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(71) Applicant and

(72) Inventor: **ZIMMERMAN, Israel, Harry** [US/US]; 310
Comstock Avenue, Los Angeles, CA 90024 (US).

(74) Agent: **DUFT, Walter, W.**; Law Offices Of Walter W.
Duft, 8616 Main Street, Suite 2, Williamsville, NY 14221
(US).

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(54) Title: COOKING SYSTEM AND METHOD FOR SEPARATING AND STORING FATTY LIQUIDS

(57) Abstract: A cooking system for separating and storing fatty liquids away from edible food either during or after cooking. The system includes a cooking apparatus having a body portion for cooking food. A fatty liquid reservoir mounted on the cooking apparatus is in fluid communication with the body portion. A pressure reducing device is in fluid communication with the reservoir and generates a pressure differential of sufficient magnitude to deliver a fatty liquid from the body portion to the reservoir. The system allows a user to cook food while removing excess liquid fat, grease or the like in order to scavenge away the unwanted fatty liquid from the cooking environment to a storage area where the liquid is safely quarantined. Once quarantined, the hot fatty liquid can be allowed to cool so that it can be eventually discarded in an environmentally beneficial manner.



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COOKING SYSTEM AND METHOD FOR SEPARATING AND STORING FATTY LIQUIDS

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BACKGROUND OF THE INVENTION

5 1. Field of the Invention

The present invention relates to cooking apparatus used for the cooking of foods that contain fat or grease, or where oil is added for frying or to pre-lubricate a cooking surface. More particularly, the invention concerns the separation and removal of fat, grease and other fatty liquids from a cooking apparatus in which food is being prepared.

10 2. Description of the Prior Art

The presence of oil or hot liquefied fat derivatives in a cooking apparatus during food preparation produces a myriad of potential dangers, environmental hazards, and otherwise unhealthy consequences. For example, allowing food to sit in a pool of hot grease while being cooked is likely to result in some of that fat being absorbed or reabsorbed by the food, which is then consumed. It is widely accepted that the eating of fatty foods that are saturated with liquefied fats and certain animal fats can adversely affect a person's health, contributing to coronary blockage and other unhealthful conditions. There is also inherent danger in allowing ultra hot grease to collect in an open pan or pot due to splattering, or worse, the possibility of the cooking apparatus being accidentally knocked over. Although it is conventional practice to pour out fatty liquids during or following cooking, the discarding such liquids in this manner presents a myriad of pitfalls. For example, pouring hot grease out of a pan or pot can be both messy and dangerous. If the grease is poured down a drain, it can solidify and clog the drain as it cools or travel through a city sewer network, carrying with it the hazards of dirty grease.

25 With the foregoing in mind, there has been a proliferation of inventions and products whose primary objective has been to produce a healthier and more practical alternative to cooking foods that may generate fatty byproducts. For example, there is the George Foreman[®] grill and equivalents that utilize gravity as a means of having animal fat runoffs (grease) roll down channels so that the grease, once separated from the food, is prevented from being reintroduced back into the food. Although such designs may succeed in separating some of the grease and prevent it from reentering the food being cooked, the grease ultimately remains in or near the hot cooking environment. In addition, because the design is totally dependant on gravity as the sole means of moving the grease, its effectiveness is limited to those situations where the cooking apparatus remains static and is

positioned on a flat surface. This, for example, would preclude its use in a fry pan or equivalent where the user may in the normal course of cooking have to pick up the cooking apparatus and shake or angle it to unusual temporary attitudes. Given the unyielding physics of gravity, such movements would cause the grease to move out of position, thereby
5 defeating the benefits of having the grease travel down to the low preordained point on the apparatus when it is in its preferred static orientation.

Other prior art proposals include the use of cooking grease traps that are injected into the center of the cooking environment. Although these traps may act to mitigate grease regurgitation under limited circumstances, they do not claim to eliminate or remove the
10 existing grease from the cooking area. Under certain circumstances, such traps, once saturated, actually act to form a concentrated area of grease and fat and can sometimes act in opposition to their primary objective and expose the food being cooked to the concentrated fat and grease, which is then reabsorbed into the food.

It is to solving the foregoing problems that the present invention is directed. In
15 particular, what is required is an improved cooking apparatus and cooking technique that allows a user to remove excess fat, grease, oil or other unwanted fatty liquids from the cooking environment during or immediately following cooking, thereby resulting in a healthier food product. Relatedly, it would be desirable to provide a way to isolate such liquids away from the open cooking utensil so that they are outside the influence of the
20 cooking environment, thereby mitigating the inherent dangers associated with open and loose ultra hot fats, grease and oil. Finally, if the fatty liquids can be quarantined away from the cooking environment, they will have an opportunity to cool to a point where they solidify, thereby allowing the user to discard the fatty solids in a more environmentally benign and safe manner.

25 SUMMARY OF THE INVENTION

The foregoing problems are solved and an advance in the art is obtained by a cooking system for separating and storing fatty liquids away from edible food either during or after a cooking process. In one aspect, the cooking system includes a cooking apparatus having a body portion for cooking food. A fatty liquid reservoir mounted on the cooking apparatus is
30 in fluid communication with the body portion. A pressure reducing device is in fluid communication with the reservoir and generates a pressure differential of sufficient magnitude to deliver a fatty liquid from the body portion to the reservoir. The system allows a user to cook food while removing excess liquid fat, grease or the like in order to scavenge away the unwanted fatty liquid from the cooking environment to a storage area where the

liquid is safely quarantined. Once quarantined, the hot fatty liquid can be allowed to cool so that it can be eventually discarded in an environmentally beneficial manner.

In another aspect, the cooking system includes a cooking apparatus, a liquefied grease/oil reservoir, and a liquid removal conduit having one end in fluid communication
5 with the cooking apparatus and another end in fluid communication with the liquefied grease/oil reservoir. A volume expander in fluid communication with the liquefied grease/oil reservoir is used to lower the ambient pressure in the reservoir. A device for activating the volume expander is also provided.

10 In a further aspect, a method is provided for separating a fatty liquid from edible food either during or after cooking. According to the method, food is placed in a body portion of a cooking apparatus having a fatty liquid reservoir in fluid communication with the body portion and with a pressure reducing device. The food is heated to generate a fatty liquid or a fatty liquid is introduced prior to cooking, and the pressure reducing device is activated to
15 generate a pressure differential of sufficient magnitude to deliver the fatty liquid from the body portion to the reservoir.

In a still further aspect, a cooking system kit is provided for attachment to a cooking apparatus. The kit includes a liquefied grease/oil reservoir, a liquid removal conduit having one end adapted to be placed in fluid communication with the cooking apparatus and another
20 end in fluid communication with the liquefied grease/oil reservoir. A volume expander in fluid communication with the liquefied grease/oil reservoir is used to lower the ambient pressure in the reservoir. A trigger device for activating the volume expander is also provided.

