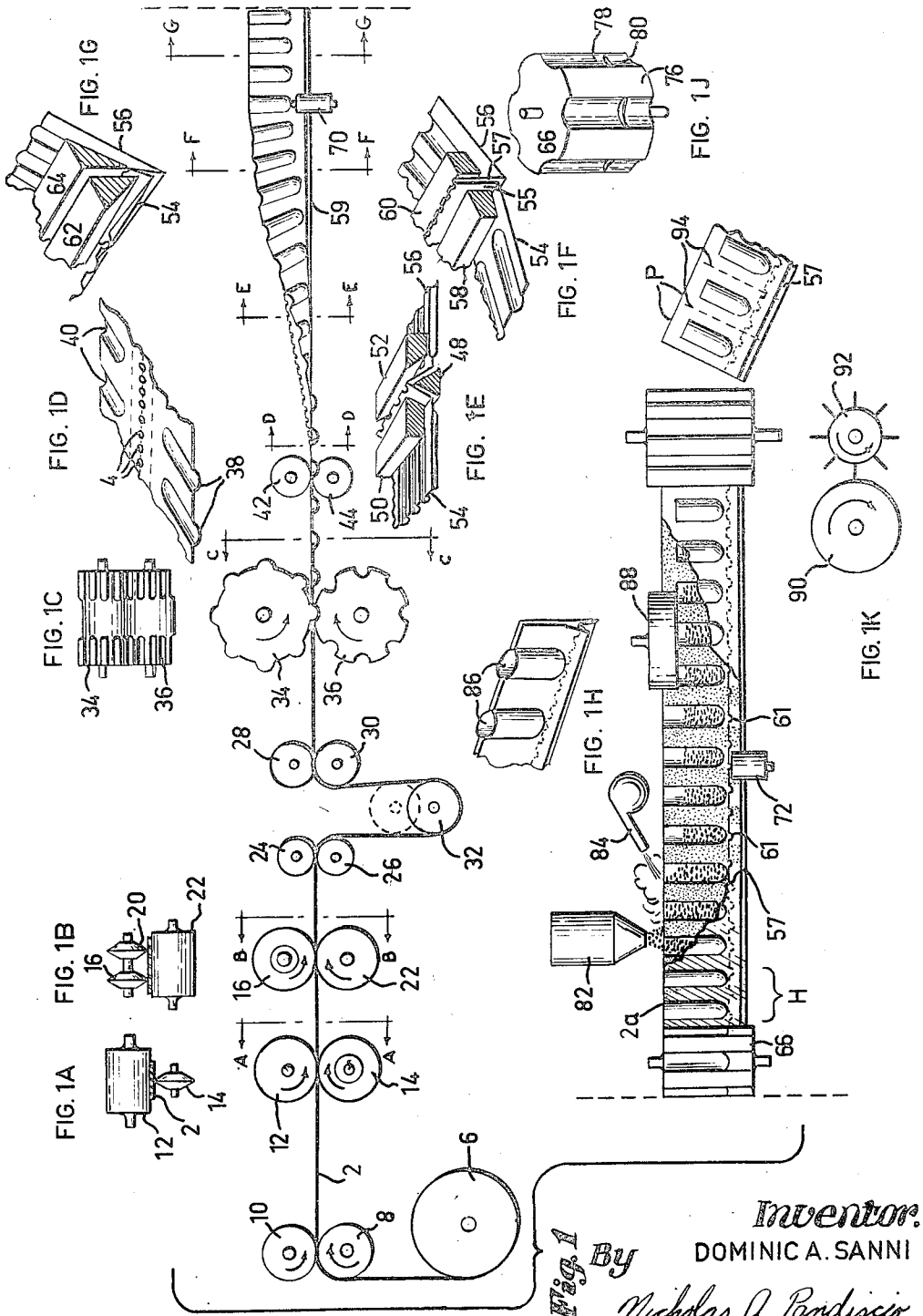
Dec. 22, 1959 D. A. SANNI 2,918,168

SHAKER DISPENSER PACKET

Filed Oct. 15, 1954 5 Sheets-Sheet 1



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SHAKER DISPENSER PACKET

Filed Oct. 15, 1954 5 Sheets-Sheet 2

