Dec. 2, 1969 C. W. VOGT 3,481,283

PACKAGE FORMING AND FILLING APPARATUS

Filed Sept. 20, 1966 3 Sheets-Sheet 1

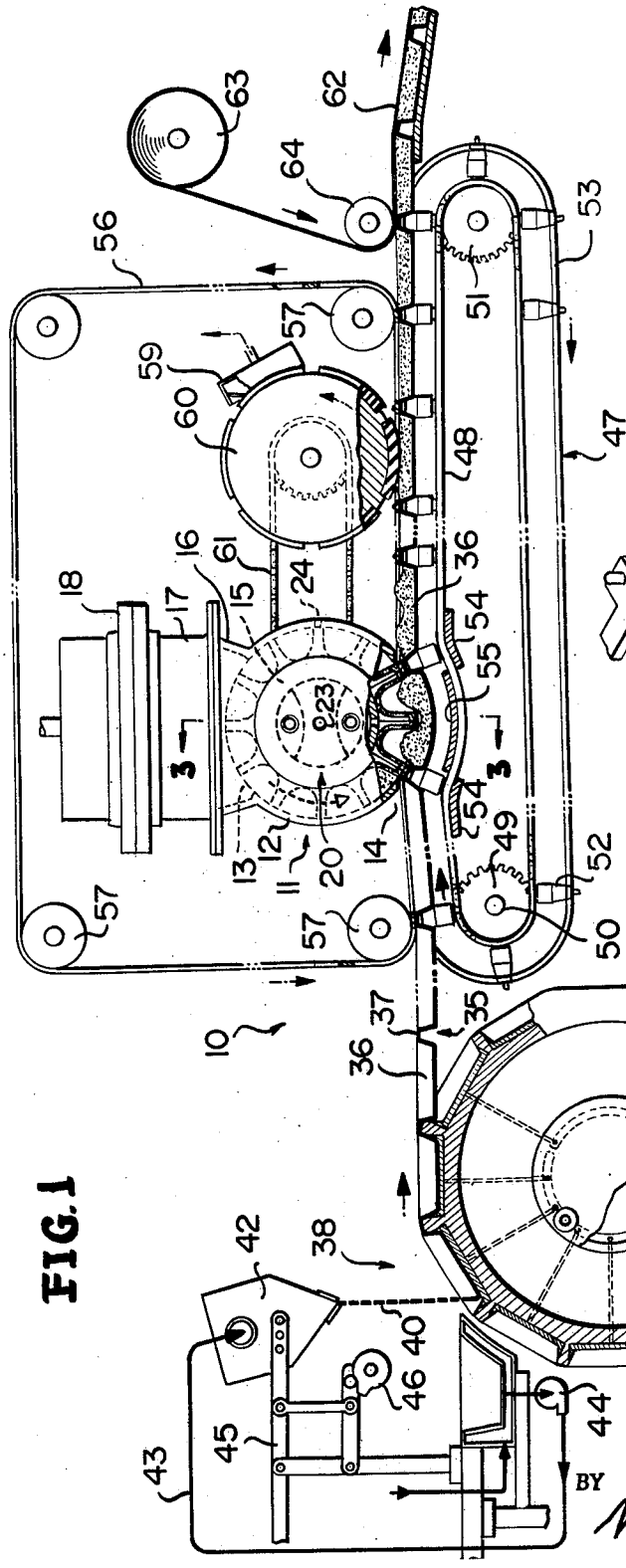


FIG. 1

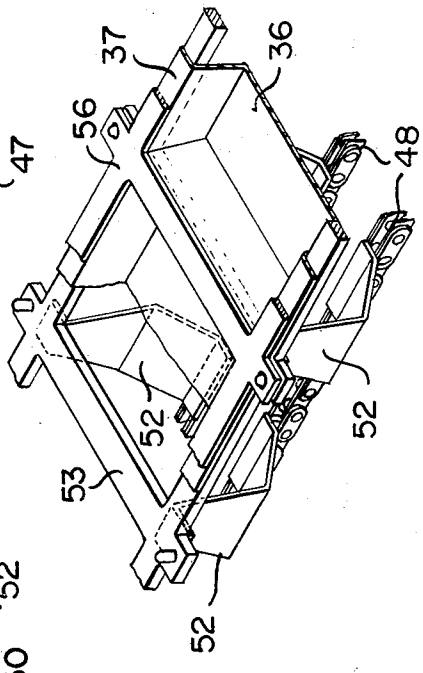


FIG. 2

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Dec. 2, 1969 C. W. VOGT 3,481,283