BRIEF DESCRIPTION OF THE DRAWINGS

25 The foregoing and other features and advantages of the invention will be apparent from the following more particular description of various exemplary embodiments, as illustrated in the accompanying Drawings, in which:

FIG. 1 is a perspective view of an exemplary cooking system constructed in accordance with the present invention;

30 FIG. 2 is a partial side view of the exemplary cooking system of FIG. 1;

FIG. 3 is a cross-sectional view showing a detail a fatty liquid drain opening and a liquid removal conduit of the exemplary cooking system of FIG. 1;

FIG. 4 is a partial perspective view showing a filter screen over the drain opening shown in FIG. 3;

FIG. 5 is a partial side view of another exemplary cooking system constructed in accordance with the present invention;

FIG. 6 is a perspective view of another exemplary cooking system constructed in accordance with the present invention;

5 FIG. 7 is a partial side view showing a handle mounted portion of the exemplary cooking system of FIG. 6;

FIG. 8 is a partial side view according to FIG. 7 showing interior components of the handle mounted portion;

10 FIG. 9 is an upper perspective view showing an alternative handle mounted portion that may be used for the exemplary cooking system of FIG. 6;

FIG. 10 is a lower perspective view of the alternative handle mounted portion of FIG. 9;

FIG. 11 is a partial perspective showing a fatty liquid reservoir of the alternative handle mounted portion of FIG. 9;

15 FIG. 12 is an exploded view of the fatty liquid reservoir and associated components of the alternative handle mounted portion of FIG. 9;

FIG. 13 is an exploded view of the alternative handle mounted portion of FIG. 9; and

FIG. 14 is a schematic diagram of another exemplary cooking system constructed in accordance with the present invention.

20 **DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

1. Introduction

According to exemplary embodiments to be described in more detail below, a cooking system is disclosed herein that allows a user to isolate, remove and separate fatty liquids and transport them away from a cooking apparatus in which food is being cooked. The fatty
25 liquids may include liquefied fat, grease, oil, water and other constituents that are either generated as a byproduct of the cooking (e.g., grease expressed from ground beef) or which are added prior to cooking as an aid to the cooking process (e.g., oil for greasing the cooking apparatus or for fat-frying the food). Advantageously, the fatty liquids can be segregated and removed to a reservoir for collection and disposal either during or after cooking. The user
30 can thus be confident that he or she can cook, emptying the reservoir as needed for disposal of the fatty liquids, and still be assured a fat free cooking environment. By removing the fatty liquids to the reservoir during cooking, the user is provided an additional level of safety in that there is no hot grease splatter and there is less likelihood of injury in the event that the cooking apparatus is accidentally tipped or knocked over. The fatty liquids can be isolated

away from the cooking apparatus so that the liquids are outside the influence of the cooking environment, mitigating the inherent dangers associated with open and loose fatty liquid materials such as ultra hot grease. Finally, because the fatty liquids are quarantined away from the heated cooking environment, the liquids have an opportunity to cool to a point
5 where they solidify, thereby allowing the user to discard the waste solids in a more environmentally benign and safe manner. As a consequence of the fatty liquids being stored separately from the primary cooking area, the user has the benefit of being able to allow the liquids to remain static as they cool and solidify to the point where the user can discard the fatty solids in a more environmentally friendly manner.

10 In the exemplary embodiments disclosed herein, fluid dynamics and the physics of differential pressure forces are used in an advantageous way. Although physicists may consider the notion of "suction" apocryphal, the net effect is what looks and acts like a suction. The disclosed embodiments effectively capitalize on the fact that when there is an environment with a higher ambient gas pressure and there is a closed environment which has
15 a lower internal gas pressure, merging the two environments will result in the high pressure tending to flow to the area of low pressure in an effort to equalize the pressure. The same dynamic provides the motive force to sweep the fatty liquids out of the cooking area, where there is a relatively high ambient pressure, to the reservoir, where through operation of a pressure reducing device, the user creates a low pressure environment. The result is a motive
20 force that continues until the pressure equalizes. This process can be repeated as many times as necessary until all the fatty liquids are removed from the cooking apparatus and moved into the reservoir. Advantageously, the removal of fatty liquids to the reservoir does not rely solely on gravity. The result is an active cooking system that allows a user to orient the cooking apparatus to different attitudes, as opposed to a passive system that relies solely on
25 gravity to drain fatty liquids and must therefore remain substantially in one position in order to properly function.

In some of the disclosed embodiments, the low pressure environment is created by utilizing a volume expanding mechanism that expands the internal volume of an open vessel that provides a fatty liquid reservoir and a closed area that surrounds the reservoir and is in
30 fluid communication therewith. The volume expanding mechanism can be provided by a multitude of devices such as a suction pump, a displacement pump, a syringe type of mechanism or a flexible bulb type of mechanism as is commonly found on basters. The physics are analogous to what a person does when they expand the internal volume in their lungs, allowing air to rush in and causing the person to breathe. In other disclosed

embodiments, the reservoir is provided by a closed vessel that is connected to a pump (e.g., suction pump) or other pressure reducing device.

A liquid removal conduit provides fluid communication between the reservoir and an open body portion of the cooking apparatus that serves as a cooking area. The liquid removal
5 conduit can be implemented in any desired fashion, including as a tube, a channel, a cavity or other hollow area. The liquid removal conduit may also be provided by a portion of the reservoir itself that extends into or is connected to the aforementioned body portion.

Optionally, a mesh or other type of filter can be positioned in front of the opening that represents the ingress end of the liquid removal conduit to prevent clogging from pieces of
10 small food, clumps of hardened grease, detritus or the like that might break off or form during the cooking phase. The liquid removal conduit connects the higher ambient gas pressure environment within the open cooking apparatus with that of the lower internal gas pressure that is generated inside the reservoir by the pressure reducing device. When fatty liquids are not present in the cooking apparatus, the ambient outside gas pressure and the internal gas
15 pressure (within the reservoir) will tend to be the same because the liquid removal conduit will act as an open vent insuring equal pressure throughout. However, whether by design (e.g., locating the liquid removal conduit ingress end at a low point in the cooking apparatus) or by user manipulation of the cooking apparatus, the liquid removal conduit opening can be submerged in the fatty liquids as they accumulate in the cooking apparatus, thereby

20 preventing a wholesale equalization of pressure by creating a controlled pressure system that comprises the liquid removal conduit, the reservoir, and the pressure reducing device. In that case, fluid dynamics and differential pressure physics would have the higher ambient gas pressure forcing its way through the liquid removal conduit to the lower pressure region of the reservoir. Because fluid dynamics teaches that the fatty liquids will substantially act as a
25 gas under these circumstances, the liquid material will flow as if it were a gas through the liquid removal conduit in an effort to equalize the differential pressure. This movement is leveraged by utilizing the liquid removal conduit to direct the fatty liquids so that they travel in a predictable path and eventually drop into the reservoir, which acts as a trap, where the liquids remain segregated from the cooking apparatus until the user decides to empty the
30 collected contents.