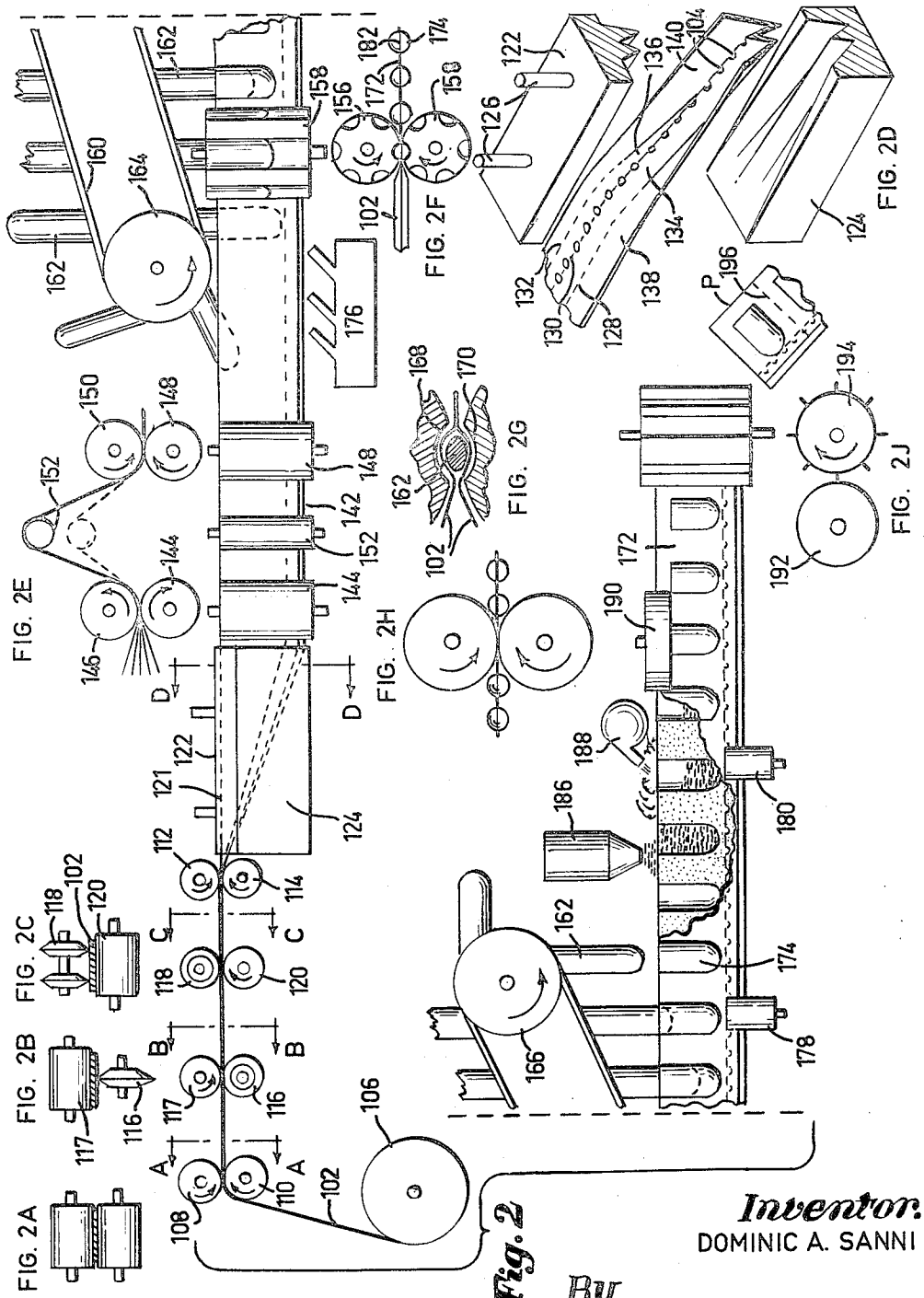


Fig. 2

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SHAKER DISPENSER PACKET

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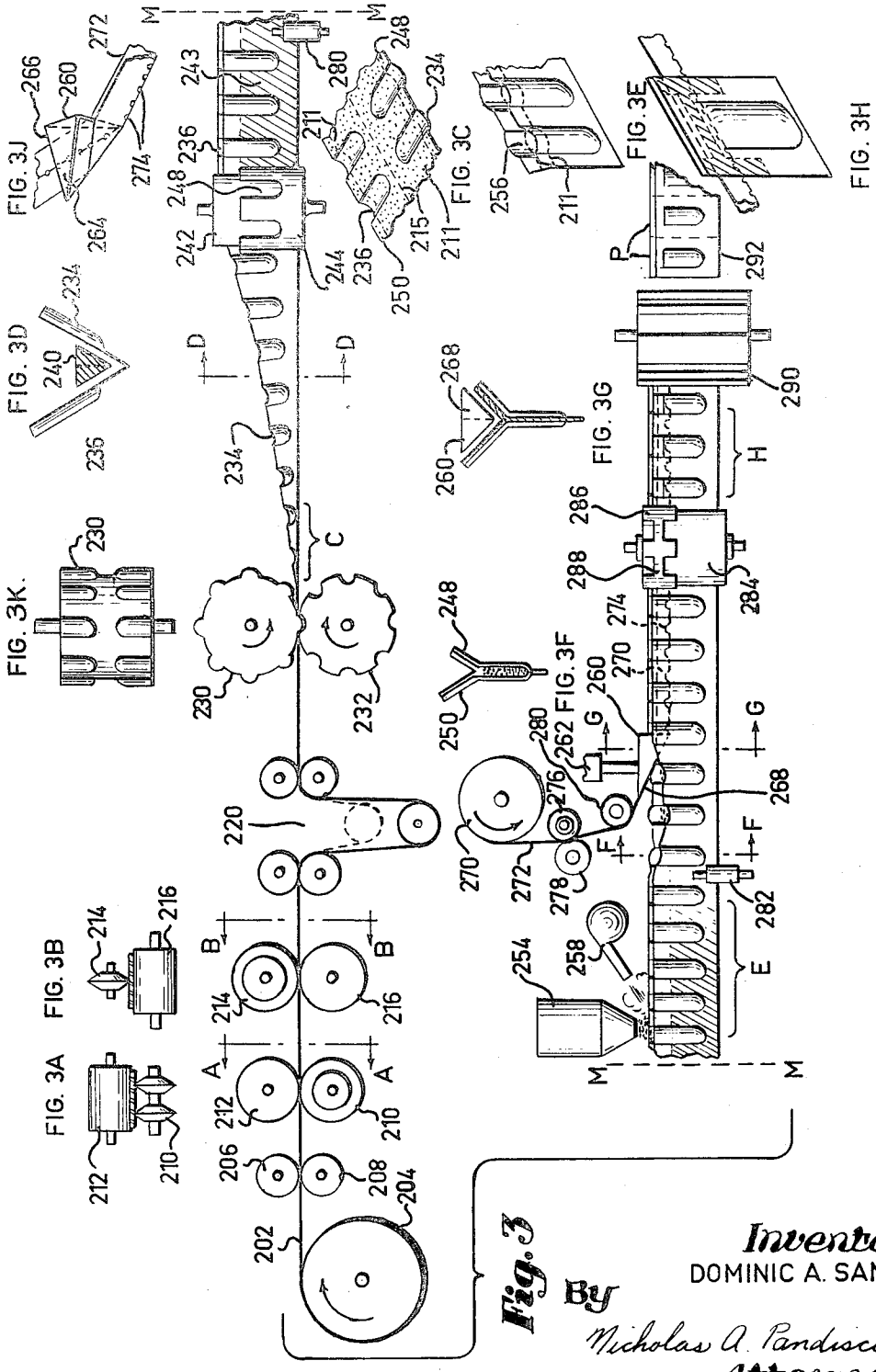