PACKAGE FORMING AND FILLING APPARATUS

Filed Sept. 20, 1966 3 Sheets-Sheet 2

FIG. 3

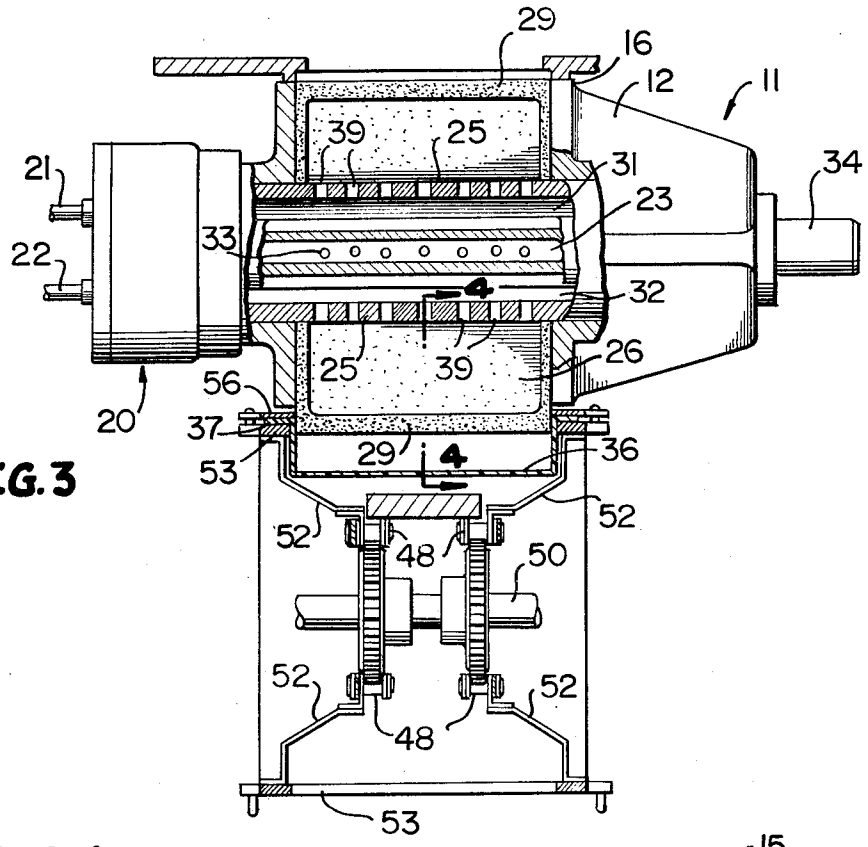
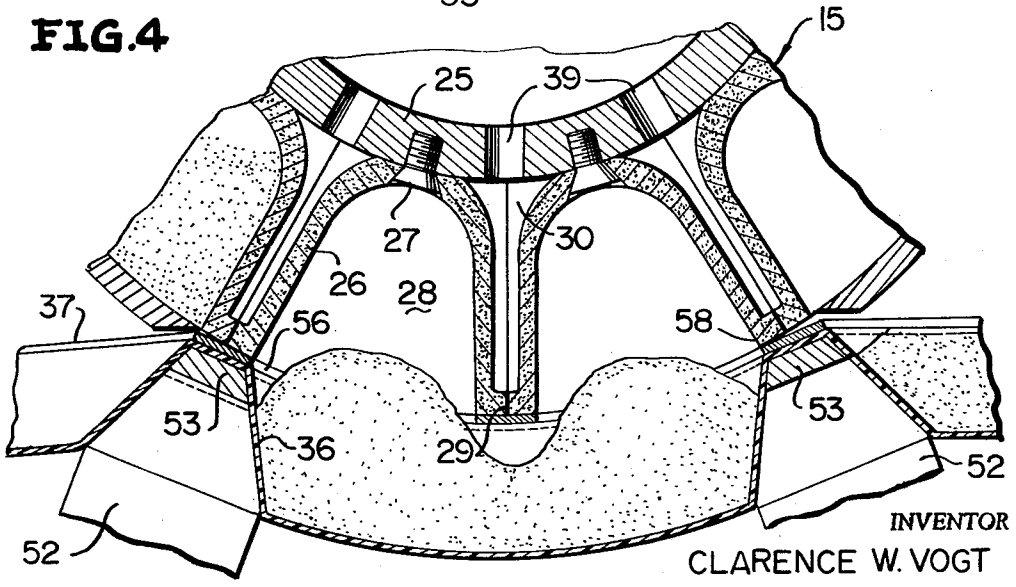


FIG. 4



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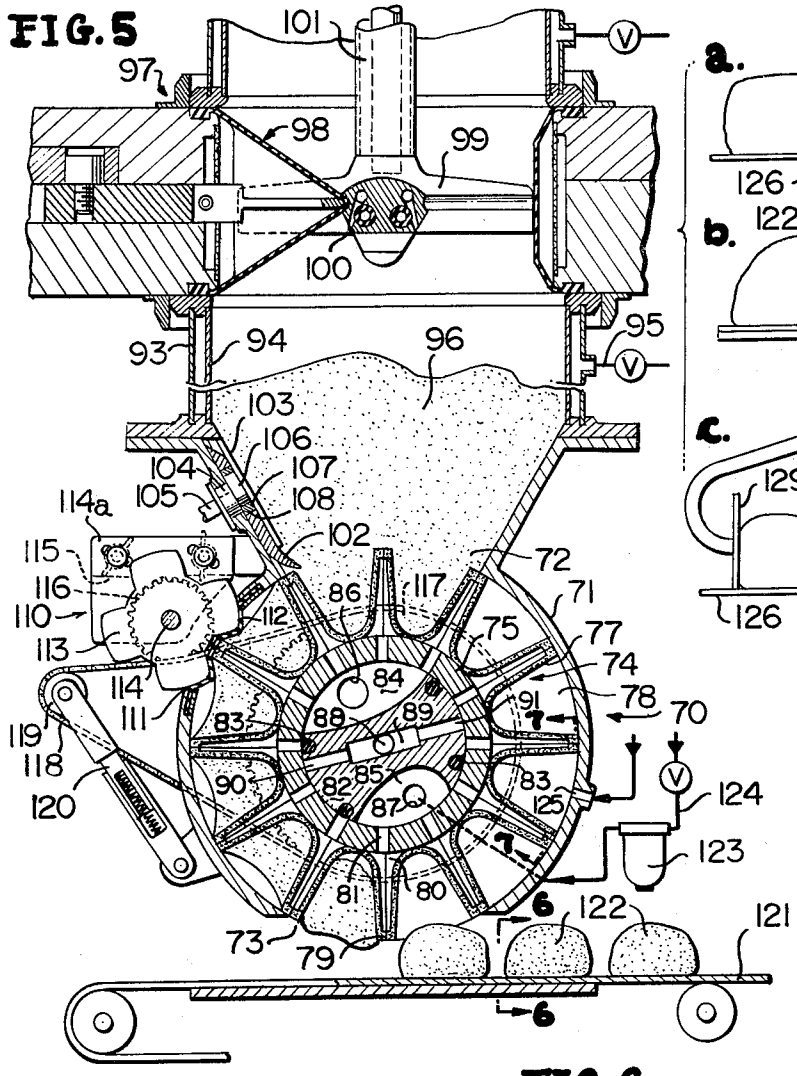
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Dec. 2, 1969 C. W. VOGT 3,481,283

