Dec. 26, 1944. A. E. VAUGHN 2,365,922

METHOD FOR PRODUCING POWDER PUFFS

Filed May 6, 1942 3 Sheets-Sheet 1

Fig. 1.

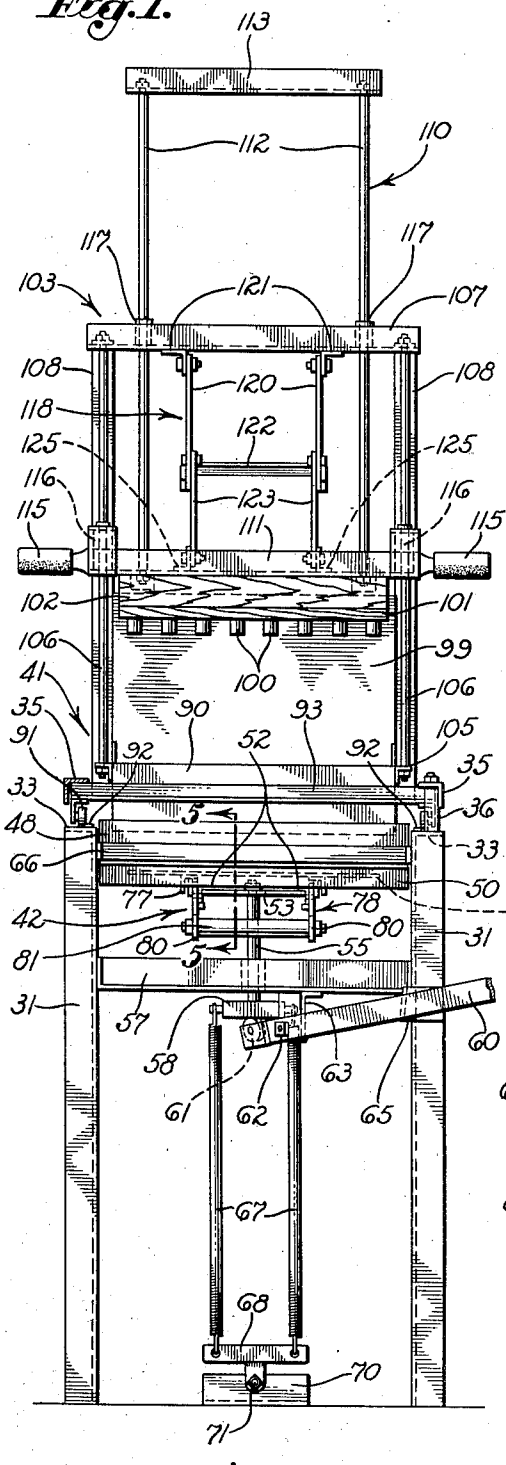


Fig. 4.

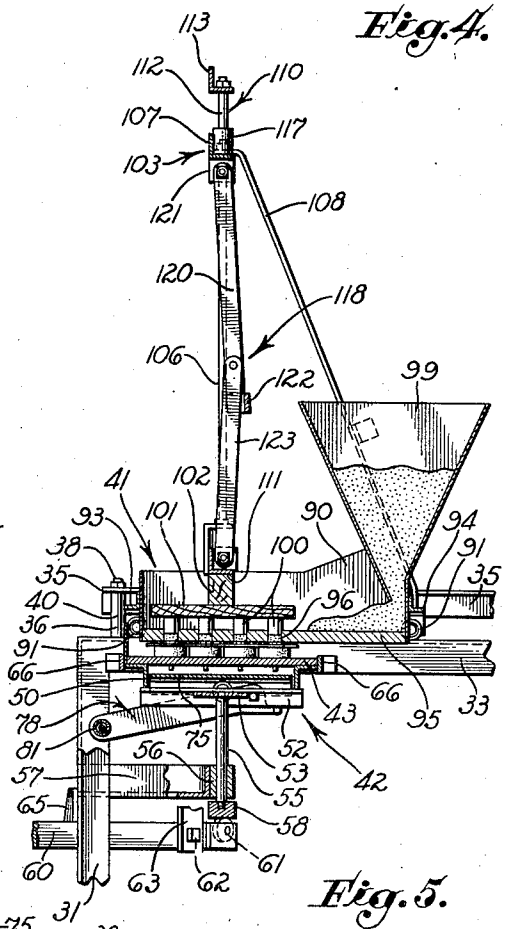
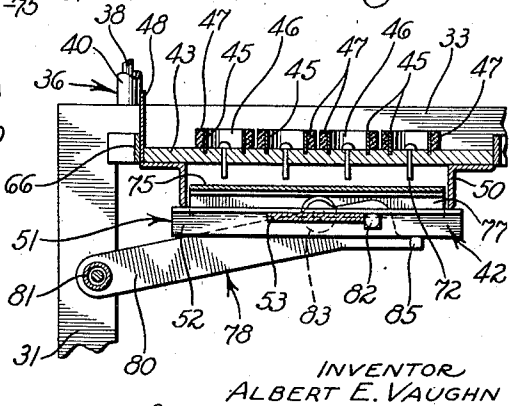


Fig. 5.