2. Exemplary Embodiments

Turning now to the drawing figures, wherein like reference numerals represent like elements in all of the several views, FIG. 1 illustrates an exemplary cooking system 10 for separating and storing fatty liquids away from edible food either during or after a cooking

process. The cooking system 10 includes a cooking apparatus 12 that is configured by way of example only as a frying pan. Other cooking apparatus types, such as pots, crocks, woks, grills, griddles and the like, may also be implemented. The cooking apparatus 12 has a handle 14 and an opening 16 is formed in the body portion 18 of the cooking apparatus where food is cooked. If desired, several openings rather than the single opening 16 could be used. The position of the opening 16 will be at a desired location on the body 18, such as on a side wall thereof. Depending on the height of the opening 16, a user may or may not need to tip the cooking apparatus to cause fatty liquids such as oil or hot grease to pool over the opening, so that they can be evacuated. It is also possible to position the opening 16 at other locations, as desired. For example, if the cooking apparatus is implemented as a cooking wok, the opening 16 could be formed at the low center point thereof. Similarly, if the cooking apparatus 12 is a frying pan, the opening 16 could be formed in the bottom surface, rather than the side wall.

As shown in FIG. 2, the handle 14 of the cooking apparatus 12 can be used to mount components for removing fatty liquids from the cooking apparatus either during or after cooking. One such component is a liquid removal conduit 20 that is implemented by way of example only as a tube. The liquid removal conduit 20 has an ingress end that communicates with the opening 16 and an egress end (not shown) that is proximate to and communicates with an opening (not shown) in the upper portion of a fatty liquid (e.g., liquefied grease/oil) reservoir 22. The reservoir 22 is preferably detachably mounted to the handle 14 so that it can be removed from the cooking apparatus 12 for draining and cleaning. The reservoir 22 can be implemented as a cup, tray, bottle or other vessel that is capable of being enclosed and maintained at a pressure that is below ambient air pressure. The liquid removal conduit 20 provides fluid communication between the reservoir 22 and the body 18 and serves to route fatty liquids from the body to the reservoir. A trigger 24 connects to a pressure reducing device (not shown) that is disposed within a sealed interior of the handle 14, and which is in fluid communication with the reservoir 22 by virtue of the upper portion of the reservoir also being disposed within the handle's sealed (airtight) interior. As described in more detail below, the pressure reducing device may be implemented by way of example only as a volume expanding device capable of generating a low fluid pressure zone within the sealed interior of the handle 14 that is used to lower the air pressure in the reservoir 22 relative to the ambient air pressure surrounding the body 18 of the cooking apparatus 12. As mentioned above, the pressure reducing device may also be implemented using other devices. The pressure differential created by the pressure reducing device provides a motive force to help

move fatty liquids from the body 18 into the opening 16, through the liquid removal conduit 20 and into the reservoir 22. Like the reservoir 22, the pressure reducing device may be either be detachably mounted on the handle 14 or it may be permanently affixed thereto. The liquid removal conduit 20 is the only connection and avenue for equalizing the pressure between the ambient environment surrounding the body 18 with the lower gas pressure environment in the reservoir 22. When the pressure in the reservoir 22 is reduced as a result of a user activating the trigger 24, fatty liquids that are present in the body 18 and covering the opening 16 will be transported to and collected in the reservoir 22. To facilitate this collection, the liquid removal conduit 20 is arranged to expel fatty liquids into the aforesaid opening in the upper portion of the reservoir 22, thereby allowing the fatty liquids to drop down and collect in a lower portion of the reservoir that extends below the egress end of the liquid removal conduit. In other words, because the egress end of the liquid removal conduit 20 empties into the upper portion of the reservoir 22, and conversely because a portion of the reservoir preferably extends below the conduit egress, the fatty liquids transported from the body 18 will fall into the reservoir and become trapped therein by gravity.

FIG. 3 is shows a detail of the opening 16 as it passes through a wall 26 in the body 18 of the cooking apparatus 12. The ingress end of the liquid removal conduit 20 is connected to the body 18 by way of a compression fitting 30 or other device, and thereby communicates with the opening 16. The liquid removal conduit 20 has a through channel 28 that passes fatty liquids removed from the body 18 to the egress end of the liquid removal conduit that communicates with the reservoir 22 of FIG. 2. FIG. 4 shows an optional exemplary filter screen 30 situated over the opening 16. The filter screen 30 is used to prevent solid materials from entering the liquid removal conduit 20 (see FIG. 3) and thereby causing it to become clogged.

Turning now to FIG. 5, another exemplary cooking system 40 is shown for separating and storing fatty liquids away from edible food either during or after a cooking process. The cooking system 40 includes a cooking apparatus 42 having a handle 44 without a sealed interior space. Although the non-handle portion of the cooking apparatus 42 is only partially shown, it will be understood that this portion may be implemented in a variety of configurations, including as a frying pan 12. Other cooking apparatus types, such as pots, crocks, woks, grills, griddles and the like, may also be implemented. A liquid removal conduit 46 is connected to an opening or openings (not shown) in a body portion of the cooking apparatus 42. The liquid removal conduit 46 has an egress end 48 that enters the top of an enclosed vessel 52 that provides a reservoir for storing fatty liquids collected from

the cooking apparatus 42. The egress end 48 preferably terminates at the top 50 of the vessel 52 so that the fatty liquids will pour down into the remainder of the vessel 52. The vessel 52 is preferably detachably attached to the handle 44 so that it can be drained and cleaned. A vacuum generator device 54 is also mounted to the handle 44 (permanently or detachably) and is provided to generate a low pressure force and thus act as a pressure reducing device. The vacuum generator device 54 has a spring-biased pump activation handle 56 (implemented, for example, as a pushbutton) engaged with a pump chamber 58. By depressing the pump activation handle or trigger 56, a low pressure force is created in the chamber 58. Because the vacuum generator device 54 and the vessel 52 do not reside within a common enclosed space (such as a sealed handle interior as per the cooking system 10 of Figs. 1-4), an air conduit 60 is used to provide fluid communication with the vessel 52. The air conduit 60 has a first end 62 connected to the chamber 58 and a second end 64 connected to the top 50 of the vessel 52. Accordingly, when low pressure is generated in the vacuum generator device 54, this low pressure is distributed via the air conduit 60 to the vessel 52, which is then communicated via the liquid removal conduit 46 to the opening of the cooking apparatus, thereby suctioning up excess fatty liquids. A conventional one-way valve or the like can be used in the vacuum generator device 54 to restore ambient pressure to the pump chamber 58 when the activation handle 56 is released. It will be appreciated that the cooking system 40 does not require the handle 44 to maintain a sealed interior space, which may simplify the construction. However, due to their proximity to the gripping area of the handle 44, the vessel 52 and the liquid removal conduit 46 are preferably enclosed and/or made of materials that are heat insulative so as to prevent excess heat from escaping therefrom. Advantageously, the components 46-64 may be either integrally formed with the cooking apparatus 42 or retrofitted to the cooking apparatus as an add-on kit. When used as a retrofit kit, the components 46-64 will become an integral part of the cooking apparatus 42 once they are attached thereto.