PACKAGE FORMING AND FILLING APPARATUS

Filed Sept. 20, 1966 3 Sheets-Sheet 3

FIG.5



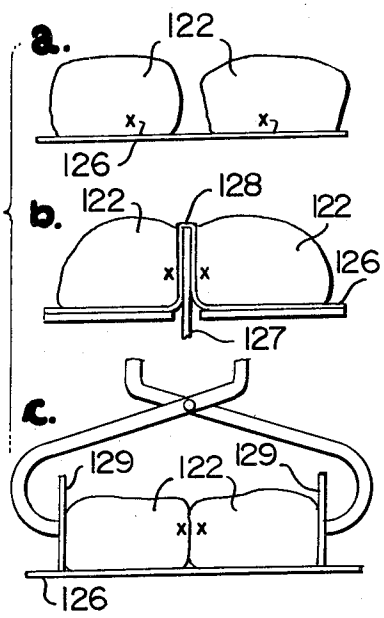
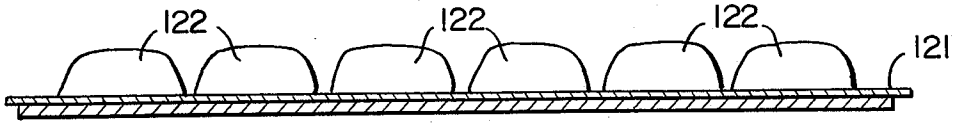


FIG.8

FIG.6



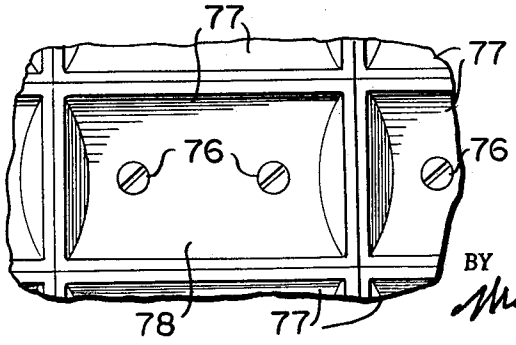


FIG.7

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3,481,283

PACKAGE FORMING AND FILLING APPARATUS

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Filed Sept. 20, 1966, Ser. No. 580,641
Int. Cl. A21c 11/00
U.S. Cl. 107—4 12 Claims

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a divider for dividing quantities of material into a plurality of equal weight quantities and utilizing a rotating impellor having a plurality of constant volume and fixed pockets each defined by a porous liner. The product is drawn into each pocket by means of a vacuum applied through the porous liner and discharge thereof is facilitated by the introduction of fluid pressure through the liner. The divider is suitable for all classes of materials including relatively sticky materials such as bread doughs.

This invention relates in general to a new and useful improvement in a package forming apparatus wherein a web formed of a series of interconnected pockets is passed beneath and in sealed engagement with a filler, and the filler is of the multiple pocket impellor type wherein while the web is associated with the impellor of the filler, an accurate charge or charges are deposited into the pockets of the web and wherein, without weighing, the charge placed in each of the web pockets is of substantially the same weight.

Another object of this invention is to provide a novel package forming apparatus which includes a filler of the type including a housing having an inlet and an outlet, the housing having mounted therein for rotation a multiple pocket impellor, and there being provided means for moving a multiple pocket web under the housing at the outlet thereof and in sealed engagement with the impellor wherein the charges placed within the pockets are delivered to the web.

Still another object of this invention is to provide an apparatus of the foregoing type wherein the filler is provided with suction means for applying suction to the pockets when they are aligned with the inlet of the housing and means for applying a discharge pressure when the pockets are aligned with the outlet of the housing; the suction providing for a uniform charging of the individual pockets.

Yet another object of this invention is to provide means for assuring the proper sealing of the pocketed web with the impellor as the web moves beneath the impellor, the means including a continuous sealing member which is moved in timed relation with respect to both the web and the impellor and has openings therethrough alignable with the pockets of the web.

A further object of this invention is to provide in association with the afore-mentioned packaging apparatus means for continuously forming the pocketed web in timed relation to the filling thereof so that the web is supplied as demanded by the filler.