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METHOD FOR PRODUCING POWDER PUFFS

Filed May 6, 1942 3 Sheets-Sheet 2

Fig. 2.

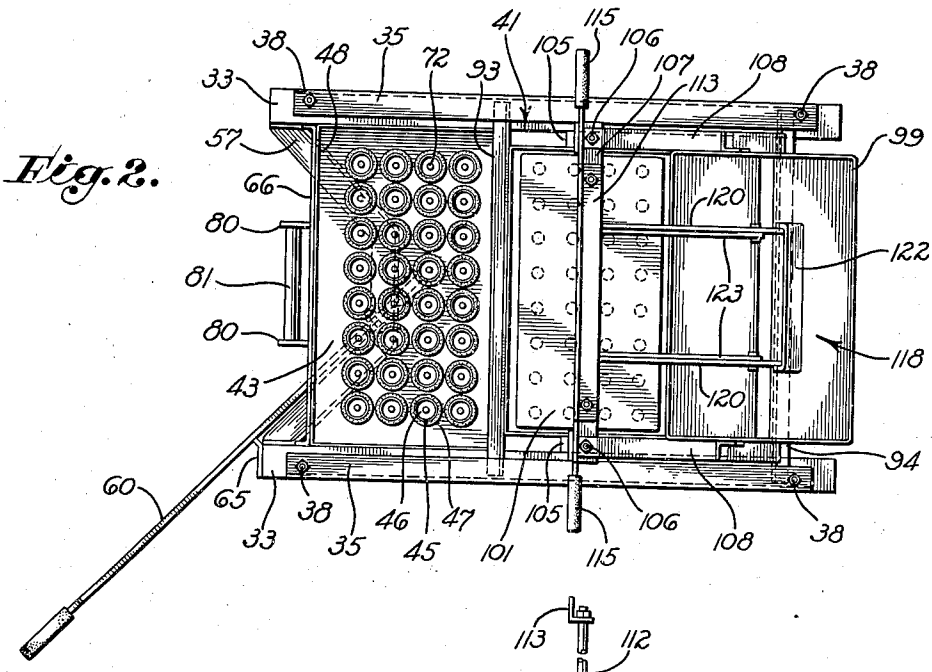
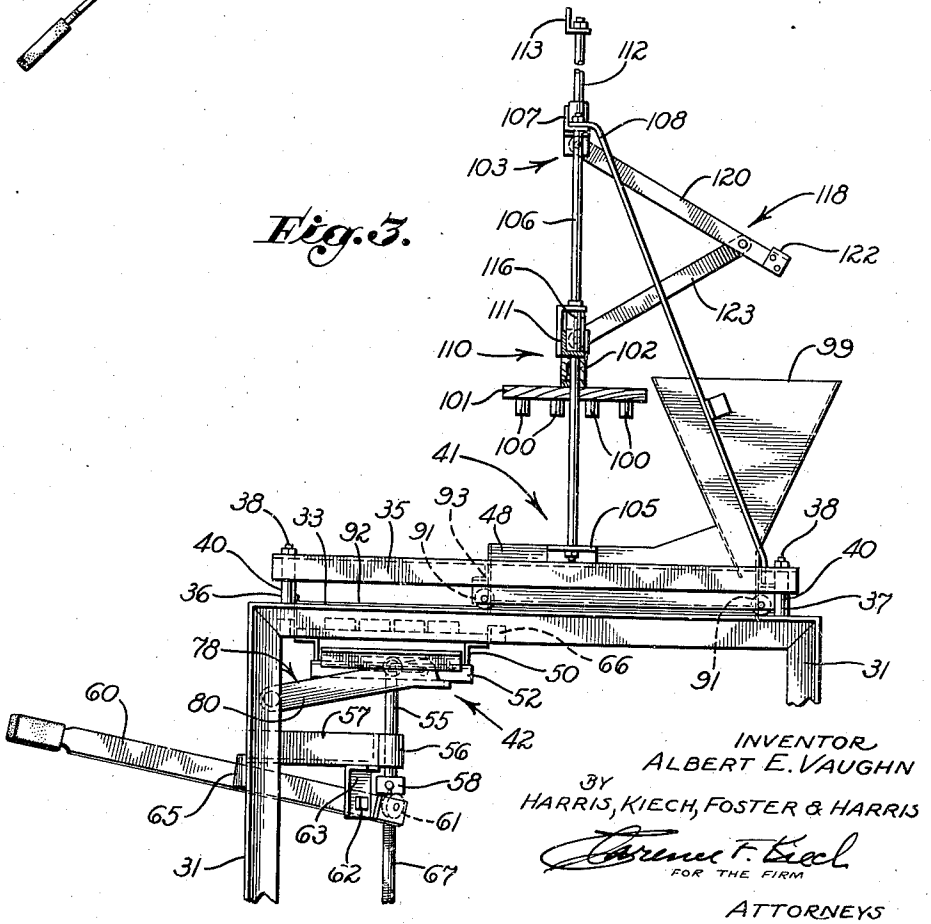


Fig. 3.



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Fig. 6.