Turning now to FIGS. 6-8, another exemplary cooking system 70 is shown for separating and storing fatty liquids away from edible food either during or after a cooking process. The cooking system 70 includes a cooking apparatus 72 having a handle 74 and a main body portion 76 where food is cooked. The cooking apparatus 72 is configured by way of example only as a frying pan. Other cooking apparatus types, such as pots, crocks, woks, grills, griddles and the like, may also be implemented. An opening 78 in the main body 76 connects to the ingress end of a liquid removal conduit 80. If desired, the liquid removal conduit 80 can be made of rigid material to provide a structural stem portion of the handle 74

that connects to the main body 76. Alternatively, the liquid removal conduit 80 may lie inside the handle stem portion (if the latter is hollow) or may be disposed adjacently thereto. A pressure reducing device 82 and a fatty liquid reservoir 84 are disposed in a sealed (airtight) interior chamber 86 of the handle 74, and are in fluid communication therewith. In

5 FIG. 6, the handle 74 is shown transparently in order to illustrate the interior chamber 86. As shown in FIG. 7, the handle 74 may be constructed so as to have an upper casing 88A and a lower casing 88B. Many other constructions would also be possible. FIG. 8 illustrates the handle 74 with the lower casing 88B removed from an upper handle casing 88A in order to further illustrate the interior chamber 86 and its contents. The reservoir 84 can reside in an

10 enlarged base section 90 (see FIGS. 6 and 7) of the interior chamber 86, where it is preferably removably attached to the handle 74. An access door 92 may be provided on the upper handle casing 88A to facilitate the removal of the reservoir 84 from the interior chamber 86. If desired, the access door 92 can be made of a transparent material that allows the contents of the reservoir 84 to be viewed in order to prevent overfilling and spillage during use.

15 Because interior chamber 86 is sealed (when the access door 92 is shut), the reservoir 84 can be implemented as an open tray or the like whose upper end is open to the remainder of the interior chamber. As in the case of the cooking system 10 of Figs. 1-4, at least a portion of the reservoir 84 preferably extends below the level at which the liquid removal conduit 80 expels fatty liquids, such that the reservoir acts as a trap for such material. The pressure

20 reducing device 82 includes a volume expanding plunger 94 that is slidably disposed in a relatively narrow cylindrical tail section 96 (see FIGS. 6 and 7) of the interior chamber 86. The plunger 94 has a resilient o-ring member 97 that engages an inner cylindrical wall surface of the interior chamber 86 in much the same manner as a plunger in a syringe barrel. Displacement of the plunger 94 away from the reservoir 84 expands the fluid volume of the

25 interior chamber 86 so as to create a negative pressure differential relative to the body 76 of the cooking apparatus 72. This pressure differential draws fatty liquids through the liquid removal conduit 80 so that they will be captured in the receptacle 84. A finger operable trigger 98 is connected to the plunger 94 and is slideable through an elongated slot (not shown) in the upper handle casing 88A to actuate the plunger and effect the aforesaid volume

30 expansion of the interior chamber 86. The trigger can be of any form and its finger engaging portion may be formed with a curl or any other comfortable alternative surface configuration.

Turning now to FIGS. 9-13, a modification of the cooking system 70 is shown at 70' . According to this modification, the handle 74' of the cooking apparatus (not shown) is implemented in a slightly different configuration and is also formed with an opening 100' (see

FIGS. 10 and 13) in the lower side of the handle 74'. The opening 100' allows the reservoir 84' to extend out of the handle, which facilitates the interchangeable use of reservoirs having different capacities (i.e., by making some deeper than others). Moreover, by making the reservoir 84' somewhat translucent, the fluid level therein can be easily monitored. The remaining components of the cooking system 70' are otherwise substantially similar to their counterparts in the cooking system 70 of FIGS. 6-8, as shown by the use of corresponding reference numerals to which the " " designation has been added. FIGS. 11-13 illustrate additional construction details of the cooking apparatus 70', including the use of an optional seal retainer 102' attached to the lower portion of the access door 92' to engage the top of the reservoir 84' in order to hold it in position and help seal the handle interior to make it airtight, a support bracket 104' for supporting the cooking apparatus body, a linkage 106' connecting the trigger 98' to the plunger 94', and a slot 108' that allows the trigger 98' to slide along the handle.

Turning now to FIG. 14, another exemplary cooking system 110 is schematically shown for separating and storing fatty liquids away from edible food either during or after a cooking process. The cooking system 110 includes a cooking apparatus 112 of any desired configuration and an opening 114 that provides the only connection and avenue for equalizing pressure between an ambient environment area 116 of the cooking apparatus 112 and a lower gas pressure environment 118 of the cooking apparatus. As described above, the lower pressure environment 118 includes a volume expander or other pressure reducing device 120, a fatty liquid reservoir 122, and a liquid removal conduit 124 that extends between an upper portion of the reservoir 122 and the opening 114. When the pressure in the environment 118 is lowered by way of the user activating the volume expander 120 (via a trigger, a push button, a slider switch or the like), fatty liquids are moved into the reservoir 122 via the liquid removal conduit 124. Because a portion of the reservoir 122 extends below the egress end of the liquid removal conduit 124, the fatty liquids will remain in the reservoir until it is emptied.

The components 120, 122 and 124 may have any desired design or configuration and they may be either separately implemented as discrete components or combined in any fashion as a composite structure. As an example of the latter configuration, the reservoir 122 could be configured so that a portion thereof serves as the liquid removal conduit 124, and could be further configured to integrally incorporate the pressure reducing device 120. This composite structure could then be detachably or permanently mounted to the cooking apparatus 112. If the components 120, 122 and 124 are implemented as discrete elements, or

as sub-combinations thereof, each element or sub-combination can be separately mounted to the cooking apparatus 112 (permanently or as detachable elements) or they could be disposed separately therefrom.

Accordingly, a cooking apparatus and method for separating and storing fatty liquids
5 have been disclosed. While exemplary embodiments have been shown and described, it should be apparent that many variations and alternative embodiments could be implemented in accordance with the teachings herein. For example, although the disclosed embodiments illustrate cooking systems that can be implemented as one integrated unit, the invention also contemplates cooking systems where not only the reservoir, but also the pressure reducing
10 device, the trigger, and the liquid removal conduit are separable in whole or in part from the cooking apparatus for both ease of cleaning and for efficiency in that such components could be attached to other cooking systems. In addition, these components can be integrated directly into and retrofitted as part of an existing cooking apparatus, for example, with the liquid removal conduit (which could be part of the reservoir) being positioned over the side
15 of the cooking apparatus and extending into the cooking zone and with the reservoir and the pressure reducing device being clipped or otherwise attached to a handle or other location on the cooking apparatus, either separately or as an integrated reservoir-pressure reducing kit. It is understood, therefore, that the invention is not to be in any way limited except in accordance with the spirit of the appended claims and their equivalents.

