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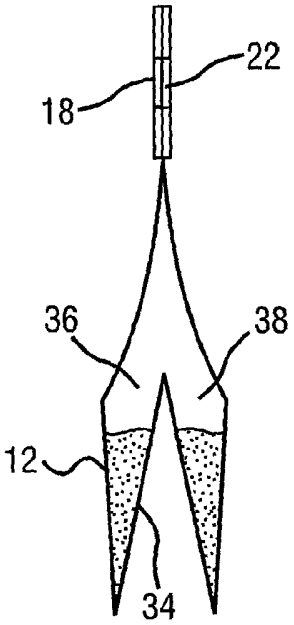
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(54) Title: INFUSION PACKAGE



(57) Abstract: An infusion package, particularly for coffee, has a container part (12) and a support (14) for the container part. The container part (12) defines two compartments, (36, 38) which contains similar amounts of coffee. In one form each end portion of the support (14) has crease lines which facilitate opening of the package for use. Also disclosed is an apparatus and method for making the package.

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Infusion Package

This invention relations to infusion packages and particularly, but not exclusively to infusion packages for coffee, and also to their formation.

Conventional infusion packages for tea or coffee comprise a porous walled container into which has been charged the coffee or tea. In use such containers are immersed in hot liquid such as water. It is known to suspend an open container such as a bag in the liquid and this has been achieved using a hanging string. In other arrangements a filter bag is provided with holding members which enable the filter to be support from the rim of a container for the hot liquid. One such arrangement is described in EP-A-0463181, but this arrangement can be difficult to use and manufacture. An infusion package which is simpler to manufacture is described in WO 01/51383, but it has been found particularly with coffee that such an arrangement does not produce a satisfactory flavour in an acceptable time.

According to a first aspect of the present invention there is provided an infusion package comprising a semi-porous open container for an infusible material and a support for supporting the container from the rim of a vessel, said support being capable of defining an opening through which liquid can be poured into the container, said container comprising opposite side walls and

divider means which divides the container into two compartments such that infusible material in one compartment is separated from that in the other compartment by said divider means.

The divider means may comprise a gusset formed between the side walls. The gusset may be formed integrally with the side walls.

The support may comprise a pair of juxtaposed members which are sealed at opposite ends. The sealing of the two members may be by means of a heat seal.

The upper end portion of the container may be sandwiched between the juxtaposed members of the support and sealed thereto by a heat seal. The support means may be foldable so that it can lie alongside the container to act as a closure which closes the open container until it is ready for use.

According to a second aspect of the present invention there is provided an infusion package comprising a semi-porous open container for an infusible material and a support for supporting the container from the rim of a vessel, said support being capable of defining an opening through which liquid can be poured into the container, said support being formed from juxtaposed members which are sealed together at opposite ends, each sealed end portion having formed therein a crease about which said members can fold in order to facilitate opening of said support.

Each crease may extend axially of the container. The seal at each said

portion of the support may be a heat seal.

A plurality of score lines may be formed on each of the juxtaposed members is a central region thereof. The score lines may extend axially of the package.

The area containing the score lines on a member may be offset laterally relative to the area containing the score lines on the offset member.

The support means may be joined to the semi porous container by a heat seal.

According to a third aspect of the present invention there is provided an apparatus for forming an infusion package from a web of material comprising folding means for folding the web of material into substantially a W-shape, means for sealing the material at positions corresponding to edges of the package, one limb of the W-shape defining a first compartment and the other limb defining a second compartment, means for cutting the material to form from the web individual container parts, means for securing a support member to the upper open end portion of each container part to form the infusion package, filling means for filling each infusion package, and means for maintaining a separation between two compartments of the container part at the filling means.

The apparatus may include second folding means for folding each support member to a position in which it closes the infusion package.

The apparatus may include a reel on which the web of material is wound. The apparatus may include means for feeding the material from the reel to the folding means. The feeding means may include tension and/or tracking control means for controlling the tension in the web of material.

The folding means may comprise means for forming the web of material into substantially a U-shape and means for forming a gusset into the base of the U-shape in order to create the W-shape.

The sealing means may comprise heat sealing means. The heat sealing means may include electrically heated jaws which engage opposite sides of the folded web. The jaws may be pneumatically operated. Alternatively the seal may be formed by crimping.

The cutting means may be designed to form a generally vertical cut along the sealed portions of the folded web.

The apparatus may include a source of pre-formed support members disposed downstream of the cutting means. Alternatively the support members may be formed from a web of material which is fed from a reel.

The apparatus may include a walking beam assembly for advancing the container parts and their accompanying support member through a support member sealing section. The support member sealing section may comprise one or more sealing stations for heat sealing each support member to the upper open end of its associated container part.

The filling means may include a hopper disposed above the path of each formed infusion package, said hopper containing material to be delivered to each container part of each infusion package. The hopper may contain coffee.

The mouth of the hopper may include an auger for delivering a predetermined quantity of material to each package.

The separation maintaining means may comprise an elongate beam which is straddled by said compartments. The beam may extend from a position close to said cutting means along the path of the container parts to said filling means in order to maintain separated the two compartments defined by the W-shape of each container part. Alternatively the separation maintaining means may comprise a finger locatable between said two compartments at the filling means. The finger may be disposed beneath the filling means and be movable upwardly to locate between said compartments. The finger can pneumatically or cam actuated.

The apparatus may include a sachet forming portion disposed downstream of the support member folding section.

According to a fourth aspect of the present invention there is provided a support for an infusion package according to any preceding claim, said support comprising two portions foldable about an axis between a position in which the portions are substantially co-planar and a position in which they are juxtaposed,

said axis containing cuts including a relatively long central cut and end cuts, the central cut and each end cut being separated by a relatively short uncut part which acts as a hinge about which the two portions can be folded.

According to a fifth aspect of the invention there is provided an apparatus for forming an infusion package from a web material comprising folding means for folding the web of material into substantially a W-shape, means for sealing the material of each limb of the W-shape at positions corresponding to the edges of a container part of the package so that one limb of the W-shape defines a first compartment and the other limb defines a second compartment, means for cutting the material to form from the web individual container parts, means for securing a support member to the upper end portion of each container part to form an infusion package and means for filling each infusion package, wherein said sealing means includes a heated blade so disposed that said limbs of the W pass on either side thereof, and a pair of oppositely disposed sealing jaws actuable to press the edge portions of each compartment against the heated blade to effect heat sealing thereof.

According to a sixth aspect of the invention there is provided an apparatus for forming an infusion package from a web of material comprising: folding means for folding a web of material to define limbs which are to form the walls for a container part of the package, sealing means for sealing the limbs at positions corresponding to the edge of the container, means for cutting

the material to form from the web individual container parts, means for securing a support member to the upper open end portion of each container part to form the infusion package and means for filling each infusion package, wherein the means for securing the support member includes an elongate heated member disposed so that an upper part of said limbs can pass one of each side thereof and a pair of opposite disposed sealing jaws actuable to press the upper part of each limb against a juxtaposed part of a support member to effect heat sealing therebetween.

According to a seventh aspect of the invention there is provided a method of forming an infusion package comprising folding a web of material into substantially a W-shape, passing the limbs of the W-shape on either side of a heated plate, pressing the material of each limb at positions corresponding to each portions of a compartment of a container part of the infusion package against the heated plate to effect sealing thereof, cutting the web along the sealed portions to form individual container parts, attaching a support to each container part and filling the compartments of the container part.