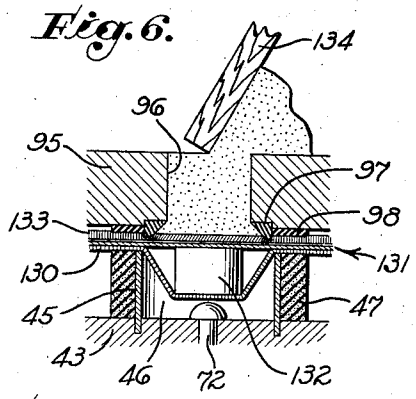


Fig. 10.

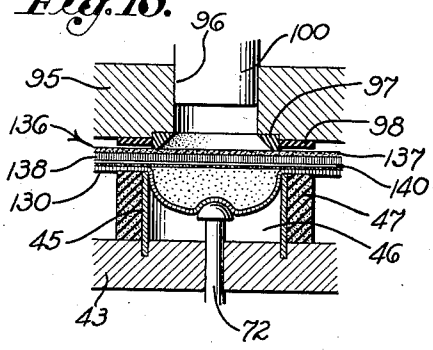


Fig. 7.

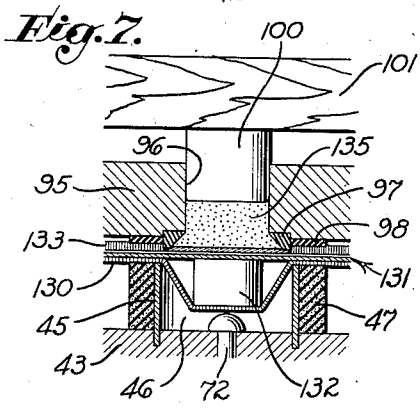


Fig. 11.

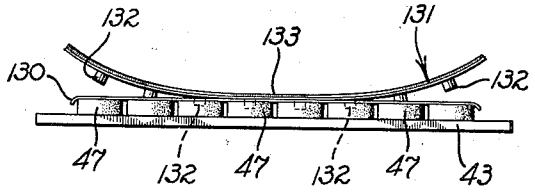


Fig. 8.

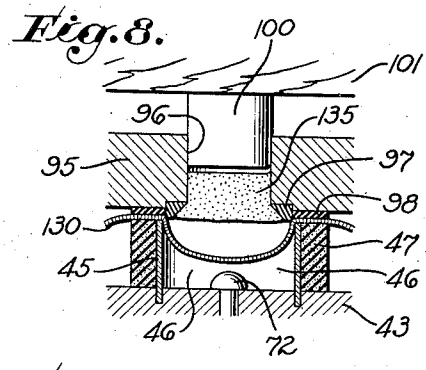


Fig. 12.

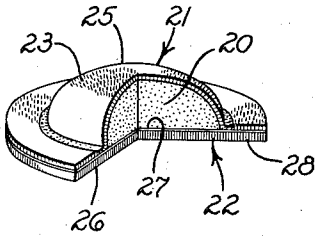
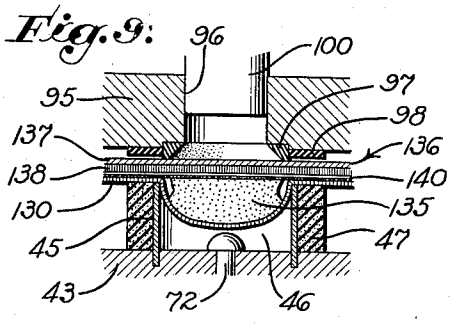


Fig. 9.



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UNITED STATES PATENT OFFICE

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METHOD FOR PRODUCING POWDER PUFFS

Albert E. Vaughn, Los Angeles, Calif.

Application May 6, 1942, Serial No. 442,002

11 Claims. (Cl. 226—19)

The present invention relates to the manufacture and filling of flexible envelopes, and is directed particularly to improvements in the invention set forth in my copending application entitled "Method for producing powder puffs," Serial No. 375,821, filed January 24, 1941. In various practices of the invention the envelopes may contain a wide range of materials in particles of various size, but in the practice chosen for disclosure herein the envelope is in the form of a dispensing powder puff in the cosmetic art.

The general purpose of my invention is to provide an efficient method for producing well fabricated envelopes filled with powder.

Basic steps of the method set forth in the above-mentioned previous application include the formation of indentations or pockets in a first sheet of material, the depositing therein of measured quantities of powder, the overlaying of a second sheet, the bonding of the two sheets together, and the cutting of the bonded sheets around the pockets to release individual powder-filled envelopes. One object of the present invention is to provide a novel and advantageous procedure for forming and filling such pockets without necessity for continuously gripping the sheet from the moment the pockets are formed until the two sheets are bonded. In this regard one feature of the invention is the concept of forming pockets by projections on a plate that is sufficiently flexible for removal from the pockets by a progressive curving action.

A problem encountered in the fabrication of powder-filled envelopes of cloth or like sheet material is that of encasing any substantial quantity of powder in the course of manufacturing the envelopes. It is not difficult to stuff a relatively large quantity of powder into a completed envelope having a suitable opening for filling, but it is exceedingly difficult to enclose relatively large quantities of powder in a procedure involving depositing of the powder masses in open pockets early in the process of fabricating the envelopes. Prior art envelopes produced by the open-pocket procedure are characterized by relatively small and relatively shallow powder masses.