Another object of this invention is to associate with the filler a combined feeder and mixer wherein finely divided flowable solids may be flowed into the filler and while passing towards the filler have associated therewith minute particles of liquid or semi-liquid material with there being an automatic mixing of the solid material and the liquid material to form a desired mixed product.

Another object of this invention is to provide a filler which is usable in conjunction with a cohesive readily moldable material, such as bread dough, and which is suitable for effecting the dividing of the material into units of equal weight.

Another object of the invention is to provide a divider of the foregoing type with means for selectively removing from the divided-out units of material quantities of the material so as to assure that each of the units of material is of a predetermined weight despite the fact that materials of differing specific gravities are fed through the divider.

A further object of this invention is to provide means for uniting two adjacent units of cohesive readily moldable material into a single unit which, after processing, will not show that the two units have been joined together.

With the above, and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a schematic side elevational view of the package forming apparatus of this invention and shows the general details thereof.

FIGURE 2 is an enlarged fragmentary perspective view showing generally the details of a pocketed web, the support therefor and means for effecting the sealing of the web to a filler.

FIGURE 3 is a fragmentary transverse vertical sectional view taken along the line **3—3** of FIGURE 1 and shows more specifically the details of the filler and the manner in which the pocketed web is supported in sealed engagement with the impellor thereof.

FIGURE 4 is an enlarged fragmentary sectional view taken along the line **4—4** of FIGURE 3 and shows further the details of the impellor of the filler and the manner in which the pocketed web is sealed relative thereto during the dispensing of material into the pockets of the web.

FIGURE 5 is a schematic elevational view with parts broken away and shown in section of a combined feeder, mixer and divider in accordance with this invention.

FIGURE 6 is a fragmentary transverse sectional view taken along the line **6—6** of FIGURE 5 and shows the multiple units dispensed by the divider.

FIGURE 7 is an enlarged fragmentary sectional view taken generally along the line **7—7** of FIGURE 5 and shows generally the configuration of the pockets.

FIGURE 8 is a schematic view showing the manner in which two units of material are joined to form a single unit, the view showing the progressive steps of joining the two units.

Referring now to the drawings in detail, reference is first made to the package forming apparatus shown in FIGURE 1 and generally referred to by the numeral **10**. The package forming apparatus **10** includes a filler which is generally referred to by the numeral **11**. The filler **11** is formed of a housing **12** having an inlet **13** and an outlet **14**. Within the housing **12** there is rotatably journalled a multiple pocket impellor **15**, the details of which will be described hereinafter.

In order that material to be dispensed may be continuously delivered to the pockets of the impellor **15**, at the inlet **13** of the housing **12** there is provided a hopper **16** to which there is secured a hopper extension **17**. Material to be dispensed may either be directly delivered to the hopper extension **17** or, as is shown in FIGURE 1, there may be connected to the hopper extension **17** a combined feeder and mixer **18** which is of the type specifically disclosed in my copending application Ser. No. 438,196, filed Mar. 9, 1965, now Patent No. 3,334,666 granted Aug. 8, 1967.

At this time, it is pointed out that the filler **11** will be provided with a valve mechanism at one end thereof,

as is viewed in FIGURE 3. The valve mechanism is generally referred to by the numeral **20** and has connected thereto a vacuum line **21** and a pressure line **22**. In addition, the valve mechanism **20** has a vent passage **23** (FIGURE 1). As the impellor **15** rotates, a vacuum or suction is applied to the individual pockets thereof while the pockets are aligned with the inlet. Then, as the pockets reach a generally horizontal position, they are vented to the atmosphere through the vent passage **23**. When the pockets become aligned with the outlet **14**, the material or product disposed therein is discharged by applying gas or air under pressure. As the pockets move between the outlet and the inlet, they are vented to the atmosphere through a port **24** (FIGURE 1).

Referring now to FIGURE 4 in particular, it will be seen that the impellor **15** includes a hollow shaft **25** which forms the main support for the impellor. A plurality of pocket forming members **26** are releasably secured to the outer surface of the sleeve **25** by fasteners **27**. The fasteners **27** are preferably in the form of screws having countersunk heads and which screws are threaded into the shaft **25**. Although in the illustrated form of the invention, each pocket forming member **26** defines a pocket **28** which extends the full length of the impellor **15**, it is to be understood that the pocket forming members may be provided with transverse partitions or each pocket forming member will extend only a portion of the length of the impellor so as to provide pockets in axially aligned rows.

It is to be understood that each pocket forming member **26** is formed of a suitable porous material and may be of a cast construction for purposes of economy. Each pocket forming member **26** is provided with a peripheral flange **29** which is sealed relative to an adjacent pocket forming member so as to define generally sealed spaces **30** between adjacent pocket forming members **26**. The shaft **25** has formed therein a plurality of vent passages **39** which are axially spaced in circumferentially spaced rows and wherein the vent passages **39** of each row opens into an associated one of the openings **30**.

The valve assembly **20** extends into the tubular shaft **25** from one end thereof and defines in the upper portion thereof a vacuum port **31** to which the vacuum line **21** is connected and a pressure port **32** of which the pressure line **22** is connected. As the impellor **15** rotates, the passages **39** come into sequential communication with the ports **31** and **32** as well as in alignment with passages **33** which open into the vent passages **23**.