According to an eighth aspect of the invention there is provided a method of attaching a support element to the upper open part of a container portion of an infusion package comprising providing a support element comprising oppositely disposed support members, locating the support members on either side of said upper container portion part, passing the support

members with said upper container portion parts one on either side of a heated member and pressing each support and upper container portion part against the heating member to effect heat sealing between each support member and the container part.

The invention will be described now by way of example only with particular reference to the accompanying drawings. In the drawings:

Figure 1 is a perspective view of an infusion package for coffee according to one embodiment of the present invention;

Figure 2 is a cross-sectional view of the infusion package;

Figure 3 is a schematic plan view of the infusion package in use;

Figure 4 is a perspective view illustrating how the container is divided into two compartments;

Figure 5 is a perspective view showing another embodiment of an infusion package;

Figure 6 is a schematic view showing the infusion package of Figure 5 in use;

Figure 7 is a plan view of a support element;

Figure 8 is a side elevational view of an apparatus for forming a package of the type shown in Figures 1 to 7;

Figure 9 is a simplified schematic view illustrating the operations carried out by the apparatus of Figure 8;

Figure 9a is a schematic illustration of a sealing jaw;

Figure 10 is a simplified perspective view illustrating the operations of the apparatus of Figure 8;

Figure 11 is another simplified perspective view illustrating one embodiment of a compartment separation maintaining means, and

Figure 12 is a view similar to Figure 11 showing a modified embodiment.

Referring to Figures 1 to 4 of the drawings an infusion package (10) comprises a container (12) and a support (14) for the container. The support comprises two support members (14) by means of which the container can be mounted on a rim of a drinking vessel such as a mug or cup (15) as shown in Figure 3 of the drawings.

The support elements can each comprise of a strip of plastics coated board which are disposed opposite one another. Each support member is notched at one of its ends (16) to define a projection (18). The projection (18) lies in the plane of the support member and projects in the lengthwise direction of the member perpendicular to the ends (16).

At the end of the support members opposite the ends (16) there is a recess (22). The recesses (22) are aligned with and correspond in shape to the respective projections (18).

The support members are sealed to one another and to the container

(12). These seals can be heat seals. The arrangement of the support members is such that the end (16) of one member is disposed opposite the end (20) of the other member so that the respective projections project in opposite directions. Each support member has a series of score lines (24) disposed between the ends (16) and extending perpendicular to the lengthwise direction of the member and parallel to the end (16, 20). The score lines enable the support members to be moved from a closed position (Figure 2) to an open position as shown in Figure 3 of the drawings.

The container is in the form of an open ended sack or bag (12). The bag is formed from a web of porous heat sealable material which is folded to produce a cross section which is generally W-shaped as shown in Figures 2 and 4, the central part of the W forming a deep gusset. The long sides (30) of the W are sealed to each other by edge seals (32) which extend from the upper to the lower end of the bag. The lower corners are rounded as shown at (35) in order to minimise drippage of liquid from the bag.

It will be seen from Figure 2 of the drawings that the central gusset (34) forms a divider means which divides the bag or container into two compartments (36, 38). Coffee in each of these compartments is separated by the central gusset. It has been found that this type of arrangement creates a coffee drink of enhanced flavour in an acceptable time. It will be appreciated that a minimum infusion time is achieved when each compartment has

substantially equal amounts of coffee therein.

The upper open end of the bag (12) is sandwiched between the support members (14). The external surfaces of the bag at the open end are secured to the opposed inwardly facing surface of the support members in such a manner that the bag can be left open at the upper end as shown in Figure 3. The support members are sealed to one another at their ends (16, 20) by heat seals which extend parallel to the score lines (24).

It will be appreciated that the support member (14) can be folded over so that it is disposed alongside the upper end of the bag (12). This has the advantage that the size of any sachet containing the infusion package is reduced and the open end of the bag is effectively closed so that the coffee will not spill out in transit.

In use the bag is removed from a sachet in which it has been stored and the support members are folded upwardly to bring the infusion package into the condition shown in Figure 1. A compressive force is applied to the opposite ends of the support member causing the members to bow outwardly in the region of the score lines (24). As shown in Figure 3 the result is that the support members adopt a generally oval configuration allowing the projections (18) to sit on the rim of a drinking vessel (15). In addition the bowing of the support members opens the upper end of the bag and provides as opening through which water can be poured onto the coffee contained in the two

compartments (36, 38) of the bag.

It will also be appreciated that the design allows the bag to be supported from the rim of the vessel so that the coffee containing portion sits in the liquid in the vessel once the water has been poured into the bag.

The support members (14) can be formed by the method described in WO 01/51383, but their formation is not in any way restricted to this method.

Another embodiment of the infusion package is shown in Figures 5 to 7. Elements common to the first embodiment are shown by the same reference numerals.

In this embodiment in the vicinity of the heat sealed end portion each support member has a crease (25) formed therein. The crease extends perpendicularly to the long dimension of each support member. Each support member has on its internal surface a series of score lines (24) disposed between the ends (16) and extending perpendicular to the lengthwise direction of the member and parallel to the end (16, 20). The creases (25) facilitate the movement of the support members from a closed position (Figure 5) to an open position as shown in Figure 6 of the drawings. The score lines results in an eye shaped opening in the open condition.

The support members can be produced essentially as a single flat element as shown in Figure 7 of the drawings. The two members are foldable about an axis (28) to the position in Figure 1. The axis is principally a cut line

but the portions defining the two members are joined at relatively short sections 29. It will be seen that these are spaced inwardly a short distance from the end of each member so that there is a relatively long central cut line (26) and two short end cut lines (27). This design facilitates folding of the support member to a juxtaposed condition.

In use of the second embodiment the bag is removed from a sachet in which it has been stored and the support members are folded upwardly to bring the infusion package into the condition shown in Figure 5. A compressive force is applied to the opposite ends of the support member causing the members to bow outwardly in the region of the score lines (24). This movement is facilitated by the crease (25). As shown in Figure 6 the result is that the support members adopt a generally eye shaped configuration allowing the projections (18) to sit on the rim of a drinking vessel (15). In addition the bowing of the support members opens the upper end of the bag and provides as opening through which water can be poured onto the coffee contained in the two compartments (36, 38) of the bag.

It will also be appreciated that the design allows the bag to be supported from the rim of the vessel so that the coffee containing portion sits in the liquid in the vessel once the water has been poured into the bag.

As illustrated in Figures 1 to 7 the side edges (32) of the bag are parallel. It will be appreciated that this is not essential and they could for

example taper towards the bottom edge.

Referring to Figures 8 to 12 apparatus for forming an infusion package of the type described with reference to Figures 1 to 7 comprises a housing 90. In the housing 90 there is a reel 100 on which is wound a web of material for forming the container part 12 of the infusion package. This material may comprise any suitable porous heat sealable material used for forming infusion packets. The reel is carried on a cantilevered shaft 102 mounted on the housing 90. The web of material is fed from the reel 100 along a path 101, which can include a pivoted guide roller assembly, and a spring loaded dancing arm 103 to a forming section 108. The guide roller assembly allows fine adjustment of the web during operation. The dancing arm 103 controls web tension and can govern material unwind through a pneumatic brake.

The forming section 108 includes a fixed plate type flow former 104 which converts the flat web into a U-shape. A fixed blade 106 then creates in the U-shape the gusset 34 which has been described above with reference to Figure 2 of the drawings. The arrangement is such that one downwardly depending portion of the W-shape, which defines one compartment of the container part, lies on one side of the blade and the other compartment lies on the other side of the blade. Guide bars are used to control the vertical alignment of the web.