Fig. 3

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SHAKER DISPENSER PACKET

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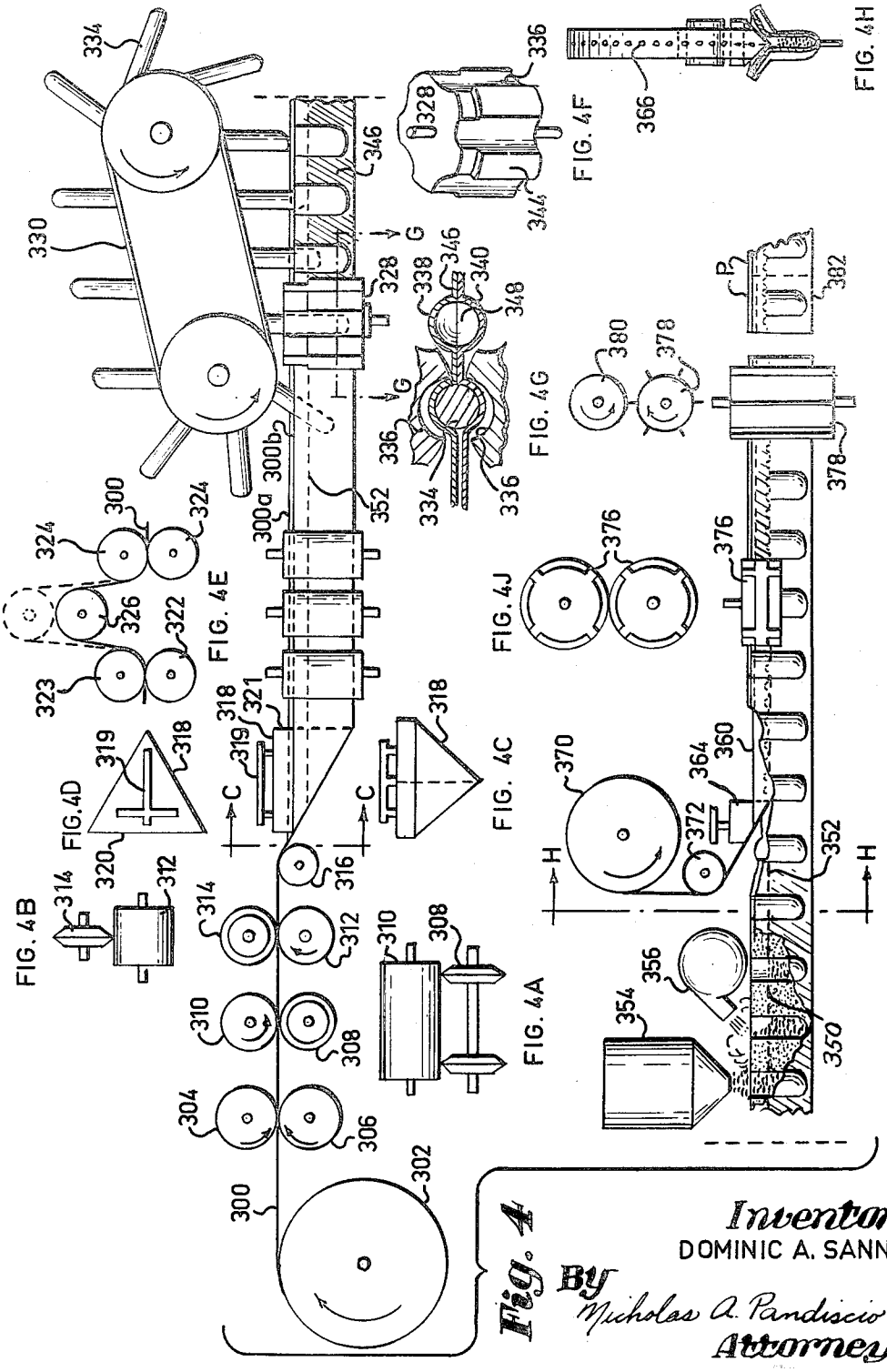


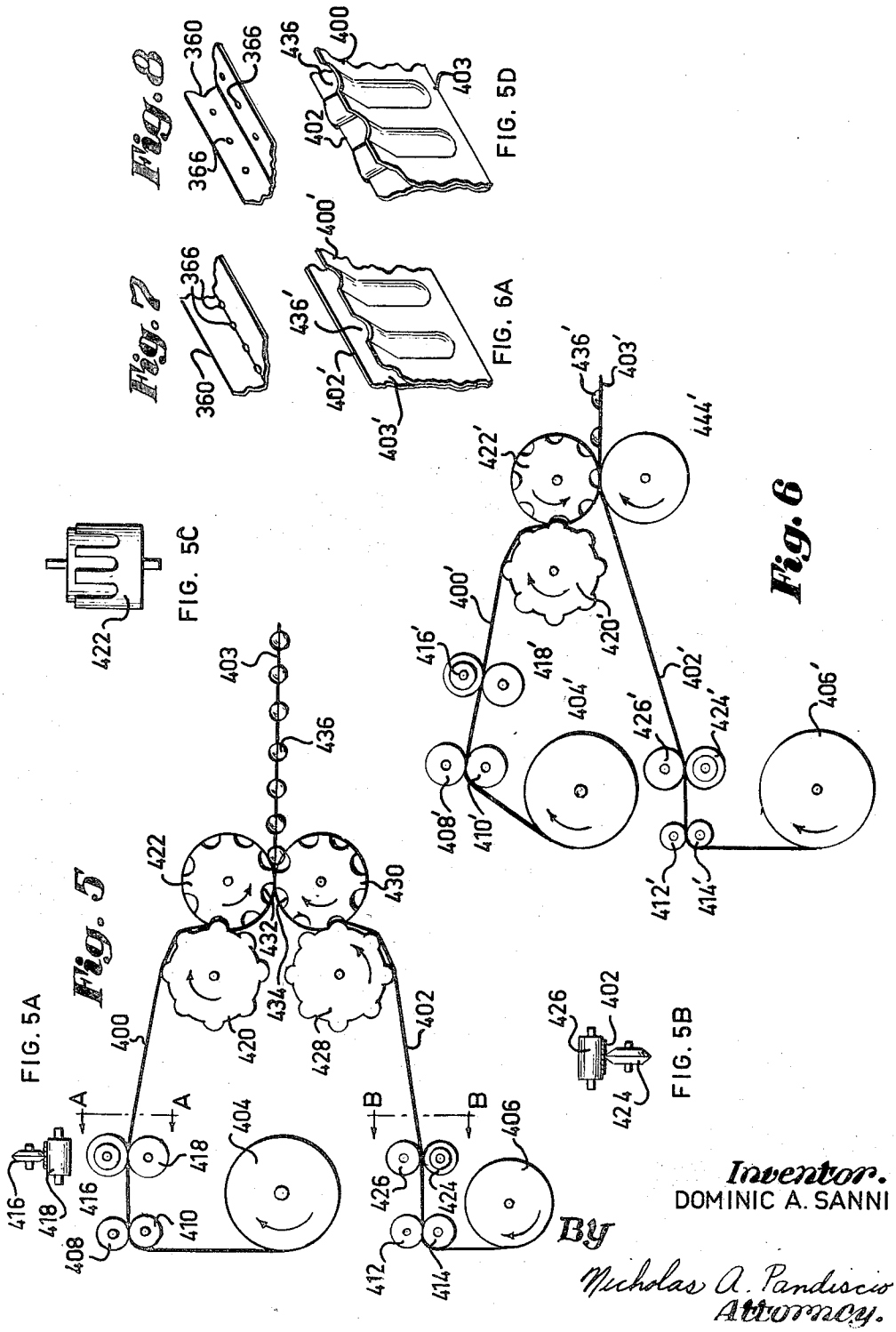
Fig. 4

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SHAKER DISPENSER PACKET

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United States Patent Office 2,918,168 Patented Dec. 22, 1959

2,918,168

SHAKER DISPENSER PACKET

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Application October 15, 1954, Serial No. 462,466

8 Claims. (Cl. 206—56)

This invention relates to the art of commodity packaging and in particular to commodity packets having means incorporated therein for dispensing commodities such as sugar, salt, spices and other products in granular, powder or particle form.