CLAIMS

What is claimed is:

- 1 1. A cooking system for separating and storing fatty liquids away from edible food
2 either
3 during or after cooking, comprising:
4 a cooking apparatus having a body portion for cooking food;
5 a fatty liquid reservoir mounted on said cooking apparatus and in fluid
6 communication with said body portion; and
7 a pressure reducing device in fluid communication with said reservoir for generating a
8 pressure differential of sufficient magnitude to deliver a fatty liquid from said body portion to
9 said reservoir.
- 1 2. The cooking system of claim 1, wherein said cooking apparatus is one of a pan, a pot,
2 a crock, a wok, a griddle, or a grill.
- 1 3. The cooking system of claim 1, wherein said reservoir communicates with said body
2 portion by way of a liquid removal conduit having a first end in fluid communication with
3 said body portion and a second end in fluid communication with an upper portion of said
4 reservoir that is above a lower portion of said reservoir that collects said fatty liquids, such
5 that said fatty liquids drop down from said second end of said liquid removal conduit into
6 said reservoir lower portion where they will be trapped.
- 1 4. The cooking system of claim 1, wherein said reservoir comprises one of an open
2 vessel or a closed vessel and is detachable from said cooking apparatus.
- 1 5. The cooking system of claim 1, wherein said pressure reducing device comprises one
2 of a pump, a syringe, or a bulb.
- 1 6. The cooking system of claim 1, wherein said cooking apparatus comprises a handle
2 and wherein said reservoir and said pressure reducing device are mounted on said handle.
- 1 7. The cooking system of claim 6, wherein said pressure reducing device and at least a
2 portion of said reservoir are disposed in an interior of said handle.

1 8. The cooking system of claim 7, wherein said reservoir and said pressure reducing
2 device are in fluid communication with said interior portion of said handle, and wherein said
3 pressure reducing device comprises volume expanding plunger slidably engaging an interior
4 surface of said handle, and further wherein displacement of said plunger expands a fluid
5 volume in said interior portion of said handle so as to create said pressure differential.

1 9. The cooking system of claim 1, wherein said pressure reducing device comprises one
2 of a finger operable trigger, a pushbutton, or a slider switch.

1 10. The cooking system of claim 1, further including a filter disposed on said body
2 portion to remove particulates from said fatty liquid prior to said fatty liquid being delivered
3 to said reservoir.

1 11. A cooking system for separating and storing fatty liquids away from edible food
2 either during or after a cooking process, comprising:
3 a cooking apparatus;
4 a liquefied grease/oil reservoir;
5 a liquid removal conduit having a first end in fluid communication with said cooking
6 apparatus and a second end in fluid communication with said liquefied grease/oil
7 reservoir;
8 a volume expander in fluid communication with said liquefied grease/oil reservoir;
9 and
10 a device for activating said volume expander.

1 12. The cooking system of claim 11, wherein said liquid removal conduit comprises one
2 of a tube, a cavity or a channel.

1 13. The cooking system in claim 11, wherein said volume expander comprises
2 one of a displacement pump, a syringe, a suction pump or a flexible bulb.

1 14. The cooking system in claim 11, wherein said liquefied grease/oil reservoir, said
2 liquid removal conduit, said volume expander, and said device for activating said volume
3 expander are integral with said cooking apparatus.

- 1 15. The cooking system in claim 11, wherein said liquefied grease/oil reservoir, said
2 liquid removal conduit, said internal volume expander, and said device for activating said
3 volume expander are separable from said cooking apparatus.
- 1 16. The cooking system in claim 11, further comprising a mesh or filter covering said first
2 end of said liquid removal conduit.
- 1 17. The cooking system of claim 11, wherein said device for activating said volume
2 expander comprises one of a pushbutton, a trigger switch, or a slider switch.
- 1 18. A cooking system for separating and storing fatty liquids away from edible food
2 either
3 during or after cooking, comprising:
4 a cooking apparatus having a body portion for cooking food;
5 reservoir means in fluid communication with said cooking apparatus for storing a
6 fatty liquid removed from said body portion;
7 pressure reducing means in fluid communication with said reservoir means for
8 generating a pressure differential of sufficient magnitude to deliver a fatty liquid from said
9 body portion to said reservoir; and
10 one or both of said reservoir means and said pressure reducing means being disposed
11 on said cooking apparatus during cooking.
- 1 19. A method for separating a fatty liquid from edible food either during or after cooking,
2 comprising:
3 placing said food in a body portion of a cooking apparatus having a fatty liquid
4 reservoir in fluid communication with said body portion and with a pressure reducing device;
5 heating said food to generate a fatty liquid or introducing a fatty liquid prior to
6 cooking; and
7 activating said pressure reducing device to generate a pressure differential of
8 sufficient magnitude to deliver said fatty liquid from said body portion to said reservoir.
- 1 20. A method for removing liquefied fat or oil from a cooking apparatus either
2 during or after cooking using the device of claim 11, comprising:

3 tilting said cooking apparatus as necessary in order to move liquefied grease/oil to
4 said first end of said liquid removal conduit, and
5 activating said internal volume expander.

1 21. A cooking system kit adapted for attachment to a cooking apparatus for removing
2 fatty liquids away from edible food either during or after cooking, comprising:
3 a liquefied grease/oil reservoir;
4 a liquid removal conduit having a first end adapted to be placed in fluid
5 communication with a cooking apparatus and a second end in fluid communication with said
6 liquefied grease/oil reservoir;
7 a volume expander in fluid communication with said liquefied grease/oil reservoir;
8 and
9 a trigger device for activating said volume expander.