The folded material is then fed into a sealing section 110. In this

section two sealing operations are carried out by means of electrically heated movable jaws which are positioned on opposite sides of the folded web of material. A heated fixed plate 112 is located centrally in the sealing section and the limbs of the W-shape locate so that they straddle the plate 112. At a first sealing position the sealing jaws create a seal profile of the form shown at 114 in Figure 6 and at a second sealing position another set of sealing jaws create the profile 115. Each movable jaw operates such that it nips the web between it and the fixed plate 112 in order to form the seal profile 114 in each limb of the W-shape. A similar operation creates the seal profile 115. The seals are carried out in such a way as to retain the position of the gusset formed in the forming section. It will be appreciated that the use of a heated blade provides relatively rapid heat sealing.

The sealing jaws can be operated pneumatically or by way of cams to provide the necessary sealing force. After the sealing section the web is fed into a cutting section 118 which is designed to form a cut along the line 120 through each previously formed sealed portion so that the seal formed in the sealing section forms the trailing edge of one container part and the leading edge of the next container part. At this stage the long edges of each compartment defined by the W-shape are not sealed to each other so that the bag part defined by the seals has a saddle like configuration.

The cutting section is shown at 118 in Figure 8 of the drawings. The

cutting section operates to cut a single container part from the leading edge of the web, that cut line being central to the vertical seal as just explained. The profile of the cut effected by the cutting section is shown at 120 in Figure 9 of the drawings.

The cutting section 118 includes an anvil and knife which are loaded together pneumatically, or via cams, in order to provide the necessary cutting force. The leading container part (122) is separated from the web in a subsequent operation by advancing that container part a greater distance than the web.

Immediately before the cutting station and disposed below the path of the container parts there is provided a mechanism (124) (Figure 11) for moving apart the two compartments of each container part. This mechanism comprises a pair of juxtaposed plates 125 which can be moved upwardly to locate in the gusset between the two compartments of each container part. The plates are expandable laterally to move apart those compartments to ensure that as the container part is advanced the container parts locate one on each side of and straddle the forward part 126 of an elongate beam 127.

Up until this point in the machine the web of material has been advanced along its linear path by means of a web advance gripper which draws the material off the reel up until its position in the cutting station. The web is arranged to be advanced 90mm during each machine cycle. The web advance

gripper includes a pneumatically or cam actuated clamp mounted on a linear slide which grips the web. The clamp and slide are driven by a cam actuated lever (125a). After each advance stroke the clamp is designed to release the web and the gripper and slider are returned to their start position. Whilst the web is not being indexed forward the web is held in position by a clamp.

The next process carried out by the apparatus is to apply support elements or tags 14 to the just formed container part. The machine includes a magazine 130 in which are loaded a plurality of pre-cut blanks of the type shown in Figure 7 each of which is to form a support element. This magazine typically has a capacity for 600 blanks. As can be seen the magazine is disposed vertically and the lowest blank is supported by a lip at the bottom end of the magazine. Suction cups operate to draw the lowest blank vertically from the stack so that the lip then supports the next blank in the stack. These suction cups are actuated pneumatically and position a blank just above the top of a container portion. Each blank is located by means of side guides and supported on its base. The blank is then released above the container part and driven forward with the container part by drive pins on a walking beam assembly shown generally at 132. The blanks are folded from their flat condition into a V-shape by means of a folding shoe. An initial fold is made over a central support to an included angle of approximately 50°. The shoe holds the fold in this position until at a support element sealing section yet to be described

completes the folding operation. The folding shoe is driven pneumatically or via cams.

Each container part and its associated, partly folded, tag or support element 14 is then moved through a sealing section 135 which comprises a series of four sealing stations by means of a walking beam assembly. In the arrangement shown in the drawings each container part and its associated tag undergo four sealing operations. These sealing operations are designed to seal the tag to the upper open end of the container part. To this end the sealing section 135 includes four sets of electrically heated jaws spaced longitudinally therealong on both sides of the tag. The sealing jaws are actuated pneumatically or via cams to provide the necessary sealing force. The walking beam assembly is designed to advance the container parts and tags from the bag cutting section to a filling station and during each machine cycle the containers parts with their tags are advanced approximately 130 millimetres. Beams provide a system for gripping and releasing the bags. A cam driven lever provides the forward and return motion to the beam.

The sealing positions are shown in Figures 9 to 12 of the drawings at 140, 141, 142 and 143. In sealing station 140, sealing occurs along area 150, in sealing station 141 sealing occurs at areas 151, and at station 142 creases 25 are formed. In the sealing stations 140, 141 and 142 the compartments of each container part are held apart by a relatively deep part 128 of the beam 127. In

the sealing station 143 the beam 127 has a relatively shallow part 129. This is to enable the upright edges of each compartment to be sealed together at 152 except at the part where the beam part 129 passes therethrough. After being sealed at position 143 the tag is securely sealed to its container part to form an infusion package.

Downstream of the tag sealing section is a filling section 145. The filling section includes a hopper 146 disposed above the path of the infusion packages. The mouth of the hopper includes a servo driven auger which is arranged to deliver an accurate amount of coffee which is stored in the hopper 146 to each infusion package as it passes below the mouth of the hopper. At the filling station each package is opened by means of pneumatically or cam actuated suction cups in order to allow coffee to enter through the mouth of the package. The two compartments defined by the W section of the container part 12 are still disposed on opposite sides of the beam part 129 at this stage and hence coffee delivered from the hopper 146 enters both of these compartments substantially in equal quantities. The compartment separating means which in this embodiment is the beam part 129 plays an important function in ensuring that the two compartments receive equal quantities of coffee.

Sensors can be provided to check that each infusion package is correctly positioned and open and the compartments of the container part can be opened by means of an air blast prior to the coffee being dispensed therein. The

apparatus can include a vibrator for vibrating the package in order to prevent coffee bridging in the container part.

After filling each infusion package is closed and the bag is transferred from the filling station on the walking beam assembly to a reject station 160. The reject station 160 is designed to provide for automatic rejection of the packages if they do not meet certain criteria.

The next stage in the apparatus is a tag or support element folding section shown at 170. In this section as shown in Figure 9 of the drawings each tag or support element is folded over so that is lies alongside its associated container part the fold line occurring in the container part material. This act of folding the tag over securely closes the infusion package and maintains the coffee in the container part during transit. A plough can be used to fold the tag towards the inside of the apparatus and guides support the tag and container part as it is transferred to the next section.

The final section of the apparatus is a sachet forming section 180 which is designed to enclose each filled infusion package in a sealed sachet. The apparatus includes a reel 200 on which a web of material for forming the sachet is wound. Material is fed from the reel 200 along a path 201 past a spring loaded dancing arm 202 to the sachet forming section 180. A sachet advance gripper draws material from the reel 200 up to a sachet seal and cut module 204 which carries out the operation shown at 205 and 206 in Figure 9.

The material is sealed vertically and then the sachets are then cut by forming a cut in the leading edge of the web that cut line being central to the formed vertical sachet seal.

The heated blade (112) of the sealing section (110) comprises two side by side electrically conductive blade parts which are separated by electrically insulating material. Electrical current can be supplied to the blade parts via leads (210) shown in Figure 12. The blade end portion (112a) is relatively thick whilst the blade end portion (112b) is relatively thin and therefore becomes hotter because of its higher resistance. The blade (112) is made of high resistance material such as titanium.