One of the difficulties involved is that of limiting the distribution of the deposited powder in the open pockets to prevent interference with the operation of bonding together the two fabric sheets adjacent the pockets. Any contamination by powder of the adhesive bonding medium results in faulty closure of the envelopes. Another difficulty is that the volume and especially the distribution of the encased powder may place the material of the sheet of the envelope under such stress as to cause the envelope to open after manufacture.

It is a further object of the present improvement to provide a procedure whereby the distribution of the deposited powder is restricted until the bonding step is completed and to include in the manufacturing process an operation for subsequently redistributing the powder to minimize stresses across the bonding zones. A feature of the invention is the concept that this object may be attained by pressing the powder into a temporary tablet form prior to deposition of the powder in the pockets and after the pockets are sealed by pressure breaking up the tablets to redistribute the encased powder before the sealed pockets are released for the free play of stresses across the bonding zones. One of the more specific objects of the invention is to provide a method for temporarily compressing the powder into tablet form, the method involving the employment of a pile fabric against an annular member offering a relatively rigid rim.

The above and other objects of my invention will be apparent in the detailed description to follow, taken with the accompanying drawings.

In the drawings, which are to be considered as illustrative only:

Fig. 1 is a front elevation of the preferred form of apparatus employed in practicing my invention;

Fig. 2 is a plan view of the apparatus;

Fig. 3 is a fragmentary side elevation of the apparatus;

Fig. 4 is a view similar to Fig. 3, the view being partly in section and showing a different position of the mechanism;

Fig. 5 is a fragmentary section on a somewhat enlarged scale, taken as indicated by the line 5—5 of Fig. 1;

Figs. 6 to 10 are cross-sectional diagrams illustrating successive steps in the method performed by using the apparatus;

Fig. 11 is a diagrammatic view illustrating the manner in which a special pocket-forming plate may be employed in the practice of the invention;

Fig. 12 is a perspective view partly in section of the preferred form of dispensing powder puff produced by the method and apparatus.

Fig. 12 shows a mass of powder **20** retained between a front dispensing wall, generally designated **21**, and a back wall, generally designated **22**. Preferably the back wall **22** is not adapted for dispensing powder. For the front dispensing

wall 21 I prefer at present to use a sheet 23 of silken velure, the warp and weft of which is silk and the pile 25 of which is rayon. The back wall 22 may be of any suitable material, but preferably is less flexible than the front dispensing wall 21 so that the front wall rather than the back wall bulges outward to encompass the powder mass 20, as shown in Fig. 12. In practice I produce a back wall 22 of the desired character by using a sheet 26 of cotton velure, disposing the sheet with the pile on the outer face and placing on the inner face a coating 27 for the dual purpose of sealing the inner face of the sheet and of providing the desired thickness in the back wall 22.

The powder puff of Fig. 12 has a marginal portion or flap 28 to serve as means to be manipulated by the user for spreading and blending the applied powder. In the preferred form of my invention the marginal flap 28 is continuous around the envelope and consists of three united layers, a marginal portion of the sheet 23 of silken velure, a co-extensive marginal portion of the sheet 26 of cotton velure, and the intervening coating 27. In the present form of my invention, the intermediate coating 27 is a rubber cement and not only serves to seal and reinforce the back wall 22 of the envelope, but also serves to bond the two sheets 23 and 26 together and to contribute thickness to the marginal flap 28. An important characteristic of the rubber cement is that it is permanently pliant and permits a degree of flexibility in the marginal flap.

In service the powder is pressed and rubbed lightly against the skin to dispense and apply powder from the mass 20, the powder working outward through the mesh of the silken velure. The fact that the back wall 22 is non-porous prevents any substantial quantity of the powder from being dispensed onto the user's hand or being otherwise wasted. After the initial operation of applying the powder, the marginal flap 28 of the powder puff is employed as a wiping means to spread and blend the powder.

The apparatus shown in Figs. 1 to 5 has a stationary frame, of angle-iron construction, the frame including legs 31, and an upper longitudinal pair of parallel bed members 33. On each side of the apparatus frame is mounted a guide rail 35 above and parallel to the corresponding bed member 33. In the construction shown, each of the guide rails 35 is supported by a forward standard 36 and a rear standard 37, each standard comprising a bolt 38 encased by a suitable sleeve 40. The purpose of the two guide rails 35 is to confine a powder-feeding assembly generally designated 41 that is mounted on the frame for movement between a rearward position shown in Fig. 3 and a forward position shown in Fig. 4. A detailed description of the powder-feeding assembly 41 will be given later.