In particular, this invention relates to a novel shaker dispenser packet and the manufacture thereof.

Accordingly, one object of this invention is to provide novel shaker dispenser packets for powdered and granular materials wherein said shaker dispenser packets are made from flexible, impressionable material in strip form traveling through a machine performing a series of operations in predetermined sequence.

Another object of my invention is to provide a novel shaker dispenser packet comprising front and back walls of flexible, impressionable material sealed to each other at their marginal edges, at least one of said walls being deformed prior to being sealed to the other of said walls so that when said walls are in sealed relation they form a fluted unit, and further comprising a perforated folded section of the same or similar material enclosed between said two walls at one end thereof, the walls of said fluted unit being separable in the region of said folded section whereby said folded section may be unfolded to expose the perforations therein and to thereby permit the commodity contained within the unit to be dispensed through said perforations.

Still another object of the invention is to provide a commodity packet or envelope having a perforated shaker dispenser element incorporated therein, said packet and said shaker dispenser element being formed from a single strip of flexible, impressionable material.

Still another object of the invention is to provide a commodity packet or envelope having a perforated shaker dispenser element incorporated therein, said packet and said shaker dispenser element being formed from two separate strips of flexible, impressionable material.

Still another object of the invention is to provide a commodity packet or envelope having a perforated shaker dispenser element incorporated therein, said packet being formed from two individual strips of flexible, impressionable material and said shaker dispenser element being formed from a third strip of the same or similar material.

Another important object of this invention is to provide a continuous dual or folded web of fluted flexible, impressionable material comprising a series of transversely extending flutes separated by transversely extending lands, and a perforated folded section running longitudinally of the web and concealed therein; said web being separable along one edge to reveal and unfold said folded section whereby commodity contained within said flutes may be dispensed therefrom through said perforations, said web being severable transversely to provide a plurality of shaker dispenser units, each extending in length a distance equal to, and comprising at least one of, said flutes.

Still a further object of this invention is to provide a

method of manufacture consisting of a predetermined sequence of operations for converting flexible, impressionable material traveling in strip form into a web of fluted units each having shaker dispenser sections normally enclosed in folded and hidden relation between the faces of said web, the faces of said web being separable to unfold said shaker dispenser section to permit removal of commodity from the unit, the web of fluted units being formed from one, two, or three individual strips of material, according to different embodiments of this invention.

Another important object of this invention is to provide apparatus which will automatically and continually convert flexible, impressionable material in strip form into a web of shaker dispenser packets filled with a selected commodity and closed at one end by a perforated section of the same or similar material folded upon itself and enclosed between the front and back walls of said packets, and to thereafter sever the web to provide a plurality of individual units.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Figure 1 schematically illustrates the method and apparatus for making commodity packets according to one embodiment of this invention;

Figure 1A is a view taken along line A—A of Figure 1;

Figure 1B is a front view taken along line B—B of Figure 1;

Figure 1C is a front view taken along line C—C of Figure 1;

Figure 1D is a perspective view of a portion of the web along line D—D of Figure 1;

Figure 1E is a perspective view of the same web at a later point in time, taken along line E—E of Figure 1;

Figure 1F is a perspective view of the web taken along line F—F of Figure 1;

Figure 1G is a perspective view of the web taken along line G—G of Figure 1;

Figure 1H is a perspective view of the web in the region designated H in Figure 1 as it appears after passing out from between the fluting rolls into position to be filled with the commodity to be packaged;

Figure 1J is a perspective view of one of the fluting or forming rolls;

Figure 1K is a plan view of the web severing elements;

Figure 2 schematically illustrates the apparatus and method for producing a dispenser packet from a single strip of material according to a second embodiment of this invention;

Figure 2A is a view taken along line A—A of Figure 2;

Figure 2B is a view taken along line B—B of Figure 2;

Figure 2C is a plan view taken along line C—C of Figure 2;

Figure 2D is an exploded view of the folding shoes and the strip as it passes between and is shaped by the shoes, the view being taken in perspective along line D—D of Figure 2;

Figure 2E is a plan view of the loop takeup mechanism;

Figure 2F is a plan view of the web as it passes between the fluting rolls;

Figure 2G is an enlarged fragmentary plan view of the web as it passes between the fluting rolls;

Figure 2H is a plan view of the web and the top sealing rolls;

Figure 2J is a plan view of the web severing mechanism;

Figure 3 schematically illustrates apparatus and method for making a dispenser packet from two strips of flexible material;

Figure 3A is a view taken along line A—A of Figure 3;

Figure 3B is a view taken along line B—B of Figure 3;

Figure 3C is a perspective view of the web as it appears in the region designated C in Figure 3;

Figure 3D is a view taken along line D—D of Figure 3;

Figure 3E is a perspective view of the web as it appears in the region designated E in Figure 3;

Figure 3F is a sectional view taken along line F—F of Figure 3;

Figure 3G is a sectional view taken along line G—G of Figure 3;

Figure 3H is a perspective view of a portion of the web as it appears in the region designated by H in Figure 3;

Figure 3J is a perspective view of a fragmentary portion of the perforated dispenser strip illustrating the disposition of the strip with respect to its folding shoe;

Figure 3K is a plan view of one of the fluting rolls of Figure 3;

Figure 4 schematically illustrates apparatus and method for forming dispenser packets from two strips of flexible, impressionable material according to another embodiment of this invention;

Figure 4A is a front view of the first scoring section;

Figure 4B is a front view of the second scoring section;

Figure 4C is a view taken along line C—C of Figure 4;

Figure 4D is a plan view of the forming shoe illustrated in Figure 4C;

Figure 4E is a plan of the loop take-up provided in the machine for compensating for variations in the linear speed of the traveling web;