The sealing section 135 also includes a centrally located heated blade (220). The support elements after being dispensed from hopper (130) are folded so that they straddle this blade (220) The blade comprises a first part (221) which is formed from phosphor bronze and a second part (222) which is formed from titanium. The transversely movable sealing jaws of the sealing stations in the sealing section (135) press the folded support element against the blade (220) with the upper part of a container being sandwiched between the blade (220) and the support element. Heat from the blade head seals the support element to the container upper or mouth part.

Heat sealing from the inside in this manner is an efficient and effective way of carrying out this operation.

The station shown at (225) in Figure 12 includes creasing jaws which have cooperating grooves and ridges. These jaws are actuable to engage opposite sides of the support element (14) in order to form the creases (25) described above with reference to Figures 5 to 7. Forming the creases (25) at this stage in the process rather than in the preformed blank ensures that the creases are accurately aligned.

As described the support elements or tags 14 are formed from pre-cut blanks stored in a magazine 130. It is possible to also form the tags from a continuous web of material fed from a reel such as that shown at 210.

Also as described the compartment separating means at the filling station comprises a beam part 129. Alternative arrangements are possible. For example a finger could be provided below the filling station 145, the finger being actuable to locate between the two compartments of each container part to hold apart those compartments. The finger can be movable upwardly to its operative position by pneumatic or cam actuating means.

Claims

1. An infusion package comprising a semi-porous open container for an infusible material and a support for supporting the container from the rim of a vessel, said support being capable of defining an opening through which liquid can be poured into the container, said container comprising opposite side walls and divider means which divides the container into two compartments such that infusible material in one compartment is separated from that in the other compartment by said divider means.

2. An infusion package according to claim 1, wherein the divider means comprises a gusset formed between the side walls.

3. An infusion package according to claim 2, wherein the gusset is formed integrally with the side walls.

4. An infusion package according to any preceding claim, wherein the support comprises a pair of juxtaposed members which are sealed an opposite ends.

5. An infusion package according to claim 4, wherein the sealing of the

two members is by means of a heat seal.

6. An infusion package according to claim 4 or claim 5, wherein the upper end portion of the container is sandwiched between the juxtaposed members of the support and sealed thereto by a heat seal.

7. An infusion package according to any preceding claim, wherein the support means is foldable so that it can lie alongside the container to act as a closure which closes the open container until it is ready for use.

8. An infusion package comprising a semi-porous open container for an infusible material and a support for supporting the container from the rim of a vessel, said support being capable of defining an opening through which liquid can be poured into the container, said support being formed from juxtaposed members which are sealed together at opposite ends, each sealed end portion having formed therein a crease about which said members can fold in order to facilitate opening of said support.

9. An infusion package according to claim 8, wherein each crease extends axially of the container.

10. An infusion package according to claim 8 or claim 9, wherein the seal at each end portion of the support is a heat seal.

11. An infusion package according to any one of claims 8 to 10 including a plurality of score lines formed on each of the juxtaposed members in a central region thereof.

12. An infusion package according to claim 11, wherein the score lines extend axially of the package.

13. An infusion package according to claim 11 or claim 12, wherein the area containing the score lines and one member is offset laterally with respect to the area contained in the score lines on the other member.

14. An infusion package according to any one of claims 8 to 13, wherein the support means is joined to the semi-porous container by a heat seal.

15. A support for an infusion package according to any preceding claim, said support comprising two portions foldable about an axis between a position in which the portions are substantially co-planar and a position in which they are juxtaposed, said axis containing cuts including a relatively long central cut

and end cuts, the central cut in each end cut being separated by a relatively short uncut part which acts as a hinge about which the two portions can be folded.

16. A support according to claim 15, wherein each portion has a projection at one end and a recess at the other, the projection on one portion being at the same end as the recess on the other portion.

17. A support according to claim 15 or claim 16 wherein the support is formed from material which is heat sealable.

18. A support according to any one of claims 15 to 17 wherein the score lines on a central part of each portion extend perpendicularly to the cuts.

19. A support according to any one of claims 15 to 18 wherein the score lines on one portion are offset relative to those on the other.

20. An apparatus for forming an infusion package from a web of material comprising folding means for folding the web of material into substantially a W-shape, means for sealing the material at positions corresponding to edges of the package, one limb of the W-shape defining a first compartment and the

other limb defining a second compartment, means for cutting the material to form from the web individual container parts, means for securing a support member to the upper open end portion of each container part to form the infusion package, filling means for filling each infusion package, and means for maintaining a separation between the two compartments of the container part at the filling means.

21. Apparatus according to claim 20 including second folding means for folding each support member to a position in which it closes the infusion package.

22. Apparatus according to claim 20 or claim 21 including a reel on which the web of material is wound.

23. Apparatus according to claim 22 including means for feeding the material from the reel to the folding means.

24. Apparatus according to claim 23 wherein the feeding means includes tension and/or tracking control means for controlling the tension in the web of material.

25. Apparatus according to any one of claims 20 to 24 wherein the folding means comprise means for forming the web of material into substantially a U-shape and means for forming a gusset into the base of the U-shape in order to create the W-shape.

26. Apparatus according to any one of claims 20 to 25 wherein the sealing means comprise heat sealing means.

27. Apparatus according to claim 26 wherein the heat sealing means include electrically heated jaws which engage opposite sides of the folded web.

28. Apparatus according to claim 27 wherein the jaws are pneumatically or cam operated.

29. Apparatus according to any one of claims 20 to 25 wherein the sealing means comprise crimping means.

30. Apparatus according to any one of claims 20 to 29 wherein the cutting means are designed to form a generally vertical cut along the sealed portions of the folded web.

31. Apparatus according to any one of claims 20 to 30 including a source of pre-formed support members disposed downstream of the cutting means.

32. Apparatus according to any one of claims 20 to 30 in which the support members are formed from a web of material which is fed from a reel.

33. Apparatus according to any one of claims 20 to 32 including a walking beam assembly for advancing the container parts and their accompanying support member through a support member sealing section.

34. Apparatus according to claim 33 wherein the support member sealing section comprises one or more sealing stations for heat sealing each support member to the upper open end of its associated container part.

35. Apparatus according to any one of claim 20 to 34 wherein the filling means includes a hopper disposed above the path of each formed infusion package, said hopper containing material to be delivered to each container part of each infusion package.

36. Apparatus according to claim 35 wherein the hopper contains coffee.

37. Apparatus according to claim 35 or claim 36 wherein the mouth of the hopper includes an auger for delivering a predetermined quantity of material to each package.

38. Apparatus according to any one of claim 20 to 37 wherein separation maintaining means comprise an elongate beam which is straddled by said compartments.

39. Apparatus according to claim 38 wherein the beam extends from a position close to said cutting means along the path of the container parts to said filling means in order to maintain separated the two compartments defined by the W-shape of each container part.

40. Apparatus according to any one of claims 20 to 37 wherein the separation maintaining means comprise a finger locatable between said two compartments at the filling means.

41. Apparatus according claim 40 wherein the finger is disposed beneath the filling means and is movable upwardly to locate between said compartments.

42. Apparatus according to claim 41 wherein the finger is pneumatically or cam actuated.

43. Apparatus according to any one of claims 20 to 42 including a sachet forming portion disposed downstream of the support member folding section.

