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 impeller 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 impeller type wherein while the web is associated with the impeller 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 the 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 impeller, and there being provided means for moving a multiple pocket web under the housing at the outlet thereof and in sealed engagement with the impeller 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 impeller as the web moves beneath the impeller, the means including a continuous sealing member which is moved in timed relation with respect to both the web and the impeller and has openings therethrough alignable with the pockets of the web.

A further object of this invention is to provide in association with the above-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 thereof 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 impeller 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 impeller 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 journaled a multiple pocket impeller 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 impeller 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 impeller 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 impeller 15 includes a hollow shaft 25 which forms the main support for the impeller. A plurality of pocket forming members 26 are releasable 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 impeller 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 impeller 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 319 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 22 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 impeller 15 rotates, the passages 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 journaled 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 22.

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, Figure 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. 408,182, 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 impeller 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 journaled 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 configured 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 accurate path having the center of the impeller 15 as a general center. With this guide arrangement, each pocket 36 is temporarily shaped to conform generally to the periphery of the impeller 15.

A seal between the web 35 and the impeller 15 is assured by means of a continuous seal forming member 56 which is integrally formed with the impeller 15. 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 impeller 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 impeller 15 and the transverse flanges 37 are alignable with the longitudinally extending vanes or ribs 58 of the impeller 15, as is best shown in FIGURE 4.

It is to be understood that the mold 41, the drive sprockets 49 and the impeller 15 are all driven in synchronized relation so as to control the timing of the movement of the web 35 with respect to the impeller 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 understood that it will be necessary that the charges of material dropped into the pockets 36 of the web 35 by the impeller 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 impeller 74 is rotatably journaled within the housing 71. The impeller 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 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 seal the pockets 78, vacuum passages 81, generally opposite 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 outlets 91, the 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, they will be relieved of the pressure 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 impeller 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 the material, a manifold or divider 99, and a flow of air 100 which is conditioned to provide 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 divider 70 is designed. 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 impeller 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 journaled a shaft 105 which is driven in a suitable manner (not shown) in timed relation to the rotation of the impeller 74. The shaft 105 carries an eccentric 106 which is mounted on the 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 wherein the impeller 74 is located, 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 114A. The compacter 113 is driven by a chain 115 which is fixed relative to the housing 70 so that the amount of penetration of the lobes of the compacter 113 within the pockets 78 may be varied.

The shaff 114 carries a sprocket 116 which is aligned with a like sprocket 117 which is secured to the impeller 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 impeller 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 charged 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, the 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 which 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 pocket 78 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 the 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 lubrication, 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 ports 125 and applied to 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 impeller 74, are coated with the releasing agent and therefore, the units are not readily adhesible 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 urge the reverse fold the belt 126 intermediate the units 122 in the manner best shown in FIGURE 8b. 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 clumps 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 8c. While the units 122 are so clamped, the belt 126 moves off of the folding bar 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 material 96 delivered by the divider 70, as shown 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 impeller and the fact that the impeller 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 impeller under a controlled vacuum and is compacted when being drawn into the pockets, the dough may be 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 divider 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 impeller rotatably journalled in said housing, said impeller having a plurality of constant volume and fixed pockets each defined by a porous liner, said housing having an inlet opening into said impeller 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 impeller and cooperative 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 impeller rotatably journalled in said housing, said impeller having an inlet opening into said impeller 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 the latter, said inlet having a boundary opposing the direction of rotation of said impeller and cooperative therewith to shear material flush with said pockets, and means for effecting the pressure discharge of material from said pockets as said
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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 from said pocket at high pressure being 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 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, 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, 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.

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 thereof 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 for coating said pockets to prevent sticking of material thereto, said coating means including means for distributing a coating material into said gas.

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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