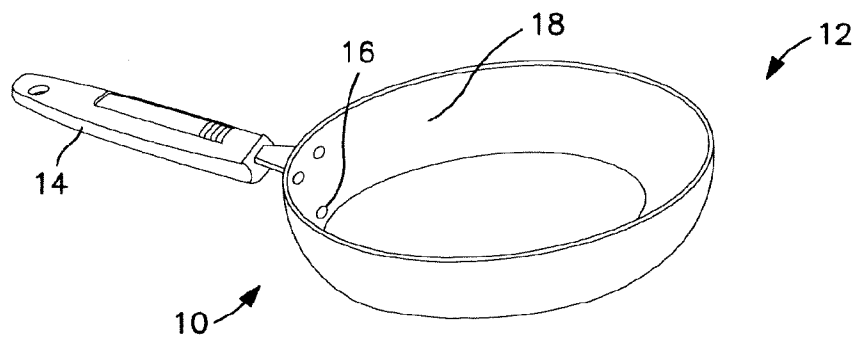


FIG. 1

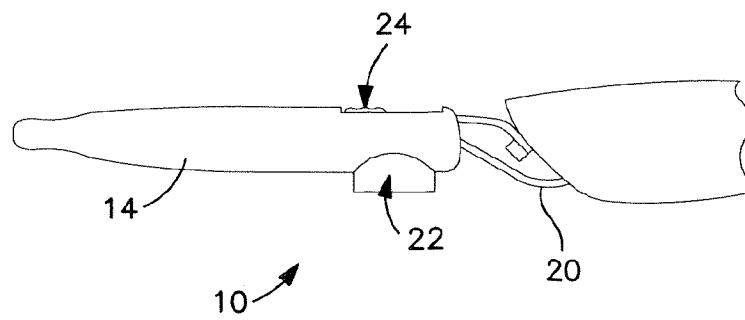


FIG. 2

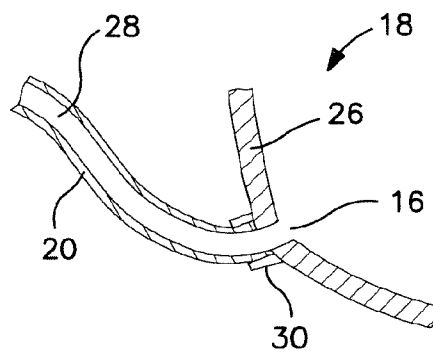


FIG. 3

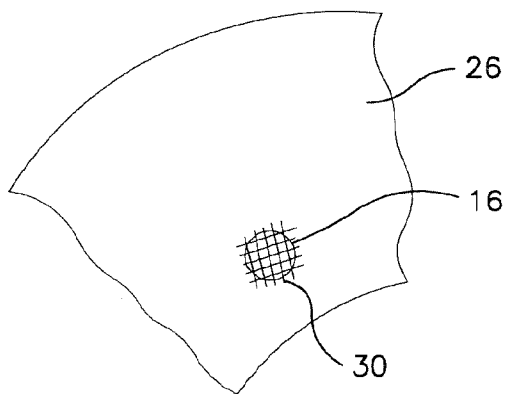


FIG. 4

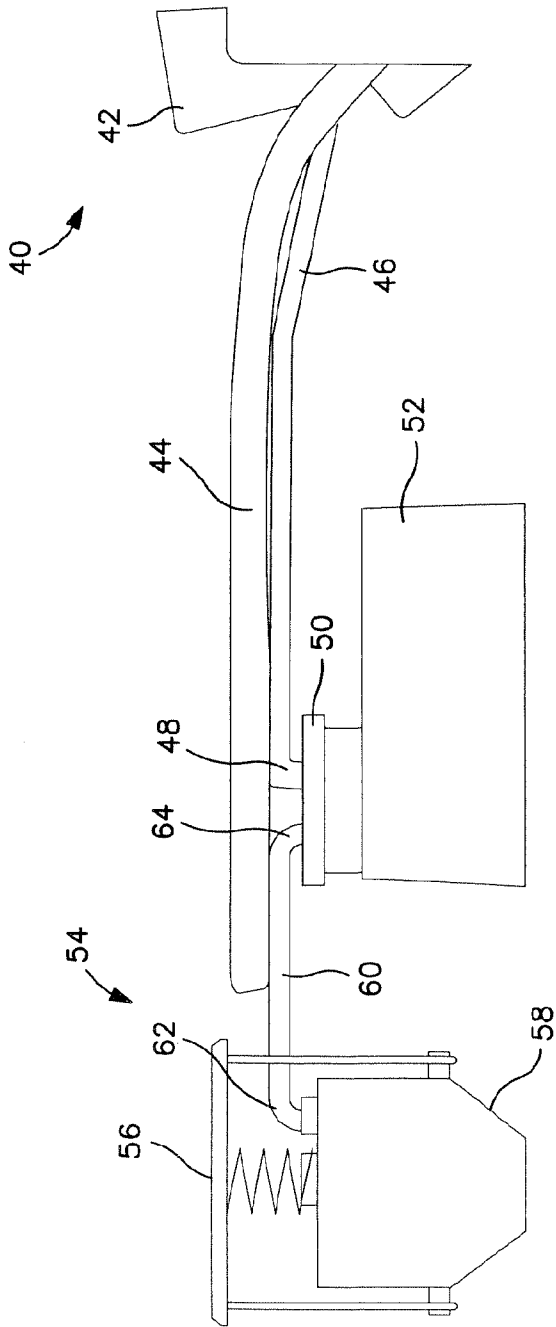


FIG. 5

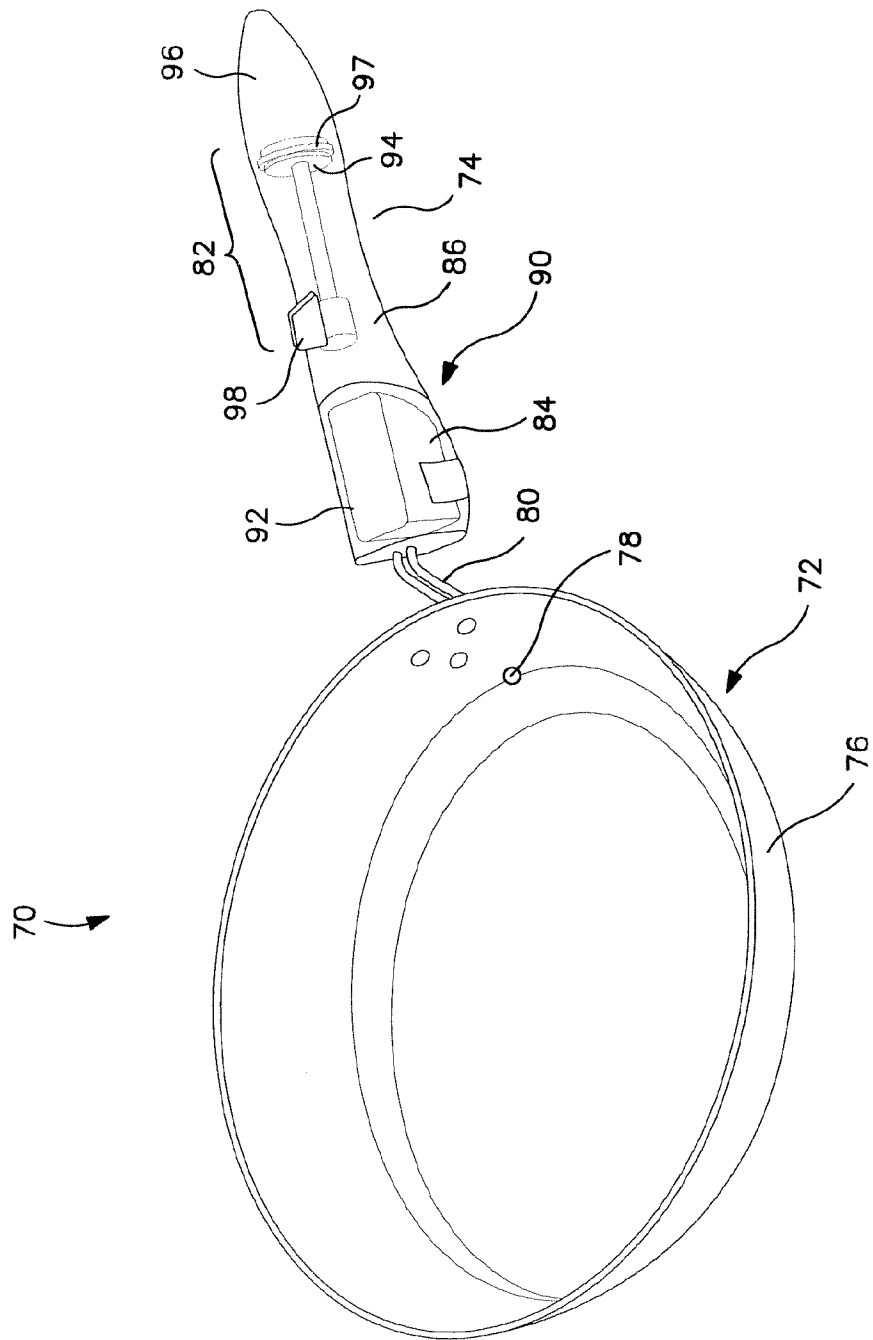


FIG. 6

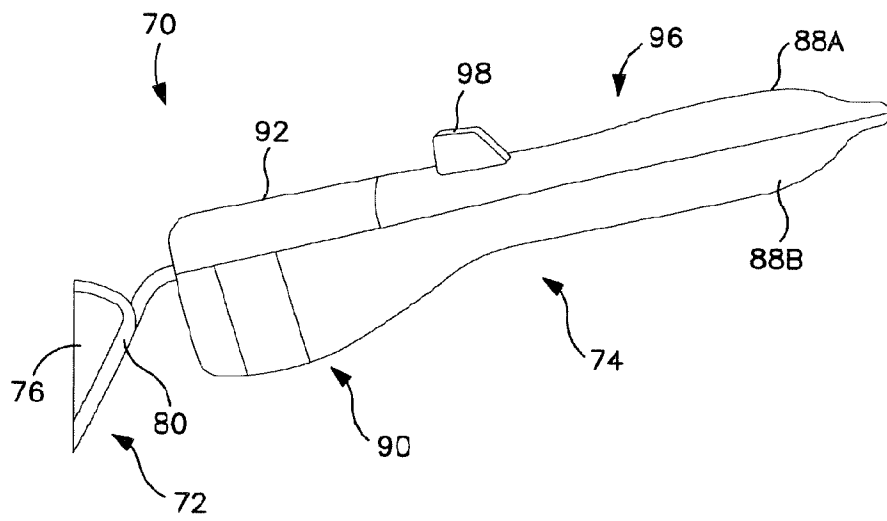