It is to be understood that the tubular shaft **25** is suitably journalled within the housing **12** for rotation. There is connected to the tubular shaft **25** a drive shaft **34** which projects out from the end of the housing **12** remote from the valve assembly **20**.

In accordance with this invention, the filler **11** may be advantageously utilized in filling pockets of a continuous web **35**. It is to be noted that the web **35** is in the form of a continuous series of interconnected pockets **36** and each pocket **36** is defined by an uppermost boundary flange **37**.

Although the continuous web **35** may be supplied in roll form, for purposes of efficiency and economy, it is preferred that the web **35** be formed immediately before the filling thereof through the use of the filler **11** at the rate demanded by the operation of the filler. To this end, the apparatus **10** also includes a pocketed web forming apparatus which is generally referred to by the numeral **38**. The web forming apparatus **38** is preferably of the form more specifically disclosed in my copending application Ser. No. 487,182, filed Sept. 14, 1965, and copending application Ser. No. 552,895, filed Jan. 25, 1966.

The web forming apparatus **38** is of the curtain type and includes a falling curtain **40** of quick setting liquid material which is directed to a rotating mold **41**. The curtain of material **40** is dispensed from a dispenser **42** which is applied with the material by a line **43** from a pump **44**. A suitable support linkage **45**, which includes a rotating cam **46**, so distributes the curtain of material to the mold **41** thereby to substantially eliminate thin areas in the web **35**.

In order that the web **35** may be properly positioned relative to the filler **11** in general and more particularly with respect to the impellor **15**, there is provided a combined conveying and support unit **47** for the web **35**. The unit **47** includes a pair of endless chains **48** which are journalled over drive sprockets **49** carried by a drive shaft **50** and idler sprockets **51**. The chains **48**, as is best shown in FIGURE 2, carry at regularly spaced intervals, arms **52** which, in turn, carry suitable flexible supports **53** which are configurated to provide for both longitudinal and transverse support of the pocket defining flanges **37**.

It is to be noted that the chains **48** are guided adjacent the filler **11** by means of suitable guides **54** and **55** about an arcuate path having the center of the impellor **15** as a general center. With this guide arrangement, each pocket **36** is temporarily shaped to conform generally to the periphery of the impellor **15**.

A seal between the web **35** and the impellor **15** is assured by means of a continuous seal forming member **56** which is supported by means of suitable roller supports **57**. A lowermost flight of the seal forming strip **56** overlies the pocket defining flanges **37** and is aligned therewith. The seal forming strip **56** passes between the impellor **15** and the flanges **37** and forms a seal between the two.

It is pointed out at this time that the pockets **36** are of a size to be aligned with a selected number of the pockets of the impellor **15** and the transverse flanges **37** are alignable with the longitudinally extending vanes or ribs **58** of the impellor **15**, as is best shown in FIGURE 4.

It is to be understood that the mold **41**, the drive sprockets **49** and the impellor **15** are all driven in synchronized relation so as to control the timing of the movement of the web **35** with respect to the impellor **15** and thereby assure alignment thereof. It is to be understood that the drive may be of any conventional type.

In order that the material deposited into the pockets **36** may fill the pockets when it is desired to do so, it is to be undrstood that it will be necessary that the charges of material dropped into the pockets **36** of the web **35** by the impellor **15** rises above the tops of the pockets **36**. The material is then leveled off by a leveling wheel **60** which is driven from the filler **11** by a suitable drive member **61** and in synchronized relation therewith. The surface of the leveling wheel **60** is constantly cleaned by a suitable cleaning unit **59** which may include a suction housing having a surface therein.

After the material within the pockets **36** has been pressed and leveled, the packages will be completed by the application of a cover web **62**. The cover web **62** is delivered from a roll **63** and is pressed against the flanges **37** surrounding the pockets **36** by means of a roll **64**. The web **62** may be secured to the web **35** in any desired manner including heat sealing.

Reference is now made to FIGURE 5 wherein there is illustrated the details of a divider which is generally referred to by the numeral **70**. The divider is in a sense a filler, but is illustrated and described as merely dispensing the material onto a take-away belt. The divider is particularly adapted for use in dispensing like amounts of a cohesive readily moldable material, such as bread dough.

The divider **70** is of the same general construction as the filler **11** and includes a housing **71** which is provided with generally diametrically opposite inlet **72** and outlet **73**. An impellor **74** is rotatably journalled within the housing **71**. The impellor **74** is formed of a tubular drive shaft **75** which has releasably secured thereto by means of screw threaded fasteners **76** a plurality of pocket defining members **77**. Each pocket defining member **77** is formed of a porous material and for purposes of economy is preferably of a cast construction although it may be formed by other methods.

It is to be noted from FIGURE 7 that each pocket forming member **77** forms a single pocket **78** and the pockets **78** are arranged in rows both axially and circumferentially. By individually forming the pocket forming members **77**, when one becomes damaged, it may be readily removed. On the other hand, for purposes of economy, it is feasible to have all of the pockets **78** of a single axial row formed from one pocket forming member. Each of the pocket forming members **77** is provided with a peripheral flange **79** (FIGURE 4) which makes possible a seal between adjacent pocket forming members **77** and at the ends of the pocket forming members so as to define sealed areas **80** between the pocket forming members **77**. The shaft **75** is provided with rows of passages **81** which open therethrough from the interior of the shaft **75** into the spaces **80**. In this manner a vacuum may be selectively drawn in the spaces and through the pocket forming members **77** into the pockets **78**. In like manner, the pockets **78** may be internally pressurized.