Figure 4F is a perspective view of one of the rolls incorporated in the machine which simultaneously facilitate fluting and sealing of the web;

Figure 4G is a sectional view taken along line G—G of Figure 4;

Figure 4H is a sectional view taken along line H—H of Figure 4;

Figure 4J is a plan view of the top sealing rolls of Figure 4;

Figure 4K is a plan view of the web severing section of the machine;

Figure 5 is a schematic illustration in the plan of a method and apparatus for forming dispenser packets from three strips of flexible, impressionable material;

Figure 5A is a view taken along line A—A of Figure 5;

Figure 5B is a view taken along line B—B of Figure 5;

Figure 5C is a side view of one of the sealing rolls illustrated in Figure 5;

Figure 5D is a perspective view of a portion of the web of Figure 5;

Figure 6 illustrates a portion of another apparatus and method for forming dispenser packets from three individual strips of flexible, impressionable material;

Figure 6A is a perspective view of a portion of the web of Figure 6;

Figure 7 illustrates a fragmentary portion of the dispensing strip incorporated in the packet produced according to this invention, showing the perforations disposed in series along the fold line; and

Figure 8 is similar to Figure 7 but shows the perforations disposed on either side of the fold line in staggered relation.

Before describing in detail the various embodiments of this invention it is to be noted that the various combinations of mechanical elements are only schematically illustrated for the purpose of conciseness and clarity of description and with the view that persons skilled in the art are capable of practicing the invention in its various forms when recourse is had to the following description which identifies the various elements and makes it understood that they are associated to comprise a cooperative system as illustrated that is capable of producing dispenser packets in a continuous stream.

It is also understood without need of illustration that any suitable motor may be utilized to operate the several embodiments and that suitable gearing obvious to persons skilled in the art is employed to synchronize the various moving rolls so as to effect fabrication of the web of packets at a constant high rate of production.

Further in the interest of conciseness, and because they go hand in hand, the description of each of the several mechanical systems is incorporated hereinafter and forms part of the description of the particular method which it is designated to carry out.

Referring to Figure 1, there is illustrated a practical embodiment of my invention, consisting of a machine which receives a single strip or web of flexible, impressionable material and thereafter converts said single strip of material into a plurality of dispenser packets filled with a suitable commodity.

It is to be understood without need of illustration that the different parts or members of the machine illustrated schematically in Figure 1, and Figures 2, 3, 4, 5, and 6 as well, are mounted on a suitable base or frame, and that the base or frame is adapted in a conventional manner to journal the various shafts for high speed rotation.

As illustrated, a horizontally positioned web of flexible, impressionable material **2**, e.g., paper, coated on both sides with a suitable thermoplastic, pressure-sensitive adhesive, and having a longitudinal series of small perforations **4**, is subjected to a series of operations which results in production of a series of novel shaker packets P.

The first operation consists in feeding the web **2** from a supply roll **6** by means of feed rolls **8** and **10'** one or both of which may be driven at a uniform speed, through two scoring assemblies.

The first scoring assembly or section comprises a smooth face roll **12** and a single scoring roll **14** mounted above and below the web respectively. Scoring roll **14** may be any suitable type of scoring roll and is positioned to score the web along the line along which run the perforations **4**. The second scoring assembly comprises two scoring rolls **16** and **20** mounted on the same shaft above the web **2** and a plain roll **22** mounted below the web. If desired the scoring rolls **16** and **20** may take the form of two circular scoring elements carried on the same cylindrical body or roll according to conventional practice. Preferably the scoring elements of the second assembly are so spaced as to score the web along two lines removed from its edges a different amount so that the finished packets will have an overlapping lip that makes it easier to open, as explained hereinafter. However, they may be equally spaced from the opposite edges if desired.

The second scoring assembly precedes a conventional loop takeup assembly comprising rolls **24**, **26**, **28**, **30** and **32**. The position of roll **32** is adjustable to bring any printed matter on the web into registration with the flutes being formed in the web at a subsequent stage.

From the loop takeup section the web advances between heated male and female fluting rolls **34** and **36** respectively which are driven at equal speeds by any suitable mechanism. Rolls **34** and **36** form flutes **38** and **40** in the web extending inwardly from the web's marginal edges as illustrated in Figure 1D. It is to be understood, of course, that only a single series of flutes, either **38** or **40**, may be provided if desired. The resulting packet will then have only one of its front and back walls fluted.

Thereafter guide rolls **42** and **44** engage the web between flutes **38** and **40** and carry it to a forming section

wherein the strip is folded downwardly about the center scoring line made by scoring roll **14**, and upwardly about the two score lines formed by scoring rolls **16** and **20**.

The forming section comprises several stages. In the first stage, as illustrated in Figure 1E, the web passes over a triangular forming shoe **48** and beneath two forming shoes **50** and **52** provided with inclined faces that are parallel to the inclined sides of shoe **48**. Shoes **50** and **52** cooperate with shoe **48** to force the center section of the web upwardly so as to cause the web to fold downward about the center score line along which run perforations **4**. Forming shoes **50** and **52** also act to maintain the fluted portions **54** and **56** of the web in substantial horizontal alignment so as to promote folding along the score lines made by rolls **16** and **20**. Thereafter the web passes between forming shoes **58** and **60** which bring the center folds **55** and **57** of the web together while simultaneously permitting the fluted sections **54** and **56** of the web to be shifted upwardly to a position slightly inclined from the horizontal. Thereafter the web passes between and under other forming shoes **62** and **64** whose inclined outer surfaces permit the fluited portions **54** and **56** to be brought still closer together.

For the purpose of facilitating folding of the web as described, it is to be understood that one single set of shoes may be substituted in place of the three sets of shoes illustrated in Figures 1E, 1F and 1G. Figure 2D, described hereinafter, illustrates how a single set of folding shoes may be utilized to effect rapid folding of the web along its score lines.

The upward shifting of the fluted sections against shoes **62** and **64** is caused by sealing rolls **66** between which the web passes and is completely converted to a double or dual web **2A**. While only one sealing roll **66** is shown, it is understood that a second identical roll is positioned behind it and is driven in synchronism therewith. Sealing rolls **66** operate to seal the fluted sections **54** and **56** together along the lands which extend transversely of the web between successive flutes.

The web **2** is drawn through the forming or folding section by a pair of drive rolls **70** positioned on either side thereof and engaging the web along its bottom edge **59**. A second pair of drive rolls **72** is employed to draw dual web **2A** through successive stages following sealing rolls **66**.