FIG. 7

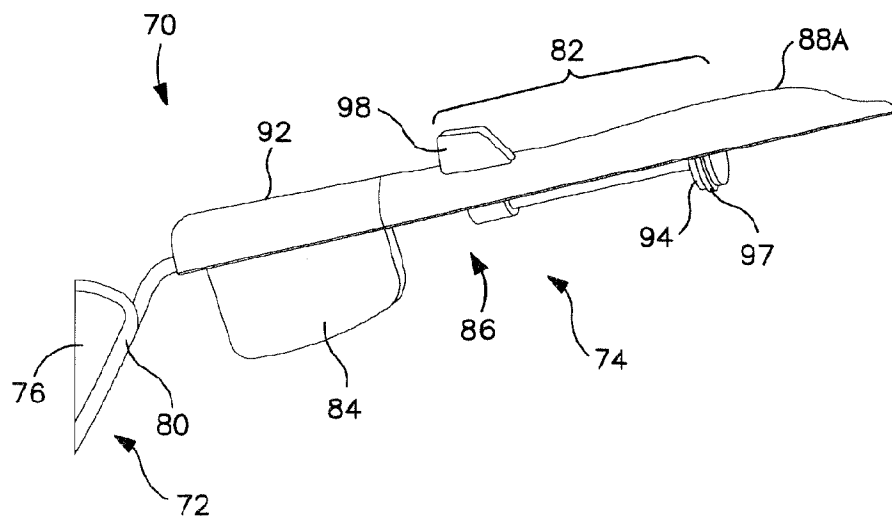


FIG. 8

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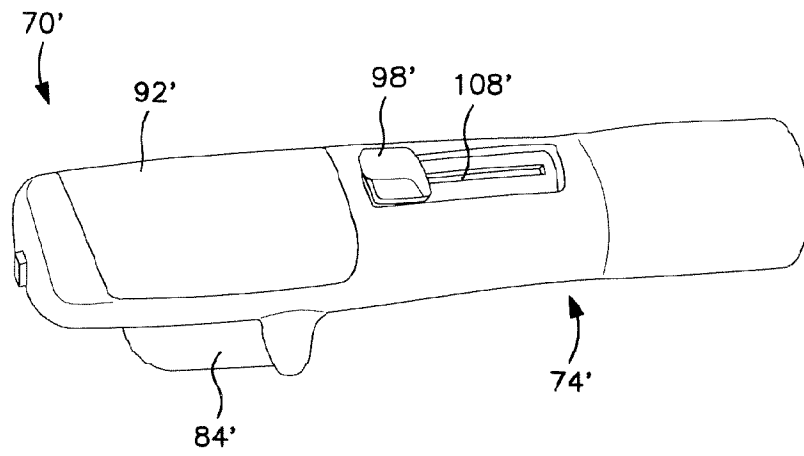


FIG. 9

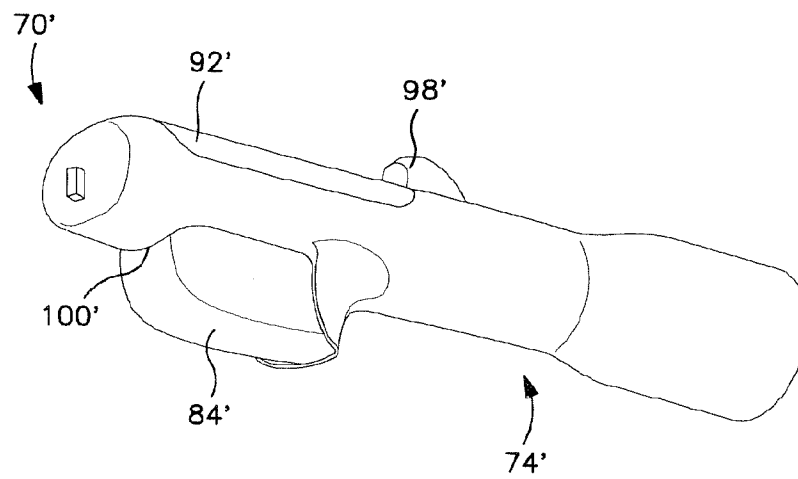


FIG. 10

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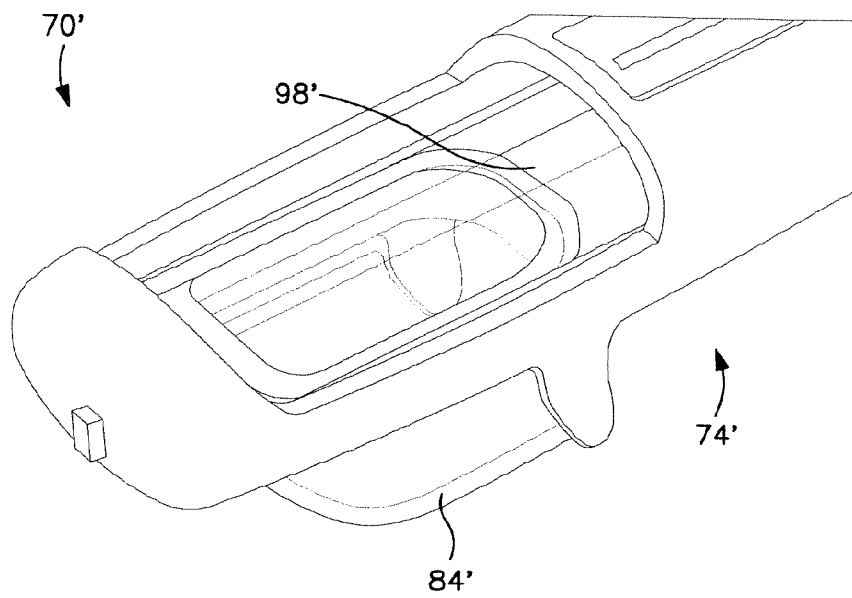