Mounted in the apparatus frame below the longitudinal bed members 33 is a support assembly, generally designated 42, that is vertically movable for cooperation with the powder-feeding assembly 41. As best shown in Fig. 5, the support assembly 42 includes a support plate 43 on which is mounted a plurality of metal cylinders 45, each of which cylinders provides a circular recess 46. Preferably each of the metal cylinders 45 is surrounded by a resilient collar 47 of sponge rubber or similar material. The support plate 43 carries a forward vertical plate 48 and rests on a rectangular frame 50 of angle-iron construction, the rectangular frame in turn resting on a lower frame comprising a pair of longitudinals 52 interconnected by a transverse horizontal plate 53. The transverse plate 53 is in turn carried by a vertical slide rod 55 that extends downward through a guide sleeve 56 on a bracket 57. The vertical slide rod 55 terminates in and is supported by a movable transverse bar 58 that is controlled by a relatively long operating lever 60. The operating lever 60, which carries a roller 61 for engagement with the transverse bar 58, is pivotally supported by a bolt 62 on a bracket 63 and is adapted for engagement with a fixed latch member 65 on one of the legs 31 of the frame.

The support assembly 42 is guided in its longitudinal movement not only by the guide sleeve 56, but also by a pair of transverse guide bars 66 interconnecting the two bed members 33. In my preferred construction the tendency of the support-assembly 42 to gravitate downward is augmented by the action of a pair of helical springs 67. As best shown in Fig. 1, a transverse equalizing bar 68 is connected to a floor bracket 70 by a suitable bolt 71 and has its opposite ends connected by the springs 67 to the corresponding ends of the transverse bar 58.

In the preferred practice of my invention I provide a series of plungers 72 in the form of headed pins for movement upward through the metal rings 45 to break up the powder tablets as heretofore suggested. In the depicted construction the headed pins loosely extend through corresponding bores in the support plate 43 and are adapted to be operated by a lift plate 75 that is guided by the surrounding rectangular frame 50. At each side the lift plate 75 carries a longitudinal angle-iron to provide a downwardly extending flange 77.

For operation of the lift plate 75, suitable means such as a yoke 78 may be provided, the yoke comprising a pair of bars 80 interconnected at their outer ends by a handle 81. Each of the bars 80 is pivotally mounted on the previously mentioned lower frame 51 by a suitable bolt 82 and carries a roller 83 for contact with the under side of the lift plate 75. To limit the downward movement of the yoke 78, the two bars 80 may be formed with fingers 85 at their inner ends for abutment against the longitudinals 52 of the lower frame 51.

The powder-feeding assembly 41 includes a box 90 that is supported by suitable rollers 91 resting on the bed members 33, the bed members being provided with suitable bars 92 to serve as guide tracks for the rollers. At the forward end of the box 90 is a cross bar 93 of angle-iron for contact with the forward standards 36 to limit forward movement of the box and the rear end of the box is provided with a similar cross bar 94 to strike the rear standards 37 to limit rearward movement of the box. Both of the cross bars also extend under the guide rails 35 to prevent upward movement of the box.

The bottom of the box 90 is a relatively thick plate 95 that may be termed a measuring plate inasmuch as it has a plurality of apertures 96 for measuring and dispensing quantities of powder for the individual powder puffs. When the powder-feeding assembly 41 is in the forward position shown in Fig. 4, the several apertures 96 of the measuring plate 95 register with the recesses 46 provided by the previously mentioned metal cylinders 45 in the support assembly 42. Each of the apertures 96 is preferably of downwardly flared configuration, as shown in Fig. 6, and is preferably provided at its lower end with an in-

ner ring 97 of relatively hard material such as hard rubber dimensioned to fit into the corresponding metal cylinder 45 on the support plate 42. An outer ring 98 of softer material such as soft rubber is aligned with the upper edge of the metal cylinder 45. At the rear end of the box 90 is mounted a suitable hopper 99 that is open at the bottom to permit powder to gravitate from the interior of the hopper onto the rear end of the measuring plate 95.

Included in the powder-feeding assembly 41 is means providing a plurality of plungers 100 adapted for movement into and out of the apertures 96 of the measuring plate 95 for the purpose of compressing powder in the apertures into tablet form and subsequently displacing the tablets. For example, the plungers 100 may extend downward from a head plate 101 on the under side of a transverse timber 102 that is adapted for vertical movement towards the measuring plate 95.

In the construction shown in the drawings, a fixed vertical guide frame, generally designated 103, mounted on brackets 105 on the sides of the box 90 comprises two upright rods 106, a head piece 107, and inclined braces 108 extending from the head piece to the rear end of the box 90. The transverse timber 102 is mounted on the lower end of a rectangular slide frame generally designated 110 comprising a lower transverse member 111, a pair of upright slide rods 112, and a head piece 113 interconnecting the upper end of the slide rods. The lower transverse member 111 has a pair of handles 115 and carries a pair of slide bearings 116 embracing the two upright rods 106 of the vertical frame 103, while the slide rods 112 of the slide frame 110 extend through suitable slide bearings 117 mounted on the upper end of the guide frame.

The slide frame 110 controlling the multiple plungers 100 may be operated by suitable means such as a toggle arrangement generally designated 118. As shown in Figs. 1, 3, and 4, a pair of upper toggle links 120 are pivotally mounted on brackets 121 at the upper end of the fixed frame 103 and are interconnected at their lower ends by a transverse operating handle 122. Pivotally connected to the upper toggle links 120 are two lower toggle links 123 that are pivoted at their lower ends to brackets 125 on the lower transverse member 111 of the sliding frame 110, the arrangement being such that the operating handle 122 moves against the lower toggle links to limit the downward extension of the toggle assembly.