The contour of each sealing roll **66** is subdivided into three types of sections, **76**, **78** and **80**. Sections **76** are elevated with respect to sections **78** and **80** and extend substantially the whole length of the roll. Sections **76** are the surfaces that seal the folds of the dual web together. Sections **78** are recessed between sections **76** to receive the flutes formed in the web by rolls **34** and **36**. Section **80** is intermediate in depth between sections **76** and **78** so as to prevent the portion of the web between its bottom edge **59** and the ends of the flutes from being sealed.

As the web leaves sealing rolls **66** it passes through a feeding section comprising a gravity feed hopper **82** filled with a suitable commodity, e.g., salt, and a blower **84**. The commodity within the hopper is permitted to drop by gravity to fill the pockets **86** formed by the flutes of the web. Since the amount of the product discharged from the hopper is usually in excess of the amount which pockets **86** are to hold, blower **84** is utilized to blow off the excess product and is so positioned as to remove all commodity above a predetermined level in the pockets so as to permit sealing off the top of the web. The top sealing is accomplished by a pair of sealing rolls **88**. It is to be noted and understood that sealing rolls **66** and **88** are heated to facilitate rapid sealing.

The web then passes through a cutting section comprising a plain roll **90** and a knife roll **92** which transversely severs the web into strips comprising a predetermined number of packets P which are individually detachable by tearing along perforations **94** made by knife roll **92**.

It is to be noted that perforations **4** are hidden from view in the sealed packet P, and so long as the inner folds **55** and **57** of the packet are not parted from each other, the commodity will be retained within the packet. However, when the front and rear walls of the packet are separated along the edge **59** to part the inner folds **55** and **57**, the commodity will be free to flow out of the packet through perforations **4** when the packet is shaken. Separation of the front and rear walls is facilitated by virtue of the fact that one wall of the packet overhangs the other due to the positioning of scoring rolls **16** and **20**, and also because inner folds **55** and **57** and the front and back walls are not sealed at areas **61** in alignment with the pockets formed by the flutes.

Referring to Figure 2, a horizontal web **102** coated on both sides and provided with perforations **104** (see Figure 2D) is continually fed from a supply roll **106** by drive rolls **108** and **110**, either or both of which may be driven. Thereafter the web is drawn by drive rolls **112** and **114** through a scoring section similar to the scoring section illustrated in Figure 1. In this instance the scoring section comprises two stages, wherein scoring roll **116** and plain roll **117** comprise the first stage and dual scoring rolls **118** and plain roll **120** comprise the second stage.

Then the web is advanced through a forming section comprising male member **122** and female member **124** positioned above and below each other respectively. The forming elements are supported on the frame of the machine by any suitable means (not shown). Thus, for example, rods **126** of male member **122** may be secured to a cross-piece of the machine. Female member **124** may be similarly mounted.

The function of members **122** and **124** is to fold the web along its score lines so that the perforated central portion of the web is sandwiched between the major marginal portions in the same manner as the web of Figure 1. As shown in Figure 2D, the three score lines **128**, **130**, and **132** divide the web into four longitudinal strips identified as inner folds **134** and **136** and marginal portions **138** and **140**. The center score line **130** coincides with perforations **104**. The folding members **122** and **124** operate to rapidly bend the inner folds **134** and **136** downwardly about score line **130** and to force the marginal portion upward about score lines **128** and **132**. The latter score lines are unevenly spaced from the center score line so that one of the inner folds is wider than the other and overlaps the other as at **142**. In order that the edges of the web will coincide with each other without overlapping when the marginal portions **138** and **140** are brought together, the center score line is preferably made closer to one edge of the web. Thus in Figure 2D, while not readily apparent, it is to be understood that score line **130** is closer to the left hand edge than it is to the right hand edge of the web.

From the forming or folding section the web is conducted through a takeup section comprising rolls **144**, **146**, **148**, **150** and **152**. All but roll **152** are fixed, and one or both of the rolls of each pair of fixed rolls may be driven. Roll **152** is movably mounted in a conventional manner to bring printing on the web into registration with the flutes formed at a subsequent stage.

Thereafter the web advances to a forming and sealing section comprising sealing rolls **156** and **158** and moving endless belt **160** carrying spacer fingers **162**. Endless belt **160** is carried by two sprocket assemblies **164** and **166** which are vertically spaced from each other by a predetermined amount. Preferably the spacing between the two sprockets is such that the endless belt running between the sprocket is inclined to the horizontal by an angle equal to 10–15 degrees. Spacer fingers **162** are in turn inclined to the belt at an equal angle so that as the fingers move from the lower sprocket **164** to the higher

sprocket **166**, they are directly vertical. The belt is positioned so that its fingers will pass between the upright marginal portions **138** and **140** of the web as illustrated and be exactly vertical as the web passes between sealing rolls **156** and **158**. The sealing rolls and the endless belt are driven in synchronism so that fingers **162** will be received in the surface cavities **168** and **170** of the rolls as the latter rotate. Sealing rolls **156** and **158** are substantially identical to the sealing rolls illustrated in Figure 1, and operate in the same manner to seal the web at predetermined transversely extending lands **172**. In this case, however, the flutes **174** are formed by fingers **162** and cavities **168** and **170** simultaneously instead of previously with respect to the sealing operation. A steam chest **176** provided with one or more jets applies steam to the web to condition it for molding the flutes. It is understood, of course, that sealing rolls **156** and **158**, as is true of similar sealing rolls illustrated in the other embodiments, are heated to facilitate rapid sealing of the web.

The web is drawn out from between the sealing rolls by two pairs of drive rolls **178** and **180** which grip the web along its lower edge. As illustrated in Figure 2F, the web passing out from between the sealing rolls comprises a series of pockets **182** formed by flutes **174** and lands **172**. The fingers **162** are lifted out of the pockets **182** by belt **160** as the web proceeds beyond the sealing roll to a feeding station where a suitable commodity is fed to the pockets by gravity from a hopper **186**. The amount of commodity in the pockets is reduced to a predetermined level by a suitable blower means **188** and then the top of the web passes between a pair of driven heated sealing rolls **190** which seal off the pockets just above the level of the commodity therein. The web then proceeds to a knife section comprising plain roll **192** and knife roll **194** which severs the web into strips comprising a plurality of packets P which are partly severed from each other by the knife rolls as indicated at **196** so as to facilitate complete separation into individual units as desired.

A modified form of the same packets is produced by the modified method and machine illustrated in Figure 3. In this case, the commodity packet is formed from two pieces instead of a single piece of flexible, impressionable material.