44. A method of forming an infusion package from a web of material comprising folding the web of material into substantially a W-shape, sealing the folded web at positions corresponding to edge portions of a container part of the package, cutting the web along the sealed portions to form individual container parts, attaching a support to each container portion, and filling the two compartments defined by the W-shape of each container part whilst holding apart said compartments to ensure equal distribution of the filled material into each compartment.

45. An apparatus for forming an infusion package from a web material comprising folding means for folding the web of material into substantially a W-shape, means for sealing the material of each limb of the W-shape at positions corresponding to the edges of a container part of the package so that one limb of the W-shape defines a first compartment and the other limb defines a second compartment, means for cutting the material to form from the web

individual container parts, means for securing a support member to the upper end portion of each container part to form an infusion package and means for filling each infusion package, wherein said sealing means includes a heated blade so disposed that said limbs of the W pass on either side thereof, and a pair of oppositely disposed sealing jaws actuable to press the edge portions of each compartment against the heated blade to effect heat sealing thereof.

46. An apparatus for forming an infusion package from a web of material comprising: folding means for folding a web of material to define limbs which are to form the walls for a container part of the package, sealing means for sealing the limbs at positions corresponding to the edge of the container, means for cutting the material to form from the web individual container parts, means for securing a support member to the upper open end portion of each container part to form the infusion package and means for filling each infusion package, wherein the means for securing the support member includes an elongate heated member disposed so that an upper part of said limbs can pass one of each side thereof and a pair of opposite disposed sealing jaws actuable to press the upper part of each limb against a juxtaposed part of a support member to effect heat sealing therebetween.

47. A method of forming an infusion package comprising folded a web of

material into substantially a W-shape, passing the limbs of the W-shape on either side of a heated plate, pressing the material of each limb at positions corresponding to each portions of a compartment of a container part of the infusion package against the heated plate to effect sealing thereof, cutting the web along the sealed portions to form individual container parts, attaching a support to each container part and filling the compartments of the container part.

48. A method of attaching a support element to the upper open part of a container portion of an infusion package comprising providing a support element comprising oppositely disposed support members, locating the support members on either side of said upper container portion part, passing the support members with said upper container portion parts one on either side of a heated member and pressing each support and upper container portion part against the heating member to effect heat sealing between each support member and the container part.

49. An apparatus for forming an infusion package from a web of material comprising: folding means for folding a web of material to define limbs which are to form the walls for a container part of the package, sealing means for sealing the limbs at positions corresponding to the edge of the container, means

for cutting the material to form from the web individual container parts, means for securing a support member to the upper open end portion of each container part to form the infusion package and means for filling each infusion package, wherein said apparatus includes means for forming a crease or creases in the support element.

50. A method of attaching a support element to the upper open part of a container portion of an infusion package comprising providing a support element comprising oppositely disposed support members, locating the support members on either side of said upper container portion part, passing the support members with said upper container portion parts one on either side of a heated member, pressing each support and upper container portion part against the heating member to effect heat sealing between each support member and the container part, and forming a crease or creases in said support element.