In the operation of the described apparatus for carrying out my new method of producing filled powder puffs of the character described, the operator moves the powder-feeding assembly 41 rearward to expose the support plate 43 and spreads a sheet 130 of the previously mentioned silken velure over the circular recesses 46 formed by the metal cylinders 45, the pile of the silken velure being downward. This sheet 130 is to form the dispensing wall 21 of a number of powder puffs.

The operator then places on the velure sheet 130 what may be termed a pocket-forming plate, generally designated 131 in Figs. 6, 7 and 11 comprising a flexible plate of metal or other material with a number of downwardly projecting bodies 132 positioned on the lower surface thereof to register with the various recesses 46 formed by the metal rings 45. In my preferred construction the pocket-forming plate is permanently covered on its upper surface by a sheet of cotton velure 133 with the pile or velure upward.

Grasping the handles 115, the operator then moves the powder-feeding assembly 41 forward to the position indicated in Fig. 4 and forces the operating lever 60 downward into engagement with the fixed latch 65, thereby moving the support assembly 42 upward to press the support plate 43 towards the measuring plate 95 at the bottom of the box 90. Since the upward movement of the box 90 is limited by extension of the two cross bars 93 and 94 into engagement from below with the two guide rails 35, the operating lever 60 may create pressure of relatively high magnitude against the measuring plate 95. When the pocket-forming plate 131 is initially placed on the velure sheet 130, the projecting bodies 132 at least partially depress the velure sheet into the recesses 46, and the upward movement of the support assembly 42 against the measuring plate 95 completes the movement of the projecting bodies into the recesses to form the required pockets in the sheet 130, as may be noted in Fig. 6. At this point in the sequence of operations the hard rubber rings 97 at the lower ends of the measuring apertures 96 in the measuring plate 95 are pressed forcibly against the upwardly presented velure pile on the upper side of the pocket-forming plate 131, the lower ends of the measuring apertures being closed by the pocket-forming plate. The operator then grasps the transverse operating handle 122 and lifts it, to raise the slide frame 110, through the action of the lower toggle links 123, to its raised position illustrated in Fig. 3. When the slide frame 110 is so raised, the plungers 100 are also raised with it, to uncover the apertures 96 of the measuring plate 95. The slide frame 110 may be held in this raised position by the operator, or otherwise suitably retained therein, while the measuring apertures 96 are filled with powder.

To fill the measuring apertures 96 the operator may employ means such as a thin board or blade 134 (Fig. 6) to shift powder forward over the various measuring apertures, after which the operator employs the blade 134 as a scraper to return excess powder towards the hopper in the manner indicated in Fig. 6. This procedure fills all of the measuring apertures 96 uniformly with relatively loose powder and the operator then pulls the toggle handle 122 forward to cause the powder entrapped in each of the measuring apertures to be pressed into a tablet 135. The forward movement of the toggle handle 122 causes the toggle links to extend, thereby shifting the slide frame 110 downward to force the various plungers 100 into the measuring apertures 96. Sufficient pressure is created to cause substantial coherence on the part of the trapped powder, sufficient to cause the powder to have a definite tendency to remain in tablet form. The operator learns to judge the proper pressure by feel. After the plungers are moved downward to exert the relatively high pressure against the entrapped powder, as indicated in Fig. 7, the toggle handle is shifted rearward sufficiently to retract the plungers, and the powder-feeding assembly 41 is shifted rearward to expose the pocket-forming plate 131. Since the compression of the entrapped powder into tablet form creates a tendency for the powder to cling to the walls of the measuring apertures, the tablets of powder do not drop out when the measuring plate is shifted rearward.

One feature of the described procedure is that it results in a clean cut tablet 135 sharply defined at its lower edges. Such a tablet can be

formed only if the lower end of each measuring aperture 96 is sealed in a manner to prevent any radial leakage of the entrapped powder under pressure. The relatively rigid inner ring 97 at the lower end of each measuring aperture presses into intimate contact with the cotton velure on the pocket-forming plate 131 to make such a seal, the cotton velure providing a positive barrier to prevent radial creepage of the powder. The required sealing action cannot be attained by substituting for the cotton velure surface any smooth metal surface or surfaces of such material as cardboard, blotting paper, or sponge rubber.

The pocket-forming plate 131 is now removed by a progressively curling action indicated in Fig. 11, the operator grasping opposite ends of the pocket-forming plate and in effect progressively peeling the pocket-forming plate away from the indented velure sheet, the peeling action progressing from the ends of the pocket-forming plate towards the middle. I have discovered that this peeling action will not disturb the desired indented configuration of the velure sheet 130, whereas a pocket-forming plate too rigid for the peeling action cannot be lifted away from the velure sheet without disarranging the sheet.