The divider **70** also includes a fixed valve structure which includes a valve member **82** which extends into the tubular shaft **75**. The valve member **82** is sealed relative to the drive shaft **75** by means of suitable sealing members **83** and is of a configuration so as to define a vacuum passage **84** generally opposing the inlet **72**, and a pressure passage **85** generally opposing the outlet **73**. A vacuum is drawn in the vacuum passage **84** through a vacuum port **86** and pressure is directed into the pressure passage **85** through a port **87**.

The valve member **82** is also provided with a pressure equalizing port **88** which opens to the atmosphere. The port **88** opens into a passage **89** which has extending from opposite sides thereof at longitudinally spaced intervals ports **90** and **91**.

It will be apparent from FIGURE 1 that as the pockets **78** pass along the inlet area **72**, a vacuum is drawn therein. As the pockets move in a counterclockwise direction and are generally sealed by the housing **71**, the vacuum within the pockets **79** will be relieved when the ports **81** come into alignment with the ports **90**. Then, when the pockets **78** reach the bottom of the housing **71** and are aligned with the outlet, pressure is directed into the pockets through the ports or passages **81** and the space **80** to direct a product therefrom. In order to eliminate the pockets being under pressure when they return the inlet **72**, as the pockets move between the outlet **73** and the inlet **72**, the pressure is relieved through the ports **91**.

It is to be noted that the housing **71** is provided above the inlet with a suitable hopper construction **93** which, if desired, may be provided with a liner **94**. Air under pressure may be directed into the hopper **93** through a pressure line **95** and through the liner **94**, which liner is of a porous construction, so as to facilitate the movement of products down through the hopper **93** into impellor **74**.

A cohesive readily moldable material **96** is placed in the hopper **93**. Bread dough is a typical example of such material. The material may be either pre-mixed and deposited into the hopper **93** in any conventional manner, or may be mixed by a combination filler and mixer **97** which is more specifically described in my copending application Ser. No. 438,196, filed Mar. 9, 1965, now Patent No. 3,334,666, granted Aug. 8, 1967. Such a combination filler and mixer would include a multi-vane valve structure **98** which controls the flow of finely divided flowable solids therethrough. The multi-vane valve member **98** includes a valve element **99** having spray ports **100** formed therein for the purpose of dispensing liquids or semi-liquids in the form of finely divided particles such as a mist. The liquids or semi-liquids are delivered to the valve member **99** under pressure through a fluid pipe **101**. It is to be understood that the flowable solids are directed through the combination filler and mixer by means of differential gaseous pressure and the blended liquid or wet ingredients are delivered under homogenizing or high pressure.

It is to be understood that the pockets **78** can be so designed that with a material of a predetermined density, the material may be divided into units of a predetermined weight. However, it will also be readily apparent that the density of the material being divided by the divider **70** will vary particularly when the material changes. Therefore, in accordance with this invention, the volume of the pockets **78** is such that for the full range of materials for which the divider **70** is designed, each pocket **78** will receive sufficient material to produce a unit of the material of a weight which is at least equal to the minimum weight for which the divider is designed. With more dense materials, it will be necessary to reduce the amount of material placed in each of the pockets **78**.

In order to control the amount of material placed in each pocket **78**, there is carried by the upper portion of the housing **70** a combined cut off and scoop member **102**. When the pockets **78** are to be completely filled, the lower edge of the combined cut off and scoop member **102** is disposed along the path of travel of the periphery of the impeller **74** so as to cut off the material **96** flush with the radial end of each pocket **78**. When the material **96** is of a density which precludes the complete filling of the pockets **78**, the combined scraper and scoop **102** is reciprocated into and out of the pockets **78** in timed relation to the rotation of the impellor **74**.

In order to facilitate the reciprocation of the combined scraper and scoop **102**, the combined scraper and scoop **102** is mounted for reciprocatory movement only by means of a pair of guides **103** carried by the housing **71**. The housing **71** also carries a suitable bearing **104** in which there is rotatably journalled a shaft **105** which is driven in a suitable manner (not shown) in timed relation to the rotation of the impellor **74**. The shaft **105** carries an eccentric **106** which is mounted within a second eccentric **107** with the two eccentrics **106** and **107** being relatively rotatable with respect to each other and the shaft **105** to vary the stroke of the combined scraper and scoop **102**.

The eccentric **107** is mounted within a generally rectangular opening **108** formed in the combined scraper and scoop **102** whereby movement of the combined scraper and scoop **102** by the eccentrics **106** and **107** is limited to the direction permitted by the guides **103**.

It will be apparent from the foregoing that by properly adjusting the eccentrics **106** and **107** relative to the shaft **105**, the penetration of the combined scraper and scoop **102** into each pocket **78** may be controlled so that each unit delivered by a pocket at the outlet **73** of the divider **70** will be of the predetermined weight.

It also has been found desirable to compact the material carried by each pocket. To this end, a compacting unit, which is generally referred to by the numeral **110**, is mounted to one side of the housing **71**. The housing **71** has an opening **111** therein adjacent the position of the combined scraper and scoop **102**, and this opening is closed to the atmosphere by means of an extremely flexible and resilient diaphragm **112**. The compacting unit **110** includes a multiple lobe compacter **113** which is of a configuration to enter into the pockets **78** so as to compact the material therein through the diaphragm **112**.