FIG. 1

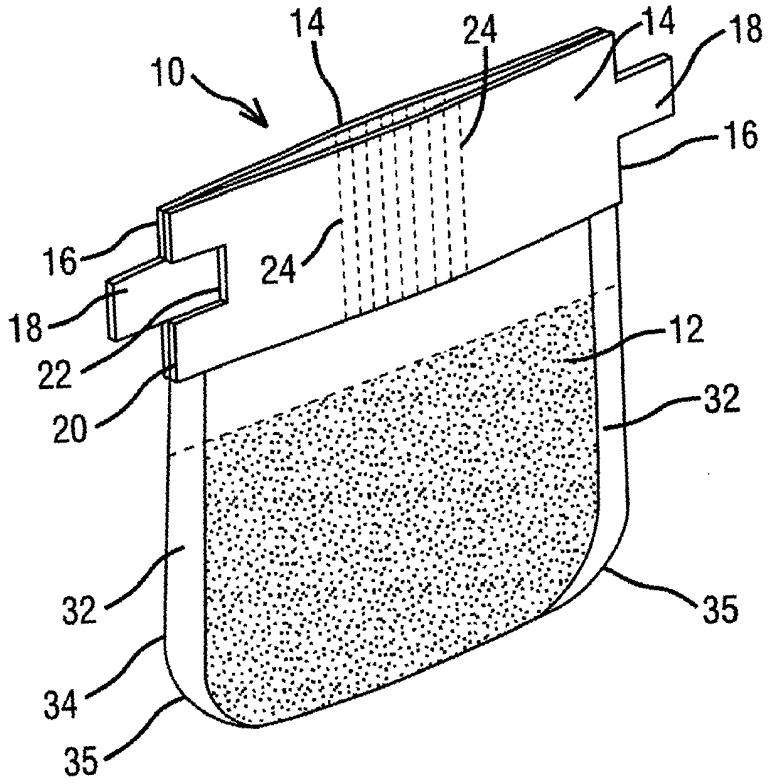


FIG. 2

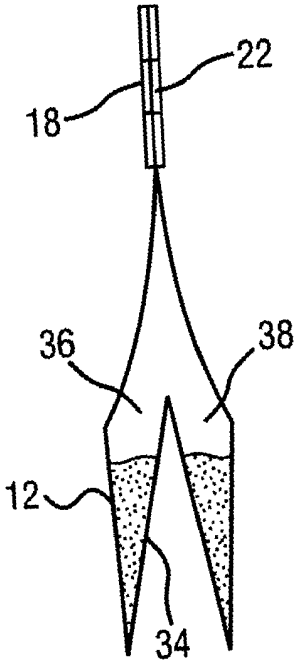


FIG. 3

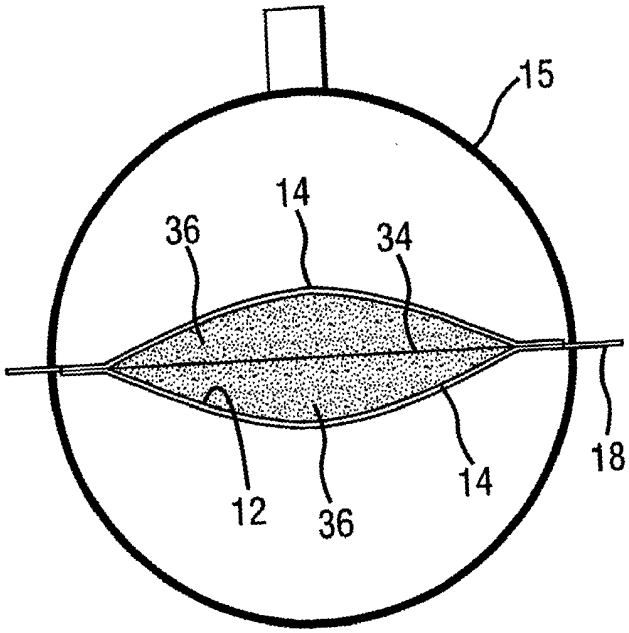


FIG. 4

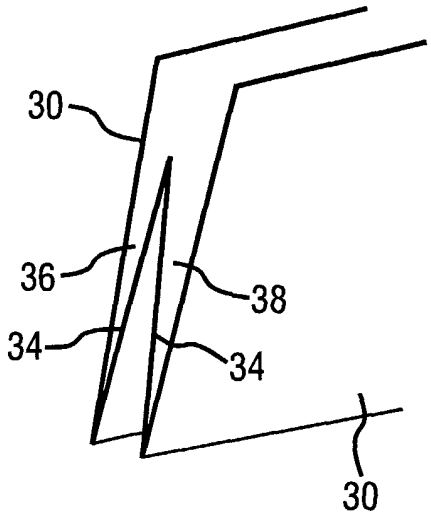


FIG. 7

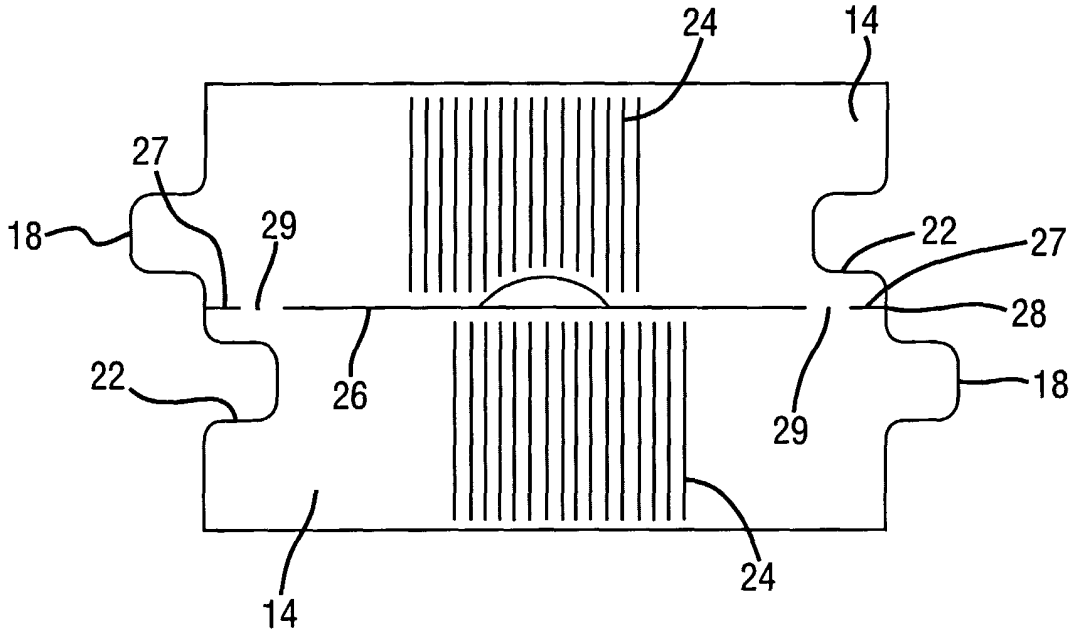


FIG. 5

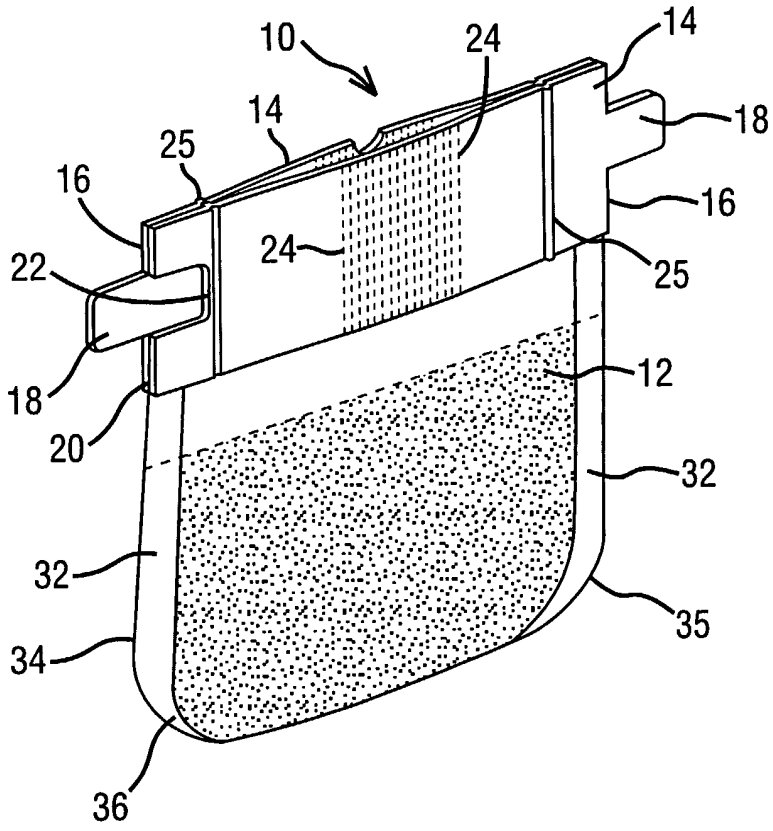