As illustrated a primary web **202** provided with a thermoplastic coating only on its upper surface, is continually fed by feed rolls **206** and **208** from a supply roll **204** to a scoring section having two stages. In this case, the scoring section is the reverse of the scoring sections illustrated in Figure 1 and Figure 2. The web is first scored on its underside by means of a dual scoring rolls **210** operating in unison with a plain roll **212**; thereafter the primary web **202** is scored on its upper surface by a single scoring rolls **214** operating in conjunction with a plain roll **216**. The web is drawn out from the scoring section and passes through a loop takeup generally designated **220** similar to the loop takeup of Figures 1 and 2.

From the loop takeup section, the web passes through a fluting section comprising male roll **230** and female roll **232**. These rolls are similar to fluting rolls **34** and **36** illustrated in Figure 1 and operated to place a series of flutes **234** and **236** along both edges of the web.

As the primary web passes from between fluting rolls **230** and **232** it is converted by folding to a two-faced or dual web, the web being folded upwardly about the score line **215** produced by score roll **214**. Preferably score line **215** is closer to one edge of the web than it is to the other. The web is folded upwardly about a forming shoe **240** shown in section in Figure 3D. Shoe **240** is similar in shape to the shoe **260** illustrated in Figure 3J and is oriented in the same direction as shoe **260** is shown to be oriented in Figure 3. However, shoe **240** is positioned with its bottom surface in a horizontal plane. The upward folding of the web is caused by a pair of identical driven heated sealing rolls **242** which draw the folds of the web into sealing engagement with each other. The cross hatching at **243** indicates the portions of the web that are sealed by the surface **244** that engages the web between the flutes and at the bottom end of the flutes. Surface **244** is provided with recesses **248** that accommodate the flutes in the web. Surface **244** terminates short of the upper end of the sealing rolls so that the marginal portions **248** and **250** determined by score lines **211** are not sealed to each other.

After passing out from between sealing rolls **242** the web is moved by drive rolls **280** and **282** beneath a hopper **254** that feeds a commodity to the pockets **256** formed between the flutes in the dual web. A blower **258** reduces the commodity in the pockets to below the level of score lines **211**.

Then the marginal portions **248** and **250** are folded outwardly by a shoe **260** which is suspended from the frame of the machine by a suitable support such as arm **262** mounted on its upper surface. Shoe **260** is wedge-shaped and its wide edge **266** is mounted nearest blower **258**. The shoe is supported with its top surface **264** horizontal so that its bottom surface **268** is inclined as shown. Mounted above shoe **260** is a supply roll **270** from which is drawn a secondary web **272** provided with perforations **274**. Web **272** is thermoplastically coated on its underside only. Web **272** passes through a scoring section comprising scoring roll **276** and plain roll **278** which scores the web along perforations **274**. Web **272** passes around a guide roll **280** and then under shoe **260** which folds the web as shown in Figure 3J and positions it between marginal portions **248** and **250**.

Then the dual primary web **202** and the secondary web **272** pass between heated top sealing rolls **284** which seal the marginal portions **248** and **250** to each other as illustrated by the cross-hatching in Figure 3H. The longitudinal surfaces **286** and the circumferential surfaces **288** of the rolls **284** operate to seal the marginal portions between the flutes to each other and to the secondary web therebetween. Surfaces **286** seal the marginal portions at their edges whereas surfaces **288** leave the edges unsealed so as to facilitate separation for subsequent release of the commodity in the packet. A knife section **290** divides the composite sealed web into strips **292** of packets P.

Figure 4 illustrates a modified method and apparatus for forming packets from two individual strips of flexible material. In this case, a web **300** coated on its top surface only is fed by drive rolls **304** and **306** from a feed roll **302** and passes to a two stage scoring section comprising rolls **308**, **310**, **312** and **314** like the scoring section illustrated in Figure 3. The web passes out from the scoring section over a guide roll **316** to a forming section comprising a folding shoe **318** identical in shape to the shoe **260** illustrated in Figures 3 and 3J. Shoe **318** is provided with a suitable bracket **319** by which it can be secured in position to the frame of the machine. The web passes beneath the shoe and is folded up about the shoe as it travels to the right away from the scoring section. The shoe **318** tapers from its broad horizontal back edge **320** to its vertical front edge **321**, causing the web to be folded from its unfolded horizontal position to a folded vertical position, forming a dual web as it passes beyond the shoe.

A loop take up comprising rolls **322**, **323**, **324**, **325** and **326** is provided to bring any printing on the web into registration with the flutes. The web then passes to a fluting section comprising a pair of heated sealing and fluting rolls **328** and an endless belt **330** carrying spacer fingers **334**. Rolls **328** comprise curved depressions **336** for accomodating the vertical folds **300*a*** and **300*b*** of the web as they are separated from each other and deformed by fingers **334**. Figure 4G illustrates how the fingers **334** cooperate with the depressions **336** to form

flutes 338 and 340. Rolls 328 also comprise raised surfaces 344 which contact the folds of the web and seal them together to form lands 346 which make pockets 348 between facing flutes 338 and 340. Surfaces 344 do not entirely engage the dual web from the top to the bottom but leave unsealed the marginal portions formed by the score lines 350 and 352 produced by the dual scoring roll 308.

The fluted web passes from between rolls 328 and passes through the gravity feed section comprising hopper 354 and blower 356. Thereafter, the marginal portions of the web are again spread outwardly about the score lines 350 and 352 so as to permit a second web of thermoplastically coated material 360 to be inserted therebetween. Web 360 is coated on its underside only.

The outward folding of the marginal portions of the web is accomplished by a folding shoe 364 which operates to fold web 360 in the same manner that shoe 260 functions (see Fig. 3). Web 360 has perforations 366 and is fed from a roll 370 and passes around a driven guide roll 372 and under and beneath forming shoe 364. The web then continues between heated rolls 376 similar in construction and function to roll 284 illustrated in Fig. 3, sealing the web along the upper portions thereof. The web is then severed by knife roll 378 operating together with plain roll 380 to form strips 382 of packets P as previously described. The web 360 may have its perforations 366 along the fold or score line as in Fig. 7 or on either side of the score line as in Fig. 8. The perforations 366 in Fig. 8 may be either staggered as shown or directly opposite each other.

The foregoing methods of forming the novel dispenser packet can be modified still further to permit the packet to be formed from three individual strips of flexible material. Figures 5 and 6 illustrate how this may be accomplished.

