of the cutting edge.

6. The method of removing a latex coating from a form having a cutting edge covered by the coating including immersing the form carrying the coating in a liquid, severing the coating through pressure by said liquid effected through relative movement of the form and liquid in the direction of the cutting edge, and continuing said relative movement for removing the severed coating from the form by the liquid entering between the coating and the form at the point of severance.

7. In an apparatus of the character described including a vessel containing a liquid, a dipping form having a knife-like edge adapted to be immersed in said liquid, and means for oscillatably supporting the form in said vessel and having an axis of oscillation extending transversely relatively to the knife-like edge to cause severance of a coating on said form by pressure of the liquid when the form is oscillated.

8. In an apparatus of the character described, a vessel containing a body of liquid, a flat form having concavely and convexly arranged arcuate edges intersecting at spaced points to provide a crescent-shaped body with the convex arcuate edge having a cutting edge, an arm connected with the concave edge of the form, and supporting means connected with said arm to suspend the form within said liquid and having an axis of oscillation extending transversely of said cutting edge to cause severance of a coating on said form by pressure of the liquid when the form is oscillated.

9. A form of the character described including a substantially flat body having convexly and

concavely arranged arcuate edges intersecting at spaced points substantially in the form of a crescent, said convex edge having a cutting edge coextensive therewith, and a supporting arm connected with the body adjacent one of said points and having a cutting edge forming a continuation of the first named edge to cause severance of an applied coating on said form when pressure is exerted in the direction of the cutting edges.

10. The method of producing substantially crescent-shaped dress-shield liners from latex including, dipping a crescent-shaped form into a body of latex with points of the crescent uppermost and with a severing edge on said form lowermost to cause the latex to spread smoothly over the points and upper edge of the crescent-shaped form and to cause any pulling of the latex that may occur upon removal of the form to take place along the severing edge when said form is withdrawn from the body of latex, withdrawing the form to deposit a coating thereon, drying the coating, effecting severage of the coating by application of a liquid pressure along the severing edge, and removing the coating from the form.

11. The method of removing a latex coating from a form having a cutting edge covered by the coating including, effecting impact of a liquid against the coating covering the cutting edge to effect severance thereof.

WILBUR J. DEAN.