The compacter **113** is mounted on a shaft **114** which is mounted for rotation by means of suitable support brackets **114*a***. The support brackets, in turn, are mounted on brackets **115** which are fixed relative to the housing **71** so that the amount of penetration of the lobes of the compacter **113** within the pockets **78** may be varied.

The shaft **114** carries a sprocket **116** which is aligned with a like sprocket **117** which is secured to the impellor **74** for rotation therewith. The sprockets **116** and **117** are connected together by a drive chain **118** which is tensioned by means of an idler sprocket **119** which is carried by a resilient arm **120**. It is to be understood that the rotation of the compacter **113** is timed with the rotation of the impellor **74**.

The divided out units of the material **96** delivered by the divider **70** drop onto a take-away belt **121**. Each divided out unit is referred to by the numeral **122**. As is shown in FIGURE 6, since the pockets **78** are disposed in axial rows, a plurality of the units **122** will be simultaneously discharged onto the take-away belt **121**.

A typical example of the material being provided is bread dough. It is to be understood that the bread dough will vary in density not only with the different types of dough, but also from batch to batch of the same dough. For example, white flour will vary in density due to variation in percentage of moisture. While in many bakeries attempts are made to maintain a uniform moisture content in the flour, it cannot be held exactly to a fixed percentage and therefore, the density of the flour will vary from batch to batch. Of course, the density of white bread dough will be different from the density of whole-wheat bread dough. The same is also true with respect to other materials wihch may be divided.

It is to be understood that the cohesive material **96**, particularly when the material is of a material such as bread dough, has a tendency to stick in the pockets **78**, and in view of this, it is desired to provide the pockets with a suitable releasing agent. The releasing agent may be a powdery material or a lubricant. In the case of bread dough and the like, a lubricant, such as a high quality mineral oil is desired. When the releasing agent is in the form of a readily flowable oil, it may be added into the air directed under pressure through the port **87** and applied to the pocket forming members **77** at the time the formed units **122** are being discharged from the pockets **78**. To this end, a suitable conventional lubricator **123** may be incorporated in the pressure air line **124** connected to the port **87**.

It is pointed out at this time that it is preferable that the pocket forming members **77** be formed of a porous material having substantial thickness whereby the oil or other lubricant distributed with the air may be directed through the pores of the liner by capillary attraction. With this type of liner construction, the lubricant is uniformly spread over the entire surfaces of the pockets **78**.

An alternative method of applying a releasing agent to the pocket forming members **77** is through a series of longitudinally spaced ports **125** formed in the housing **71** intermediate the outlet **73** and the inlet **72**. The releasing agent may be blown into the pockets **78** through the ports **125**. If desired, lubricants may be sprayed into the pockets through the ports **125**. Of course, it is to be understood that flour and like releasing agents which are not flowable in the same manner as liquids, may be directed into the pockets **78** through the ports **125**.

It is to be noted that when the units **122** are directed from the pockets **78**, all of the surfaces thereof, except the surface disposed at the periphery of the impellor **74**, are coated with the releasing agent and therefore, the units are not readily adherable to one another. In FIGURE 8 there is illustrated how the units may be combined to form larger units. It is to be noted that the surfaces of the units **122** which have not been coated with the releasing agent are engaged with the upper surface of a stretchable belt **126**. These surfaces of the units **122** are identified by the letter *x*. As the belt **126** moves longitudinally, the central portion thereof rides up on an elongated folding bar **127** so as to upwardly reversely fold the belt **126** intermediate the units **122** in the manner best shown in FIGURE 8*b*. It is to be noted that when the central portion of the belt **126** is folded as at **128**, on the folding bar **127**, the surfaces *x* of the units **122** are brought into opposed relation in view of their adhesion to the surface of the belt **126**. While the surfaces *x* of the units **122** are disposed in opposed relation, suitable clamps **129** are brought down on opposite sides of the units **122** so as to urge the units **122** together in the manner shown in FIGURE 8*c*. While the units **122** are so clamped, the belt **126** moves off of the folding bar **127** and the surfaces *x* of the units **122** come into contact with one another and the units **122** become adhesively bound to one another due to the cohesive properties of the material forming the units **122**.

A specific application of the divider **70** of FIGURE 5 and the method of joining the units **122** in the manner shown in FIGURE 8, is found in the bread making industry. For example, the divider **70** could be constructed to form dough units **122** having a controlled weight of either one-half pound or one pound. When the units weigh one-half pound, two units could be combined to form a one pound dough batch, three units could be combined to form a one and one-half pound dough batch and four units could be combined to form a two pound dough batch. On the other hand, the weight of the units **122** could be one pound and normally the units would not be combined with one another, but serve to provide the basis for one pound loaves of bread. When two pound loaves of bread are desired, two of the dough units could be combined together in the manner shown in FIGURE 8.

It is pointed out here that the divider **70**, due to the multiple pocket formation of the impellor and the fact that the impellor can be rotated at a relatively high speed, will divide dough into controlled units at a rate not presently possible. Furthermore, because the dough is drawn into the individual pockets of the impellor under a controlled vacuum and is compacted when being drawn into the pockets, the dough may be more uniformly divided. Furthermore, by making a single adjustment, the weight of each dough unit may be accurately controlled to a predetermined weight. In addition, due to the novel method of lubricating the pockets **78**, a much smaller quantity of mineral oil is required for preventing sticking than is used in dough dividers presently being utilized. The minimizing of the use of the oil is important both as to cost and damaging the quality of the product.