After the pocket-forming plate 131 is removed, the powder-feeding assembly 41 is returned to the forward position and again the operating lever 60 is manipulated to press the support assembly 42 upward against the measuring plate 95. The upward movement of the support assembly 42 causes the velure sheet 130 to be effectively gripped around the rim of each pocket, the parts then being positioned as shown in Fig. 8. The operator then manipulates the toggle handle 122 to cause the plungers 100 to move downward to maximum extent, thereby dislodging each of the tablets 135 from the measuring plate to drop into the pocket below. The next step is to lower the support assembly 42, retract the plungers 100, and shift the powder-feeding assembly 41 rearward to expose the indented and powder-filled sheet of velure 130.

The fabrication procedure may be completed by providing a coated sheet of cotton velure, spreading the coated sheet over the powder-laden sheet 130, bonding the two sheets together around each of the powder tablets, and then cutting through the bonded zones around the pockets to release individual filled powder puffs. While these final steps may be carried out in any suitable manner, in the preferred practice of my invention I employ temporary panels formed by attaching sheets of cotton velure to temporary reinforcing sheets such as sheets of cardboard. The velure face of each temporary panel is coated with a suitable adhesive and then the panel is placed adhesive-side down on the powder-laden sheet 130. Thus, Fig. 9 indicates a temporary panel, generally designated 136, lying face down on the powder-laden velure sheet 130, the temporary panel comprising a sheet 137 of cardboard, a sheet 138 of cotton velure with the pile side towards the cardboard, and, finally, a coating 140 of adhesive sealing material. In the preferred practice of my invention the temporary panels 136 are coated with rubber cement and placed in stock until required and a suitable solvent is applied to the adhesive coating to make the coating tacky just before the panel is used.

As soon as the temporary panel 136 is placed face down in the machine, the powder-feeding assembly 41 is returned to its forward position and the support assembly 42 is again elevated, thereby causing each of the metal rings 45 to press upward towards the corresponding outer rubber ring 98. This action results in the lower velure sheet 130 being bonded under pressure to the upper velure sheet 138 in a circular zone around each of the pockets. It is important to note that the compressed powder has sufficient coherence to retain its tablet form throughout this procedure so that no powder whatsoever is displaced into the circular bonding zone around each pocket.

Since the tablets 135 are relatively large compared to the capacities of the pockets and since the tablets do not conform to the natural or unrestrained configuration of the pockets, substantial stresses in the fabric material of the pockets would be transmitted to the bonding zones around the pockets if the support assembly 42 were lowered at this point to release the series of interconnected pockets. In the preferred practice of my invention, therefore, I provide for reducing such stresses prior to release of the interconnected pockets. Preparatory to this step, the plungers 100 may be lowered into reinforcing contact with the temporary panel. The operator swings the handle 81 downward to move the lift plate 75 upward, thereby forcing each of the plungers or pins 72 upward against the lower side of each powder-filled pocket. Fig. 10 indicates the manner in which the plunger deforms the pocket and breaks up the tablet 135 to restore the powder to loose form. The minimizing of the stresses is accomplished for the most part by the redistribution of the powder to conform with the natural configuration of the pocket, but the action of the plunger 72 may also result in stretching the fabric material to reduce stress. The interconnected pockets of powder supported by the sheet of cardboard 137 are then released from the bonding pressure by lowering the support assembly 42 and the powder-feeding assembly 41 is moved rearward to permit removal of the sheet of cardboard 137 supporting the interconnected pockets of powder.

In my prior practice I proceed from this point by completely cutting through all of the layers including the sheet of cardboard 137 to release the pockets as individual envelopes. In the present practice, however, I employ a cutting die to cut each envelope out of the assembly, but cause the cutting die to penetrate the sheet of cardboard 137 to only a partial extent, the penetration of course being from the fabric side of the assembly. As a result of such partial penetration the individual fabric envelopes are released but the cardboard retains its unitary character. Partial cutting of the cardboard in this manner permits me to use each sheet of cardboard at least twice as the foundation for a temporary panel 136. Preferably the cardboard is shifted relative to the cutting zones when it is employed a second time.

After the individual envelopes are severed from the assembly they may be subjected to a vacuum device to remove all lint or small fibers released by the cutting operation. The individual powder puffs are then in final form for sale.

My description in specific detail of a preferred practice of the invention is given by way of illustration only and may be varied widely within the scope of my appended claims.

I claim as my invention:

1. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predeter-

mined mass of powder, said method including the steps of: compressing the mass of powder into temporary coherence, thereby forming a temporary tablet; placing the temporary tablet between two layers of sheet material; bonding the two layers together to form a closed envelope without substantially disturbing said coherence, thereby avoiding spreading the powder into the bonding zone; and applying force against the outside of the envelope to break up said tablet into powder form and to redistribute the powder content of the envelope to minimize strains in the sheet material across the bonded areas of the envelope.

2. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predetermined mass of powder, said method including the steps of: compressing the mass of powder into temporary coherence, thereby forming a temporary tablet; placing the temporary tablet between two layers of sheet material; gripping the two layers together into bond to form a closed envelope without substantially disturbing said coherence, thereby avoiding spreading the powder into the bonding zones; and while still gripping the two layers together applying force against the outside of the envelope to relieve strains in the sheet material and to redistribute the powder by breaking up said tablet.

3. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predetermined mass of powder, said method including the steps of: compressing a plurality of predetermined masses of the powder into temporary coherence, thereby forming a plurality of temporary tablets; forming a plurality of depressions in a layer of said sheet material to serve as a plurality of powder pockets; depositing said tablets in said pockets; placing a second layer of said sheet material over said first sheet and over the tablets deposited thereon; gripping the two layers together into bond in zones surrounding each of said pockets; while gripping the two layers together applying force against the outside of the pockets to relieve strains in the sheet material and to redistribute the powder by breaking up said tablets; and cutting through the two sheets in said bonding zones to separate the pockets as powder-filled envelopes.

4. A method characterized by the use of a member with a plurality of apertures for producing envelopes from sheet material and encasing in the envelopes in the course of manufacture thereof predetermined masses of powder, said method including the steps of: blocking said apertures from one side of said member to form powder molds; placing powder in said apertures from the other side of the member and compressing the powder therein to form temporarily coherent powder masses; displacing said temporarily coherent masses from said apertures onto a layer of said sheet material; overlaying said sheet of material and said temporarily coherent masses with a second layer of sheet material; bonding said two layers together around said masses of powder while the masses are still coherent, thereby forming a plurality of interconnected envelopes containing the powder masses; and cutting through said two layers at the bonded zones around said masses of powder to release individual powder-containing envelopes.

5. A method of fabricating from two flexible sheets an envelope containing a mass of powder including the steps of: attaching one of said flexible sheets to a temporary stiffening sheet; depositing spaced masses of the powdered material on one of said flexible sheets; overlaying the spaced masses and the powder-laden flexible sheet with the other of said flexible sheets; bonding said two flexible sheets together around each of said masses, thereby forming a panel including and reinforced by said temporary stiffening sheet; and cutting through said flexible sheets and partially through said stiffening sheet around each of said pockets to release the pockets as individual envelopes without cutting the stiffening sheet into corresponding pieces, whereby the same stiffening sheet may be employed to repeat the procedure with other flexible sheets.

6. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predetermined mass of powder, said method including the steps of: placing a temporary tablet, formed by compressing a mass of powder, between two layers of sheet material; bonding the two layers together to form a closed envelope, thereby avoiding spreading the powder into the bonding zone; and applying force against the outside of the envelope to break up said tablet into powder form and to redistribute the powder content of the envelope to minimize strains in the sheet material across the bonded areas of the envelope.

7. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predetermined mass of powder, said method including the steps of: placing a temporary tablet, formed by compressing a mass of powder, between two layers of sheet material; gripping the two layers together into bond to form a closed envelope, thereby avoiding spreading the powder into the bonding zones; and while still gripping the two layers together applying force against the outside of the envelope to relieve strains in the sheet material and to redistribute the powder by breaking up said tablet.

8. A method of producing an envelope from sheet material and encasing in the envelope in the course of manufacture thereof a predetermined mass of powder, said method including the steps of: forming a plurality of depressions in a layer of said sheet material to serve as a plurality of powder pockets; depositing a tablet, formed by compressing a mass of powder, in each of said pockets; placing a second layer of said sheet material over said first sheet and over the tablets deposited thereon; gripping the two layers together into bond in zones surrounding each of said pockets; while gripping the two layers together applying force against the outside of the pockets to relieve strains in the sheet material and to redistribute the powder by breaking up said tablets; and cutting through the two sheets in said bonding zones to separate the pockets as powder-filled envelopes.

9. In a method of making a powder dispensing envelope from a pair of sheets of sheet material, one of which is porous, the steps of: forming a depression in said porous sheet; compressing a mass of powder into temporary coherence adjacent said depression, thereby forming a temporary tablet of said powder; moving said tablet bodily into said depression; overlaying said depression with the other of said sheets; bonding said sheets together around said depression to form an envelope enclosing said powder; and applying force against the outside of said envelope to break said tablet into powdered form.

10. In a method of making a powder dispensing envelope from a pair of sheets of sheet material, one of which is porous, the steps of: forming a depression in said porous sheet; compensating a mass of powder into temporary coherence adjacent said depression, thereby forming a temporary tablet of said powder; moving said tablet bodily into said depression; overlaying said depression with the other of said sheets; heavily bonding said sheets together in a narrow area immediately around said depression to seal said powder in said depression and thus form an envelope, and lightly bonding said sheets together outside of said area to provide a flat marginal flange of substantial width; and applying force against the outside of said envelope to break said tablet into powdered form.

11. In a method of making a powder dispensing envelope from a pair of sheets of sheet material, one of which is porous, the steps of: forming a depression in said porous sheet; inserting into said depression a temporary tablet formed of cohering powder; overlaying said depression with the other of said sheets; bonding said sheets together around said depression to form an envelope enclosing said powder; and applying force against the outside of said envelope to break said tablet into powdered form.

ALBERT E. VAUGHN.

CERTIFICATE OF CORRECTION.

Patent No. 2,365,922. December 26, 1944.

ALBERT E. VAUGHN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 6, first column, line 4, claim 10, for "compensating" read --compressing--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of March, A. D. 1945.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)