FIG. 11

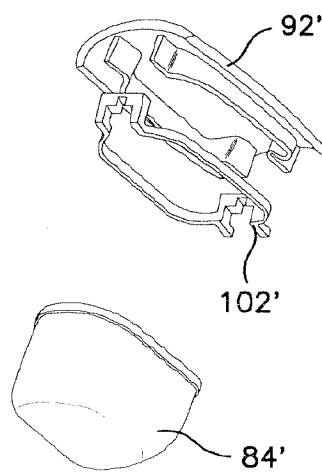


FIG. 12

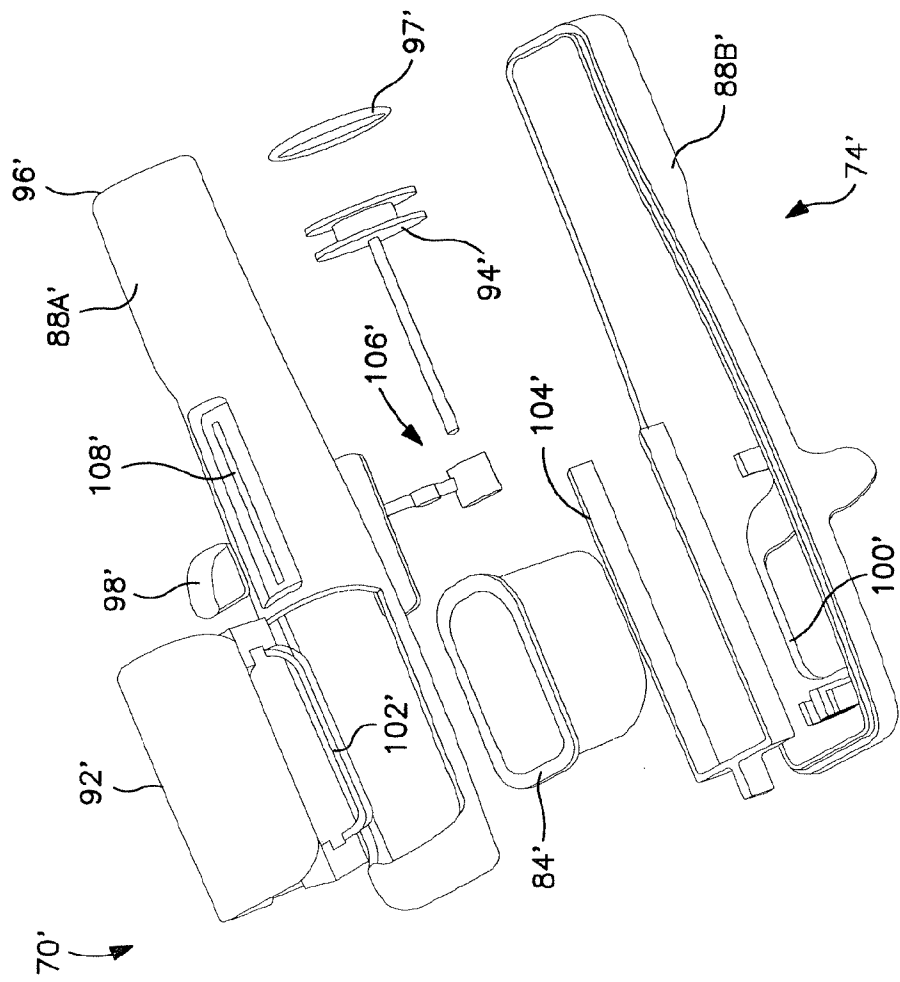


FIG. 13

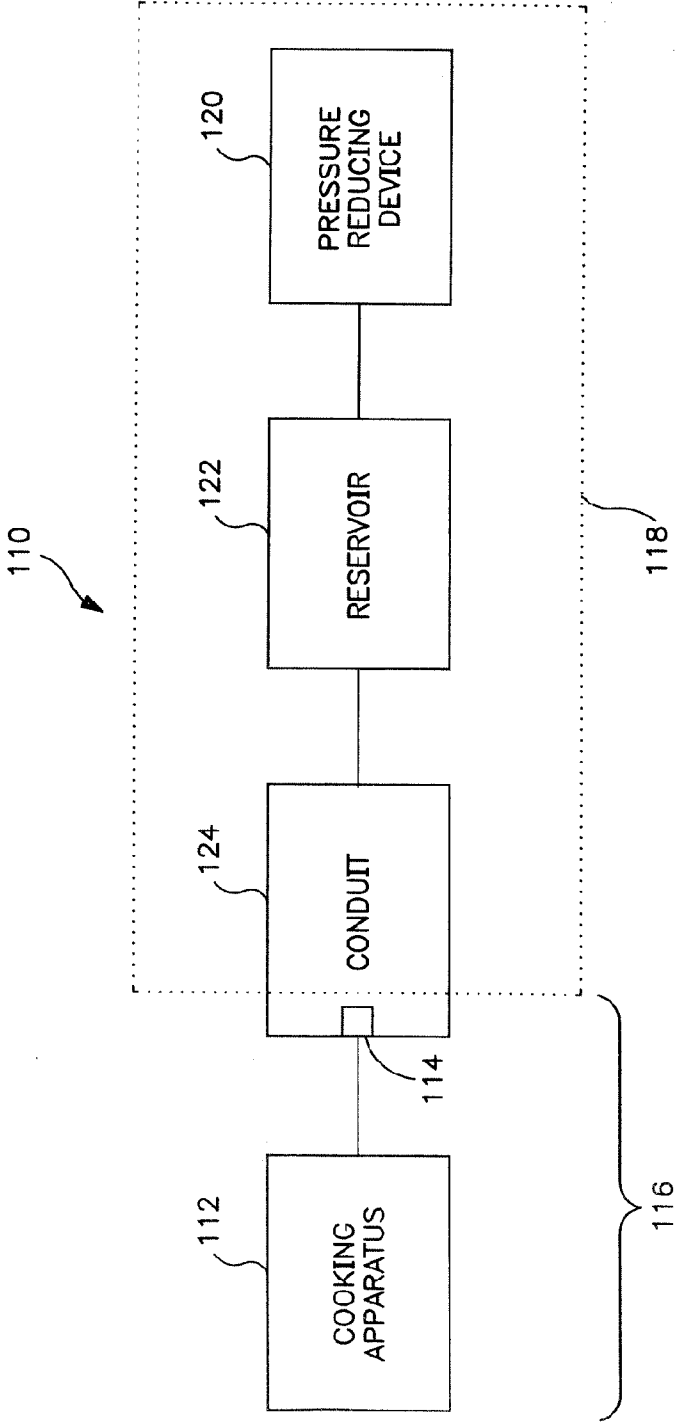


FIG. 14