Although the filler **11** and the divider **70** have been illustrated in conjunction with a specific type of feeder, it is to be understood that the materials may be fed with other types of feeders. For example, suitable pumps may be utilized. These pumps may include the Moyno Pump which is manufactured by the Moyno Pump Division of Robbins and Myers, Inc., Springfield, Ohio.

Although this application has been restricted to several specific embodiments of the invention, it is to be understood that minor variations may be made in the invention without departing from the spirit of the invention, as defined by the appended claims.

I claim:

1. A divider for readily moldable material, said divider comprising a housing, a multiple pocket impellor rotatably journalled in said housing, said impellor having a plurality of constant volume and fixed pockets each defined by a porous liner, said housing having an inlet opening into said impellor and an outlet, means for producing a suction within said pockets to directly draw such material through said inlet opening into said pockets to completely fill each pocket with a predetermined amount of material, said inlet having a boundary opposing the direction of rotation of said impellor and cooperable therewith to shear material flush with said pockets, and means for effecting the pressure discharge of material from said pockets as said pockets are successively aligned with said outlet.

2. A divider for readily moldable material, said divider comprising a housing, a multiple pocket impellor rotatably journalled in said housing, said housing having an inlet opening into said impellor and an outlet, means for producing a suction within said pockets to draw such material into said spockets to fill the latter, said inlet having a boundary opposing the direction of rotation of said impellor and cooperable therewith to shear material flush with said pockets, and means for effecting the pressure discharge of material from said pockets as said

pockets are successively aligned with said outlet, each pocket being provided with a porous liner through which said suction is drawn, said means for effecting pressure discharge of material includes means for supplying a gas under pressure through said liner, and means for coating said pockets to prevent sticking of material thereto, said coating means including means for distributing a coating material into said gas.

3. A divider for readily moldable material, said divider comprising a housing, a multiple pocket impellor rotatably journalled in said housing, said housing having an inlet opening into said impellor and an outlet, means for producing a suction within said pockets to draw such material into said pockets to fill the latter, said inlet having a boundary opposing the direction of rotation of said impellor and cooperable therewith to shear material flush with said sockets, and means for effecting the pressure discharge of material from said pockets as said pockets are successively aligned with said outlet, each pocket being provided with a porous liner through which said suction is drawn, the coating material being a lubricant, and said liner being of a sufficient thickness to distribute the lubricant by capillary action.

4. A divider for readily moldable material, said divider comprising a housing, a multiple pocket impellor rotatably journalled in said housing, said housing having an inlet opening into said impellor and an outlet, means for producing a suction within said pockets to draw such material into said pockets to fill the latter, said inlet having a boundary opposing the direction of rotation of said impellor and cooperable therewith to shear material flush with said pockets, and means for effecting the pressure discharge of material from said pockets as said pockets are successively aligned with said outlet, and means for precoating said pockets to prevent sticking of material therein, each divided unit of material discharged from said divider having one substantially uncoated surface, and means for combining two units of material by bringing together the uncoated surfaces thereof.

5. The divider of claim 4 wherein said combining means includes a flexible web for receiving units of material with the uncoated surfaces thereof resting on said web, means for folding said web intermediate two adjacent units to bring the uncoated surfaces theretof into opposed relation, and means for clamping together the two units while releasing said web.

6. A divider for readily moldable material, said divider comprising a housing, a multiple pocket impellor rotatably journalled in said housing, said housing having an inlet opening into said impellor and an outlet, means for producing a suction within said pockets to draw such material into pockets to fill the latter, said inlet having a boundary opposing the direction of rotation of said impellor and cooperable therewith to shear material flush with said pockets, and means for effecting the pressure discharge of material from said pockets as said pockets are successively aligned with said outlet, and means provided at said inlet in the direction of rotation of said impellor to remove a predetermined amount of material from each pocket whereby all units of material discharged from said divider are of substantially equal weight.

7. The divider of claim 6 wherein said material removing means includes a scoop operating in said inlet in timed relation to movement of said pockets.

8. An apparatus for combining two units of cohesive material comprising a flexible web adapted to receive the units in transversely spaced relation, a folding device for temporarily longitudinally folding the web intermediate a pair of units to bring the units into close side-by-side relation, and clamp means extending transversely of said web for clamping the units when the units are in side-by-side relation to clamp together the units when said web is folded and until said folding device releases and said web moves from in between the units.

9. The apparatus of claim 8 wherein said web is a continuous moveable web.

10. The divider of claim 1 wherein there is associated with said inlet a combined feeder and mixer for forming the cohesive readily moldable material.

11. The divider of claim 1 wherein there is associated with said inlet a combined feeder and mixer for forming the cohesive readily moldable material, including means for effecting the controlled flow of finely divided flowable solids under the influence of a pressure differential and means for spraying in the path of the flowing solids minute particles of liquid and semi-liquid material.

12. The divider of claim 1 together with means for selectively varying the volume of material delivered by each pocket at said outlet, and means for compacting the material within said pockets intermediate said inlet and said outlet.

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107—9, 15