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FIG. 6

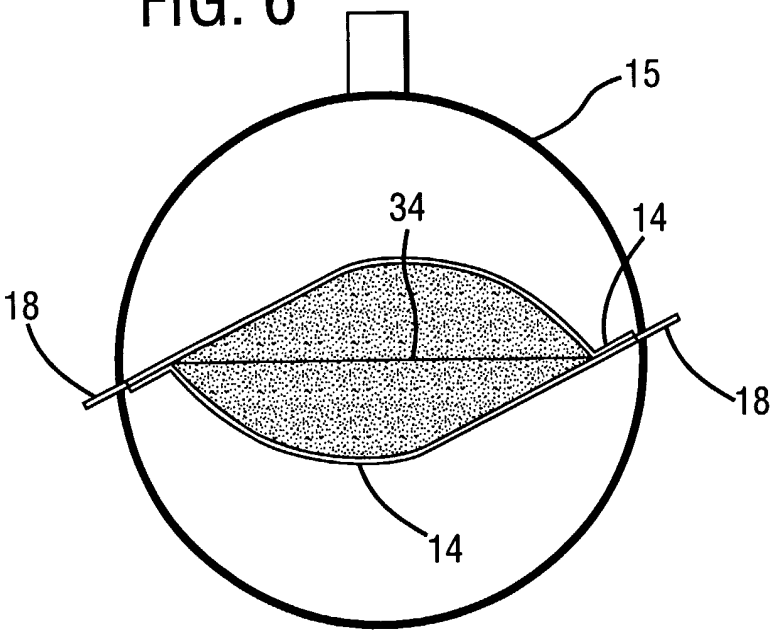

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FIG. 8

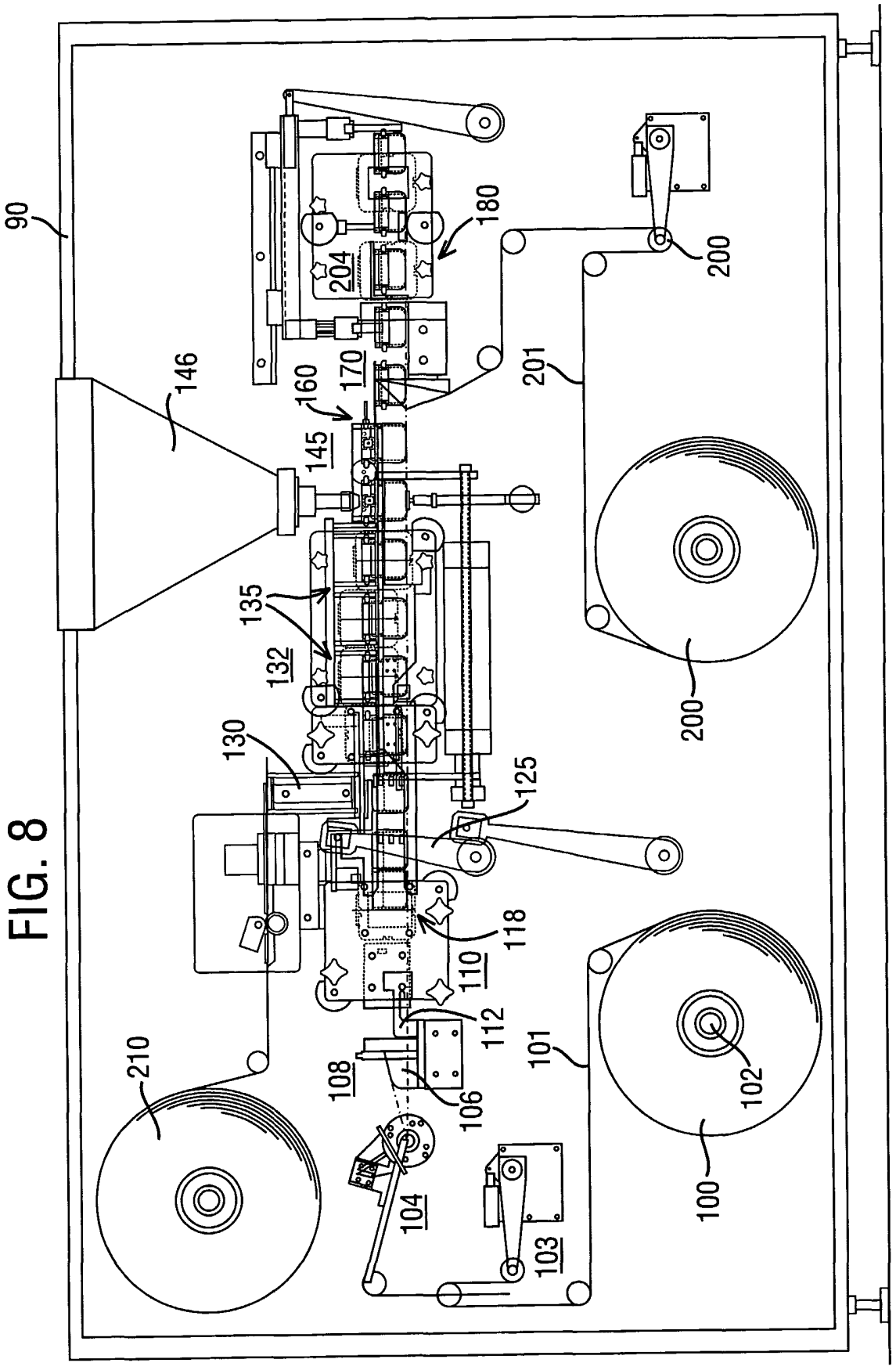

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FIG. 9

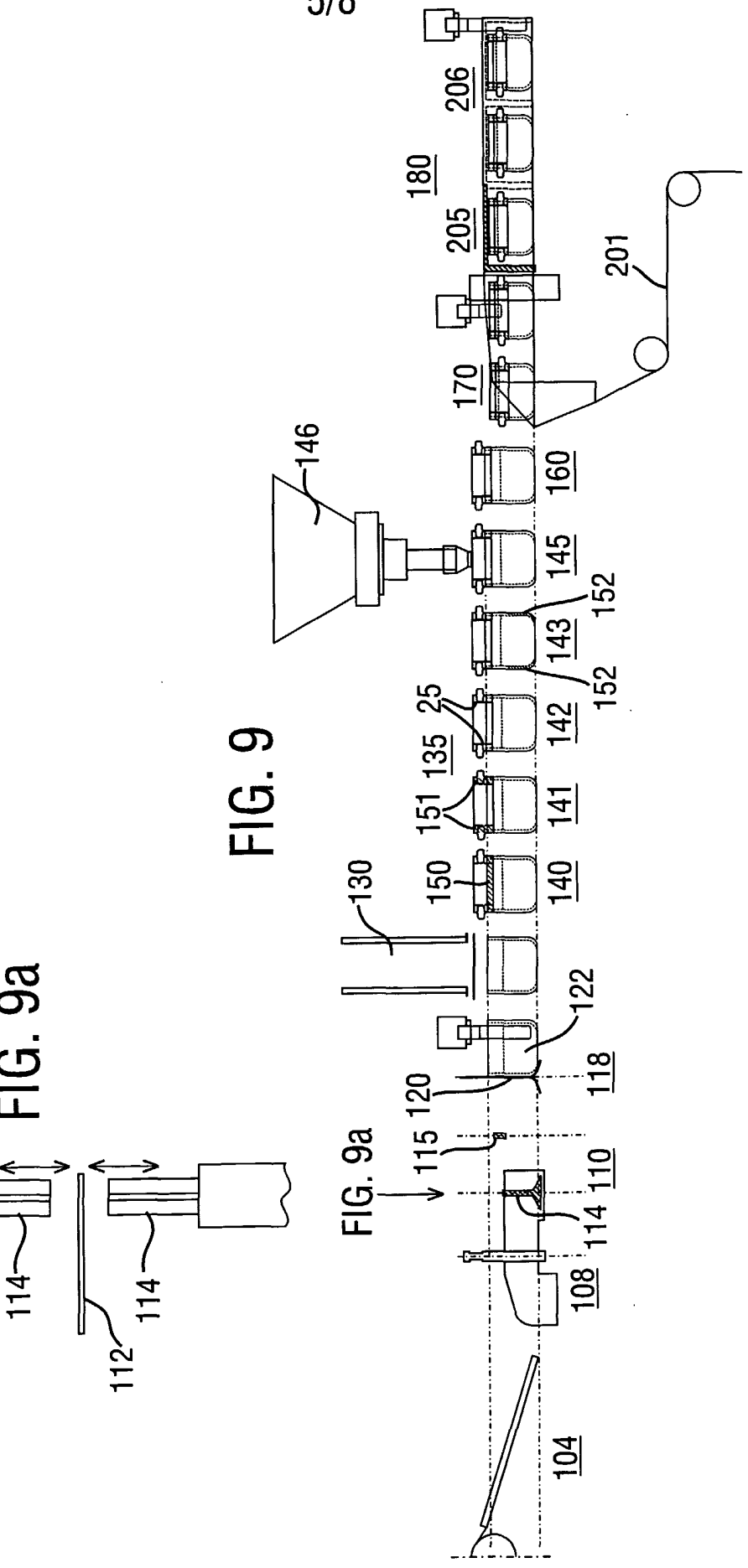