In Fig. 5 two webs of material 400 and 402 are fed in synchronism from their supply rolls 404 and 406 respectively. Webs 400 and 402 have thermoplastic coatings on the adjacent or facing sides. Drive rolls 408 and 410 draw web 400 from supply roll 404. Drive rolls 412 and 414 draw web 402 from supply roll 406. Web 400 passes through a single stage scoring section comprising scoring roll 416 and plain roll 418, and is scored on its outer surface adjacent to its top edge. It then passes between male and female sealing and fluting rolls 420 and 422 respectively which make transverse flutes therein.

Web 402 passes through a scoring section comprising scoring roll 424 and smooth roll 426 which scores the web along its outer surface adjacent to its top edge. Then web 402 passes between male and female sealing and fluting rolls 428 and 430 which are identical in construction to rolls 420 and 422 respectively. Only rolls 422 and 430 are heated, and they are positioned adjacent each other and operate in synchronism so that cavities 432 and 434 bring fluted portions of the two webs into matching and facing relation as the two webs pass between rolls 422 and 430. Rolls 420 and 428 also operate in synchronism so that the flutes of the two webs will coincide with each other upon arrival at the female rolls. A dual web 403 comprising pockets 436 is formed by the latter.

While not shown, it is understood that the remainder of the machine of Fig. 5 comprises the elements shown in Fig. 3 following dotted line M—M, so that web 403 is advanced first to a commodity supply where its pockets 436 are filled, then to the next station where a third perforated web identical to web 272 is folded and positioned between the top unsealed portions of the dual web 403, thereafter between a pair of top sealing rolls, and finally to a severing section, all accomplished as shown in Fig. 3.

Fig. 6 illustrates a method and apparatus similar to that of Fig. 5 wherein the like numbers designate like elements. However, in Fig. 6 a single smooth roll 444 is substituted for female roll 430 and male roll 428. Smooth roll 444 occupies the same position relative to roll 422' as roll 430 occupies relative to roll 422. Consequently web 402' remains unfluted and is secured to web 400' as it passes between rolls 422' and 444 to form a dual web 403' comprising pockets 436' that are one-half the size of pockets 436 of Fig. 5.

It is to be understood that the term "dual web" and the term "two-face web" are interchangeable and are intended to embrace a web presenting two parallel layers, formed either by two individual webs secured to each other in parallel engaging relation, or by a single web folded upon itself. The former situation occurs in Figs. 5 and 6; the latter type of fabrication occurs in Figs. 1–4.

It is also to be understood that dispenser packets may be manufactured according to the present invention from paper, cellophane, or any other synthetic sheet material capable of being molded or fluted.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. Therefore it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts specifically illustrated and that within the scope of the appended claims it may be practiced otherwise than as specifically described or illustrated.

I claim:

1. A commodity package having a closed bottom and comprising front and back walls and an inverted expandable pleat between and secured to said walls at their top edges, said pleat having several perforations, portions of the folds of said pleat being sealed to each other, said front and back walls being sealed directly to each other at their side edges from the bottom of said package up to the bottom of said pleat and being sealed directly to the folds of said pleat above the bottom of said pleat, and a commodity in particle form contained in said package below said pleat, said commodity having a particle size smaller than said perforations.

2. A commodity package as defined by claim 1 wherein one fold of said pleat extends above the top edge of the other fold of said pleat.

3. A rectangular commodity package having a closed bottom and comprising front and back walls and an inverted expandable pleat between said walls at their top edges, said pleat being perforated in the region of its fold line, the folds of said pleat being joined to said front and back walls along said top edges from one side edge to the other side edge of said walls, portions of the folds of said pleat between said front and back walls being sealed to each other, said front and back walls being sealed to each other at their side edges from the bottom of said package up to the bottom of said pleat and being sealed at their side edges to the folds of said pleat above the bottom of said pleat, and a commodity in particle form contained in said package below said pleat, said commodity having a particle size smaller than the perforations in said pleat.

4. A commodity package formed from a single web of flexible sheet material, said package comprising a front wall and a back wall both of rectangular configuration and an inverted expandable pleat formed integral with said front and back walls and positioned between said walls at the top end of said package, said pleat being perforated in the region of its fold line, said front and back walls being directly sealed to each other along their bottom edges, said front and back walls being sealed directly to each other at their side edges from their bottom edges up to the fold line of said pleat, said front and back walls being sealed at their side edges directly to the folds of said pleat from the fold line of said pleat to the top of said package, said folds being sealed directly to each other at their side edges between the side edges of said front and back walls.

5. A commodity package constructed of a single piece of flexible packaging material comprising rectangular front and back walls and an inverted expandable pleat comprising two folds located fully between said walls, said front wall and one of said folds having a common top edge, said back wall and the other of said folds also having a common top edge, said folds having a common bottom fold edge extending parallel to and located between the top and bottom edges of said walls, said folds having a series of small openings located in the region of their common fold edge, limited portions of said folds being breakably sealed to each other, said front and back walls having their bottom edges sealed directly and permanently to each other, said front and back walls having their corresponding side edges sealed directly and permanently to each other from their bottom edges up to said common bottom fold edge of said folds and sealed directly and permanently to said folds above said common bottom fold edge, and a commodity in particle form contained between said front and back walls below said common fold edge, said commodity having a particle size smaller than said openings.

6. A commodity package as defined by claim 5 wherein said common top edge of said front wall and said one fold projects above the level of said common top edge of said back wall and said other fold.

7. A rectangular commodity package containing a commodity in particle form, said package comprising a front wall, a back wall, and an inverted expandable pleat consisting of two folds between said front and back walls, one of said folds and said front wall having a common top edge, the other of said folds and said back wall also having a common top edge, said two folds having a common bottom fold edge and a series of small openings which are larger in size than the particle size of said commodity, said small openings being located in the region of said common bottom fold edge, said folds being directly sealed to each other at limited portions thereof,

whereby said folds may be unsealed from each other and spread apart to expose said small openings, said front and back walls each having a bottom edge located below said common bottom edge of said folds and a pair of opposite side edges, said front and back walls having their bottom edges sealed directly to each other, said front and back walls also having their corresponding side edges sealed directly to each other from their bottom edges up to said common bottom fold edge and sealed to said folds from said common bottom edge to said common top edges, said commodity being contained between said front and back walls below said common bottom fold edge.

8. A package as defined by claim 7 wherein the side edges of said front wall are longer than the side edges of said back wall and the common top edge of said front wall and said one fold is disposed above the common top edge of said back wall and said other fold.

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