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FIG. 9a

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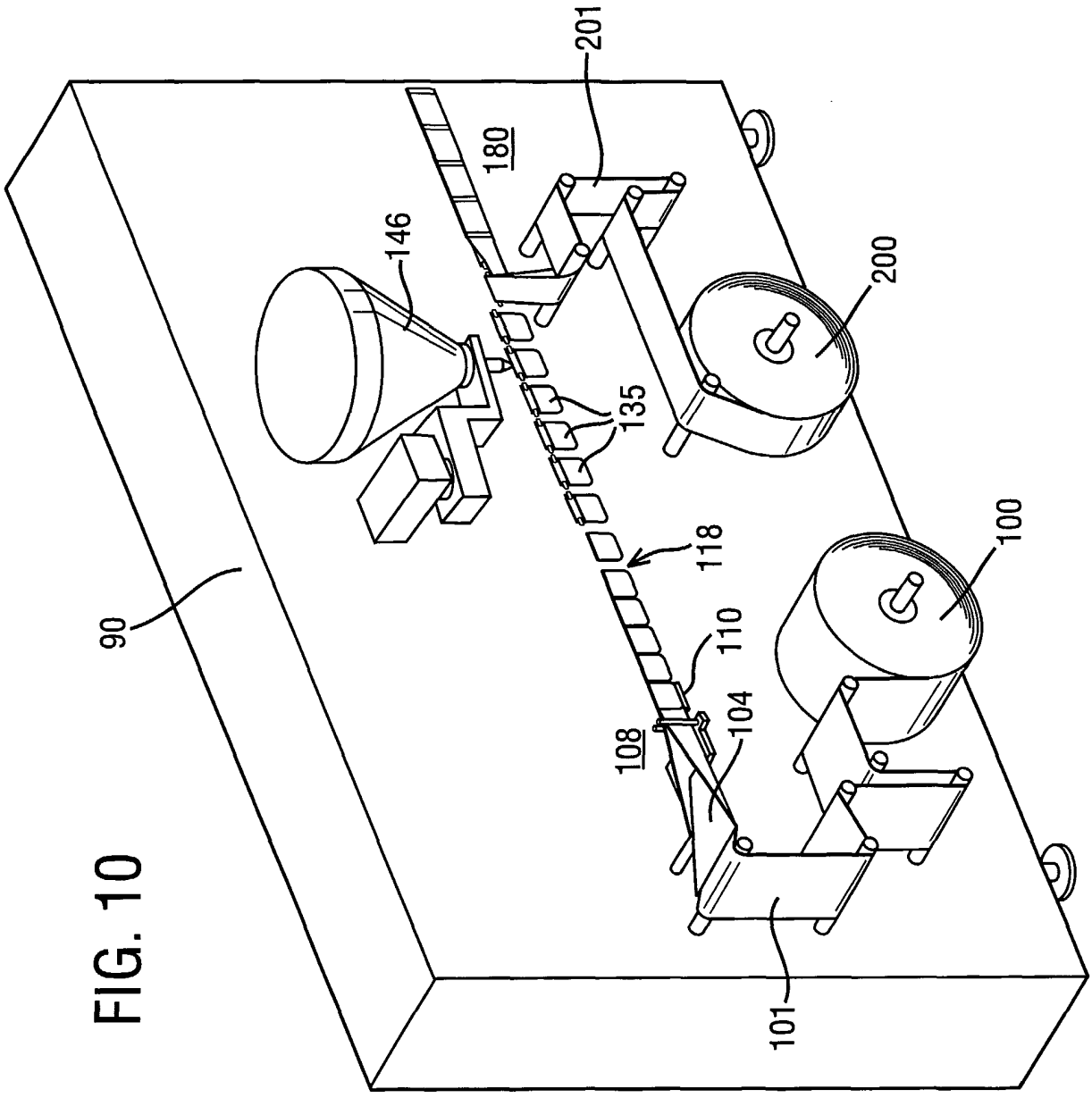
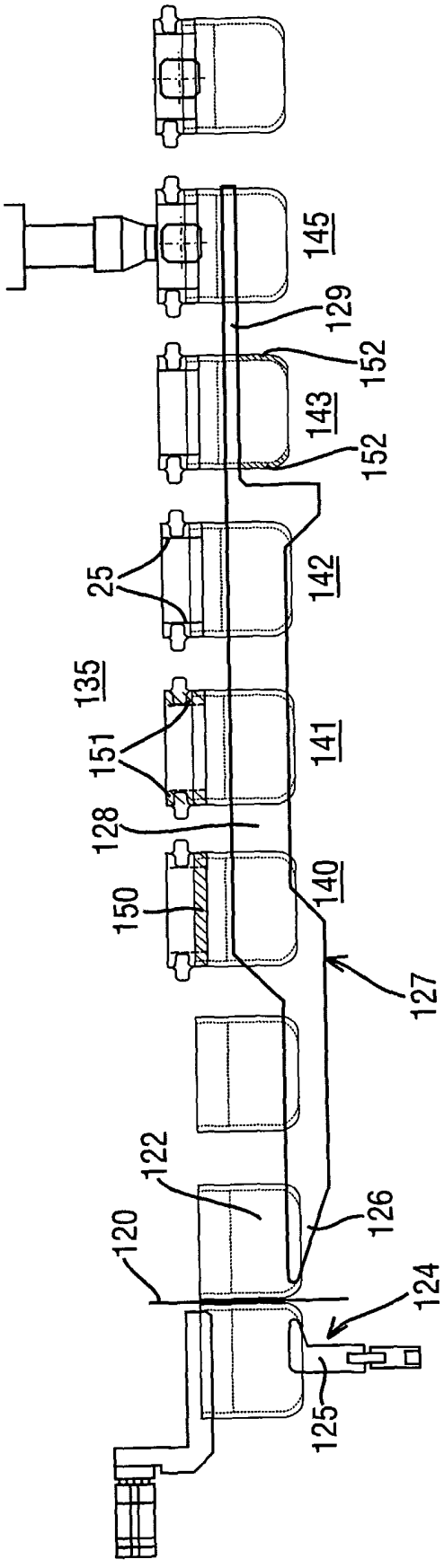


FIG. 10

FIG. 11


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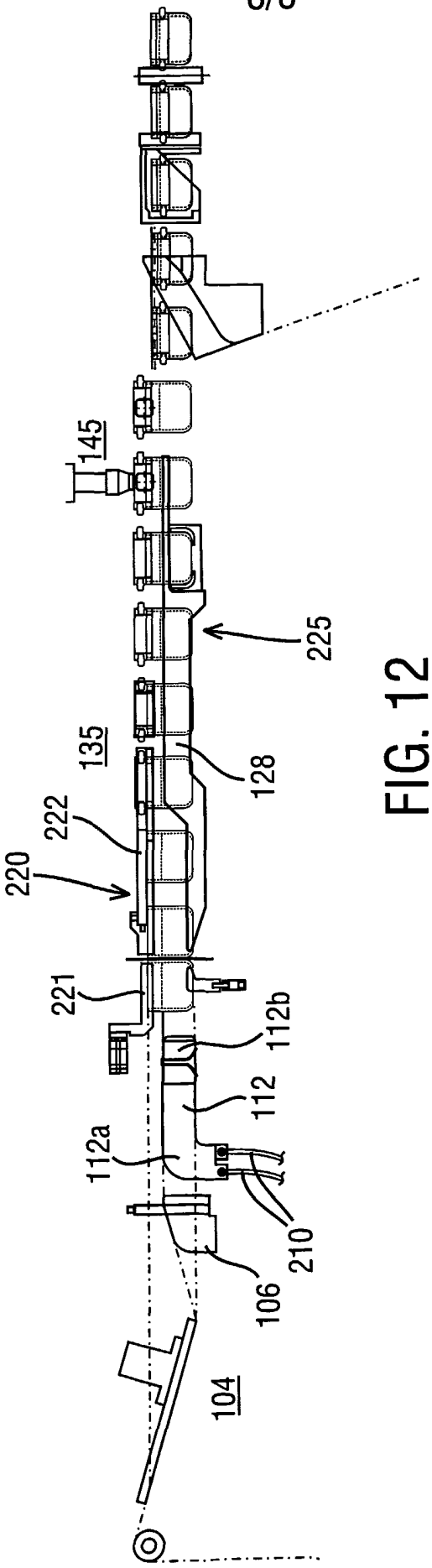


FIG. 12